CONTRACT NO: RLM/RWST/OMM/0101/2024/25

RE-ADVERT: APPOINTMENT OF A CONTRACTOR FOR CONSTRUCTION OF BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

AUGUST 2025

NAME OF BIDDER: ……..

BID PRICE: ……..…… (VAT Incl.)

Prepared by:

RUSTENBURG WATER SERVICES TRUST
1A KOCK STREET
RUSTENBURG
0300

BID CLOSES: 26 August 2025 at 10:00

CONTRACT NO: RLM/RWST/OMM/0101/2024/25 – RE-ADVERT:

CONSTRUCTION OF BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

PARTICULARS OF THE BIDDER		
NAME OF THE BIDDING OR TENDERING COMPANY		
POSTAL ADDRESS		
	POSTAL CODE	
STREET ADDRESS (PHYICAL ADDRESS)		
	POSTAL CODE	
NAME OF COMPANY REPRESENTATIVE		
E-MAIL ADDRESS		
TELEPHONE NUMBER (TELKOM LINE)		
CIDB CRS NUMBER		
CELLPHONE NUMBER		
ALTERNATE CELLPHONE NO.		
CENTRAL SUPPLIER DATABASE NUMBER OF THE BIDDING COMPANY		

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

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Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

BID PROCESS CRITERIA LIST

RLM/RWST/OMM/0101/2024/25 - RE-ADVERT: APPOINTMENT OF A CONTRACTOR FOR CONSTRUCTION OF BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

CONTRACT NO: RLM/RWST/OMM/0101/2024/25 – RE-ADVERT:
CONSTRUCTION OF BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

TENDERING PROCEDURES:
DOCUMENT COMPLETION INSTRUCTION AND RETURNABLE SCHEDULE

A bid not complying with the requirements stated hereunder will be regarded as an "Unacceptable bid", and as such will be rejected.

"Unacceptable bid" means any bid which, in all respects, does not comply with the conditions of bid and specifications as set out in the bid documents, including conditions as specified in the Preferential Procurement Policy Framework Act (Act 5 of 2000) and related legislation as published in Government Gazette number 22549, dated 10 August 2001, in terms of which provision is made for this policy.

Important information to note:

1. Bidder should not remove any page from the bid document or submit a copy of the original bid document.
2. The bid document should not be completed using a pencil or any other colour ink. Only black ink must be used to complete the bid document. Only tick the appropriate option. Please be informed that whether you scratch out, tick or circle, your answer will be where the pen ink is reflecting.
3. The bid should be properly signed by the designated signatory contained in the tender document.
4. The bidder should not attempt to influence the evaluation and/or awarding of the contract.
5. The bid should not submit after the relevant closing date and time.
6. Failure to complete and sign and / or disclose wrong information in any of the declaration forms will result in an "Unacceptable bid".
7. Compulsory questionnaires must be fully completed and signed.
   NB! In the case of Joint Venture separate compulsory questionnaire forms must be completed and submitted.
8. The bidder must in the case of Joint Venture submit separate MBD 5 forms for each partner.
9. In the case of multi directors or joint venture, the bidder must submit separate MBD 4 declaration forms for each director.
10. Bid documents must be in envelopes that clearly marked with the bid number and description.
11. Bidders are not allowed to use correction pens. In a case where a wrong answer is ticked, a straight line must be made across the wrong answer, then initial next to the mistake and a correct answer must be ticked or provided in writing.
12. Bidder must be registered with Central Supplier Database (CSD)
13. The bidder must attach the following documents:
    - A valid proof of payment with the relevant reference number as stipulated in the tender advertisement.
    - Required CIDB Grading Certificate where applicable.

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

- The authority of signatory (printed on bidder's letter head) if the tender is a CIDB related project.
- A copy of a valid signed Joint Venture/Consortium agreement (if applicable) to the bid document.
- **Municipal rates and taxes statements of the directors**
  - ✓ Current municipal rates and taxes statement in the names of the director (from the previous month determined by the date of tender closure) for each directors' address must be attached; or
  - ✓ Valid lease agreement of the director/s with all critical contractual obligations (i.e Lease period, use of premises, lessors' responsibilities, leases' possibilities, amounts related to the lease, address of the leased premises, signatures etc) or,
  - ✓ An original letter from tribal authority not older than three (3) months if the director/s are residing in a tribal land, or
  - ✓ If the rates and taxes account is not in the names of the director/s the attached municipal rates and taxes statement must be submitted together with an original affidavit from the property owner whose names are appearing on the municipal rates and taxes statement to confirm that the director resides in their property.
- **Municipal rates and taxes statements of the company**
  - ✓ Current municipal rates and taxes statement in the name of the company (from the previous month determined by the date of tender closure) for the company's' address must be attached; or
  - ✓ Valid lease agreement of the company (showing all critical contractual obligations (i.e Lease period, use of premises, lessors' responsibilities, leases' possibilities, amounts related to the lease, address of the leased premises, signatures etc), or
  - ✓ An original letter from a tribal authority not older than three (3) months if the company is operating from a tribal, or
  - ✓ If the rates and taxes account is not in the names of the company, the attached municipal rates taxes statement must be submitted together with an original affidavit from the property owner whose names are reflecting on the municipal rates and taxes statement to confirm that the company operates from their property.

NB!!

The company address written on the tender document and statement submitted must be the same as the one reflected on the CSD report.

- ✓ **For procurement expected to be less than 10 million, awards will not be made to bidders owing municipal rates and taxes for over 90 days at the time of tender closure.**
- ✓ **For procurement expected to be more than 10 million, awards will not be made to bidders owing municipal rates and taxes for over 30 days at the time of tender closure.**

14. The bidder must comply with the following:

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- Bidders must submit both a hard copy document and an electronic tender document in the form of a USB (only) which must be clearly marked with the company name. (Bidders will be disqualified for not submitting a USB containing the scanned bidding documentation)

VERIFICATION OF DOCUMENTS AND INFORMATION.

- Please note that by submitting this tender document, you are agreeing to the verification process of your supporting documents by the Rustenburg Local Municipality.
- Tax compliance status will be verified using CSD number. (For a bidder to be considered for final award, their status must reflect "tax compliance" before final award is made)
- CIDB Grading will be verified.
- Sworn Affidavits will be accepted only if its originals submitted.

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

BID NOTICE

RLM/RWST/OMM/0101/2024/25 - RE-ADVERT: APPOINTMENT OF A CONTRACTOR FOR CONSTRUCTION OF BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

CONTRACT NO: RLM/RWST/OMM/0101/2024/25 – RE-ADVERT:
CONSTRUCTION OF BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

TENDER ADVERTISEMENT **BID NUMBER:** RLM/RWST/OMM/0101/2024/25 – RE-ADVERT **COMPULSORY BRIEFING SESSION:** 29 July 2025 at 10:00 Virtually on Microsoft Teams **CLOSING DATE:** 26 August 2025 at 10H00			
DESCRIPTION	**DOC. FEES (NON-REFUNDABLE)**	**EVALUATION CRITERION**	**ENQUIRIES**
Re-advert: Appointment of a contractor for construction of Bospoort North reservoir and access road	**TENDER DOCUMENT AMOUNT** R5 000.00 **REFERENCE NUMBER:** 0101+Company name **BANK NAME** Standard Bank **ACCOUNT NUMBER:** 033 054 657 Bidders who previously bought the tender document must attach their previous Proof of Payment. Payment will be verified	❖ Administrative evaluation (document completion and attachment of mandatory documents) to include all necessary certifications. ❖ CIDB Grading of 8CE or higher ❖ Functionality minimum qualifying score of 70 out of maximum of 100 points ❖ 90/10 preferential point system (price = 90 & Specific goals = 10) **NB! That no other evaluation criterion should be used**	**TECHNICAL** Mr. C van Eck 012 842 8706 Coenie.vaneck@bigengroup.com And Mr. M. Lekukela Mpho.lekukela@rwst.co.za **SCM** Ms. J. Masinga 014 590 3123 jmasinga@rustenburg.gov.za

1. Bid documents must be in a sealed packaging clearly marked with the bid number and description, must be placed in the bid box in the foyer of the Municipal offices, Missionary Mpheni House, Beyers Naude Drive, Rustenburg not later than the prescribed closing date, where after the bids will be opened in public at the Municipal offices.
2. All bids will be evaluated in accordance with the Supply Chain Policy of the Rustenburg Local Municipality, PPPFA 2022 and other related legislations. Bids will remain valid for 90 days.
3. The lowest or any bid will not be necessarily accepted, and the municipality reserves the right to accept the whole or part of any bid. The municipality reserves the right to increase or decrease quantities as indicated in the technical specifications. A market analysis conducted will be taken into consideration to ensure right procurement and quality service delivery.
4. Tender submission must comply with the instruction note (Tender Completion and Attachment of Mandatory Documents) as well as all other additional tendering conditions and requirements stated in the tender document.
5. No bids will be considered from any person(s) in the service of the state (as defined in Regulation 1 of Local Government: Municipal Supply Chain Management Regulations).

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

6. Objections or complaints must be submitted in writing to the Municipal Manager at the address stated, and must contain the following:
   (a) reasons and/or grounds for the objection or complaint.
   (b) the way in which the objector or complainant's rights have been affected; and
   (c) the remedy sought by the objector or complainant
7. Any objection or complaint must reach the Municipal Manager with a 14-day period after award has been made. Late objections or complaints will not be entertained.
8. Submissions which fail to adhere to all the requirements and instructions stated on this advert, E-tender advert, CIDB Website for CIDB tenders as well as the tender document will lead to disqualification.
9. Should there be any contradictions between the information on the advert and the information in the tender document, then the information on this advert will take precedence.

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

SPECIFICATIONS
REFER TO PART C3: SCOPE OF WORK

RLM/RWST/OMM/0101/2024/25 - RE-ADVERT: APPOINTMENT OF A CONTRACTOR FOR CONSTRUCTION OF BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

FUNCTIONALITY

RLM/RWST/OMM/0101/2024/25 - RE-ADVERT: APPOINTMENT OF A CONTRACTOR FOR CONSTRUCTION OF BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

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The Bid Evaluation Committee reserves the right to verify all the information provided. Values: non-submission = 0, 1= Poor, 3 = Good, 5 = Excellent					
	CRITERIA	WEIGHT	VALUE	SCORE	VERIFICATION METHOD
1. Company Experience					
Previously completed concrete water retaining structure projects (reinforced concrete reservoirs larger than 20 Mℓ) Should the bidder be appointed through subcontracting, the main contractor's appointment, completion certificate and appointment letter of the sub-contracting and completion certificate should be attached).		**25**		**Attach appointment letters and completion certificates per project on client letterhead.**	
	5 and above appointment and completion certificates **(Value= 5)**				
	4 appointment and completion certificates **(Value = 3)**				
	2-3 appointment and completion certificates **(Value = 1)**				
	1 appointment and completion certificates **(Value = 0)**				
1.2 Previously completed paved access road projects (Paved access road longer than 1.5 km) Should the bidder be appointed through subcontracting, the main contractor's appointment, completion certificate and appointment letter of the sub-contracting and completion certificate should be attached).		**20**		**Attach appointment letters and completion certificates per project on client letterhead**	
	5 and above appointment and completion certificates **(Value= 5)**				
	4 appointment and completion certificates **(Value = 3)**				
	2-3 appointment and completion certificates **(Value = 1)**				
	1 appointment and completion certificates **(Value = 0)**				
2 Key Personnel: Please attach qualifications with comprehensive CV indicating relevant reservoir and/or access road construction experience and contactable references					
2.1 Project / Contracts Manager (Reservoir) • **A minimum qualification of NQF level 6 (Diploma or Advanced Certificate) in Civil Engineering**		**15**		**Attach a comprehensive CV with clear experience in the construction reinforced concrete reservoirs larger than 20 Mℓ**	
	12 Years and above experience **(Value = 5)**				
	9 – 11 Years experience **(Value = 3)**				
	5 – 8 Years experience **(Value = 1)**				
	1 – 4 Years experience **(Value = 0)**				
2.2 Project / Contracts Manager (Access Road) • **A minimum qualification of NQF level 6 (Diploma or Advanced Certificate) in Civil Engineering**		**10**		**Attach a comprehensive CV with clear experience in the construction of paved access roads**	
	12 Years and above experience **(Value = 5)**				
	9 – 11 Years experience **(Value = 3)**				
	5 – 8 Years experience **(Value = 1)**				
	1 – 4 Years experience **(Value = 0)**				
2.3 Site agent • **A minimum qualification of NQF level 6 (Diploma or Advanced Certificate) in Civil Engineering**		**10**		**Attach a comprehensive CV with clear experience in the construction of reinforced concrete reservoirs or paved access roads**	
	12 Years and above experience **(Value = 5)**				
	9 – 11 Years experience **(Value = 3)**				

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

	5 – 8 Years experience **(Value = 1)**				
	1 – 4 Years experience **(Value = 0)**				
2.4 Site Foreman		**10**		**Attach a comprehensive CV with clear experience in the construction of reinforced concrete reservoirs or paved access roads**	
	12 Years and above experience **(Value = 5)**				
	9 – 11 Years experience **(Value = 3)**				
	5 – 8 Years experience **(Value = 1)**				
	1 – 4 Years experience **(Value = 0)**				
2.4 Health and Safety Office **• Minimum qualification of NQF level 6 in Safety Management and Professional registration with OHS SACPCMP**		**10**		**Attach a comprehensive CV with clear experience**	
	12 Years and above experience **(Value = 5)**				
	9 – 11 Years experience **(Value = 3)**				
	5 – 8 Years experience **(Value = 1)**				
	1 – 4 Years experience **(Value = 0)**				
TOTAL		**100**			

Calculate the points scored according to the following formula:

$$Ps = \frac{[So]}{Ms} \times Ap$$

Where:
Ps = percentage scored for functionality by the bid under consideration
So = total score of bids under consideration, i.e. weight X value = score
Ms = maximum possible score = 500
Ap = percentage allocated

Total percentage scored by the bidder on functionality: $Ps = \frac{\quad}{500} \times 100 =$

NB: No tender will be regarded as an acceptable tender/responsive if it fails to achieve the minimum qualifying score for functionality of 70 out of a maximum of 100 points.

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

AUTHORITY OF SIGNATORY

RLM/RWST/OMM/0101/2024/25 - RE-ADVERT: APPOINTMENT OF A CONTRACTOR FOR CONSTRUCTION OF BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

T2.2.14: Authority of Signatory

With reference to Clause 2.13.4 of the Tender Data, I/we herewith certify that this tender is submitted by: ***(Mark applicable block)***

a company, and attach hereto a certified copy of the required resolution of the Board of Directors ☐

a partnership, and attach hereto a certified copy of the required resolution by all partners ☐

a close corporation, and attach hereto a certified copy of the required resolution of the Board of Officials ☐

a one-man business, and attach hereto certified proof that I am the sole owner of the business submitting this tender ☐

a joint venture, and attach hereto ☐

- **an notarially certified copy of the original document under which the joint venture was constituted; and**
- **certified authorisation by the participating members of the undersigned to submit tenders and conclude contracts on behalf of the joint venture**

SIGNED ON BEHALF OF TENDERER: ……..

PLEASE NOTE:

Failure to complete all blank spaced on this form or attend to other details mentioned therein will render the Bid liable to rejection.

The signatory shall confirm his/her authority thereto by attaching on the tendering company's letterhead a duly signed and dated copy of the relevant resolution of the board of directors / partners.

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

MDB FORMS

RLM/RWST/OMM/0101/2024/25 - RE-ADVERT: APPOINTMENT OF A CONTRACTOR FOR CONSTRUCTION OF BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

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PART A
INVITATION TO BID

YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF THE RUSTENBURG LOCAL MUNICIPALITY					
BID NUMBER:	RLM/RWST/OMM/0101/2024/25	CLOSING DATE:	26 AUGUST 2025	CLOSING TIME:	10h00
DESCRIPTION	RE-ADVERT: APPOINTMENT OF A CONTRACTOR FOR THE CONSTRUCTION OF THE BOSPOORT NORTH RESERVOIR AND ACCESS ROAD				
THE SUCCESSFUL BIDDER WILL BE REQUIRED TO FILL IN AND SIGN A WRITTEN CONTRACT FORM (MBD7).					

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

RUSTENBURG LOCAL MUNICIPALITY					
MISSIONARY MPHENI HOUSE					
CNR BEYERS NAUDE AND NELSON MANDELA DRIVE, RUSTENBURG					
SUPPLIER INFORMATION					
NAME OF BIDDER					
POSTAL ADDRESS					
STREET ADDRESS					
TELEPHONE NUMBER	CODE		NUMBER		
CELLPHONE NUMBER					
FACSIMILE NUMBER	CODE		NUMBER		
E-MAIL ADDRESS					
VAT REGISTRATION NUMBER					
TAX COMPLIANCE STATUS	TCS PIN:		OR	CSD No:	

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

BIDDING PROCEDURE ENQUIRIES MAY BE DIRECTED TO:		TECHNICAL INFORMATION MAY BE DIRECTED TO:	
CONTACT PERSON	J Masinga	CONTACT PERSON	Coenie van Eck
TELEPHONE NUMBER	014 590 3123	TELEPHONE NUMBER	012 842 8700
E-MAIL ADDRESS	jmasinga@rustenburg.gov.za	E-MAIL ADDRESS	Coenie.vaneck@bigengroup.com

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

PART B
TERMS AND CONDITIONS FOR BIDDING

1.	**BID SUBMISSION:**
1.1.	**BIDS MUST BE DELIVERED BY THE STIPULATED TIME TO THE CORRECT ADDRESS. LATE BIDS WILL NOT BE ACCEPTED FOR CONSIDERATION.**
1.2.	**ALL BIDS MUST BE SUBMITTED ON THE OFFICIAL FORMS PROVIDED, COMPLETED WITH A BLACK PEN**
1.3.	**THIS BID IS SUBJECT TO THE RLM SUPPLY CHAIN MANAGEMENT POLICY, PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2022, THE GENERAL CONDITIONS OF CONTRACT (GCC) AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT.**
2.	**TAX COMPLIANCE REQUIREMENTS**
2.1	**BIDDERS MUST ENSURE COMPLIANCE WITH THEIR TAX OBLIGATIONS.**
2.2	**BIDDERS ARE REQUIRED TO SUBMIT THEIR UNIQUE PERSONAL IDENTIFICATION NUMBER (PIN) ISSUED BY SARS TO ENABLE THE ORGAN OF STATE TO VIEW THE TAXPAYER'S PROFILE AND TAX STATUS.**
2.3	**APPLICATION FOR THE TAX COMPLIANCE STATUS (TCS) CERTIFICATE OR PIN MAY ALSO BE MADE VIA E-FILING. IN ORDER TO USE THIS PROVISION, TAXPAYERS WILL NEED TO REGISTER WITH SARS AS E-FILERS THROUGH THE WEBSITE WWW.SARS.GOV.ZA.**
2.4	**FOREIGN SUPPLIERS MUST COMPLETE THE PRE-AWARD QUESTIONNAIRE IN PART B:3.**
2.5	**BIDDERS MAY ALSO SUBMIT A PRINTED TCS CERTIFICATE TOGETHER WITH THE BID.**
2.6	**IN BIDS WHERE CONSORTIA / JOINT VENTURES / SUB-CONTRACTORS ARE INVOLVED; EACH PARTY MUST SUBMIT A SEPARATE TCS CERTIFICATE / PIN / CSD NUMBER.**
2.7	**WHERE NO TCS IS AVAILABLE BUT THE BIDDER IS REGISTERED ON THE CENTRAL SUPPLIER DATABASE (CSD), A CSD NUMBER MUST BE PROVIDED.**
3.	**QUESTIONNAIRE TO BIDDING FOREIGN SUPPLIERS: (BIDDER MAY NOT BE DISQUALIFIED ON THIS PART IF INDICATED THAT THEY ARE NOT FOREIGN BASED SUPPLIER)**
3.1.	**IS THE ENTITY A RESIDENT OF THE REPUBLIC OF SOUTH AFRICA (RSA)?** ☐ **YES** ☐ **NO**
3.2.	**DOES THE ENTITY HAVE A BRANCH IN THE RSA?** ☐ **YES** ☐ **NO**
3.3.	**DOES THE ENTITY HAVE A PERMANENT ESTABLISHMENT IN THE RSA?** ☐ **YES** ☐ **NO**
3.4.	**DOES THE ENTITY HAVE ANY SOURCE OF INCOME IN THE RSA?** ☐ **YES** ☐ **NO**
3.5.	**IS THE ENTITY LIABLE IN THE RSA FOR ANY FORM OF TAXATION?** ☐ **YES** ☐ **NO**
IF THE ANSWER IS "NO" TO ALL OF THE ABOVE, THEN IT IS NOT A REQUIREMENT TO REGISTER FOR A TAX COMPLIANCE STATUS SYSTEM PIN CODE FROM THE SOUTH AFRICAN REVENUE SERVICE (SARS) AND IF NOT REGISTER AS PER 2.3 ABOVE.	

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

SIGNATURE OF BIDDER: ……

CAPACITY UNDER WHICH THIS BID IS SIGNED: ……

DATE: ……...

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

PART A
MBD 3.1

PRICING SCHEDULE – FIRM PRICES
(PURCHASES)

NOTE: **ONLY FIRM PRICES WILL BE ACCEPTED. NON-FIRM PRICES (INCLUDING PRICES SUBJECT TO RATES OF EXCHANGE VARIATIONS) WILL NOT BE CONSIDERED**

IN CASES WHERE DIFFERENT DELIVERY POINTS INFLUENCE THE PRICING, A SEPARATE PRICING SCHEDULE MUST BE SUBMITTED FOR EACH DELIVERY POINT

Name of bidder…… Bid number…….....

Closing Time …… Closing date……...

OFFER TO BE VALID FOR 90 DAYS FROM THE CLOSING DATE OF BID.

ITEM NO.	QUANTITY	DESCRIPTION	BID PRICE IN RSA CURRENCY ** (ALL APPLICABLE TAXES INCLUDED)

- Required by: …….
- At: …….

……

- Brand and model …….
- Country of origin …….
- Does the offer comply with the specification(s)? *YES/NO
- If not to specification, indicate deviation(s) …….
- Period required for delivery …….
  *Delivery: Firm/not firm
- Delivery basis ……

Note: All delivery costs must be included in the bid price, for delivery at the prescribed destination.

** "all applicable taxes" includes value- added tax, pay as you earn, income tax, unemployment insurance fund contributions and skills development levies.

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

MBD 4
DECLARATION OF INTEREST
(IN CASE OF MULTI DIRECTORS OR JOINT VENTURE, BIDDERS MUST SUBMIT SEPARATE MBD 4 DECLARATION FORMS FOR EACH DIRECTOR)

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Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

MBD 4: DECLARATION OF INTEREST

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

1. Any legal person, including persons employed by the state[1], or persons having a kinship with persons employed by the state, including a blood relationship, may make an offer or offers in terms of this invitation to bid (includes a price quotation, advertised competitive bid, limited bid or proposal). In view of possible allegations of favouritism, should the resulting bid, or part thereof, be awarded to persons employed by the state, or to persons connected with or related to them, it is required that the bidder or his/her authorised representative declare his/her position in relation to the evaluating/adjudicating authority where-
   - the bidder is employed by the state; and/or
   - the legal person on whose behalf the bidding document is signed, has a relationship with persons/a person who are/is involved in the evaluation and or adjudication of the bid(s), or where it is known that such a relationship exists between the person or persons for or on whose behalf the declarant acts and persons who are involved with the evaluation and or adjudication of the bid.

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

2.1. Full Name of bidder or his or her representative: ……..……

2.2. Identity Number: …….

2.3. Position occupied in the Company (director, trustee, hareholder[2]): ……

2.4. Company Registration Number: …….

2.5. Tax Reference Number: .....

2.6. VAT Registration Number…….....….....

2.7. Personal Reference Tax Number……

2.7.1. The names of all directors / trustees / shareholders members, their individual identity numbers and state employee numbers must be indicated in paragraph 3 below.

[1]"State" means –

(a) any national or provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No. 1 of 1999);
(b) any municipality or municipal entity;
(c) provincial legislature;
(d) national Assembly or the national Council of provinces; or
(e) Parliament.

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

2.8. Are you presently in the service of the state?

(Tick applicable box)

YES		NO	

2.8.1. If yes, furnish particulars. ……

……..

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

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

(b) a member of the board of directors of any municipal entity; (c) an official of any municipality or municipal entity;

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

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

2.9. Have you been in the service of the state for the past twelve months?
(Tick applicable box)

YES		NO	

2.9.1. If yes, furnish particulars……..……..

……

2.10. Do you have any relationship (family, friend, other) with persons in the service of the state and who may be involved with the evaluation and or adjudication of this bid?
(Tick applicable box)

YES		NO	

2.10.1. If yes, furnish particulars……..……..

……
.

2.11. Are you, aware of any relationship (family, friend, other) between any other bidder and any persons in the service of the state who may be involved with the evaluation and or adjudication of this bid? *(Tick applicable box)*

YES		NO	

2.11.1. If yes, furnish particulars……..……..

2.12. Are any of the company's directors, trustees, managers, principal shareholders or stakeholders in service of the state?
(Tick applicable box)

YES		NO	

2.12.1. If yes, furnish particulars……..……..

……

2.13. Are any spouse, child or parent of the company's directors trustees, managers, principle shareholders or stakeholders in service of the state?
(Tick applicable box)

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

YES		NO	

2.13.1. If yes, furnish particulars……..……..
……

2.14. Do you or any of the directors, trustees, managers, principle shareholders, or stakeholders of this company have any interest in any other related companies or business whether or not they are bidding for this contract.
*(**Tick applicable box**)*

YES		NO	

2.14.1. If yes, furnish particulars……..……..
……

…… **……**
Signature **Date**

…… **……**
Capacity **Name of Bidder**

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

MBD 5

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

RLM/RWST/OMM/0101/2024/25 - RE-ADVERT: APPOINTMENT OF A CONTRACTOR FOR THE CONSTRUCTION OF THE BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

MBD 5
DECLARATION FOR PROCUREMENT ABOVE R10 MILLION (ALL APPLICABLE TAXES INCLUDED)

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

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

*YES	NO

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

……

……..

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

*YES	NO

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

2.2 If yes, provide particulars.

……

……

……

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

*YES	NO

3.1 If yes, furnish particulars

……

……

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

*YES	NO

4.1 If yes, furnish particulars

……

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

…….

CERTIFICATION

I, THE UNDERSIGNED (FULL NAME) …….....

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

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

…….....	……..…….....
Name/s and Surname of Bidder	Signature
…….....	.....**2025**
Position in the Firm/Company	Date

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

MBD 6.1
PREFERENCE POINTS CLAIM FORM

RLM/RWST/OMM/0101/2024/25 - RE-ADVERT: APPOINTMENT OF A CONTRACTOR FOR THE CONSTRUCTION OF THE BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

MBD 6.1 PREFERENCE CLAIMED IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS, 2022

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

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

1. GENERAL CONDITIONS

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

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

1.2 To be completed by the organ of state

a) The applicable preference point system for this tender is the 90/10 preference point system.

b) The 90/10 will be applicable in this tender.

1.3 Points for this tender (even in the case of a tender for income-generating contracts) shall be awarded for:

(a) Price; and

(b) Specific Goals.

1.4 To be completed by the organ of state:

The maximum points for this tender are allocated as follows:

	POINTS
PRICE	90
SPECIFIC GOALS	10
Total points for Price and SPECIFIC GOALS	**100**

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

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

2. DEFINITIONS

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

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

envisaged in legislation.

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

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

(d) **"tender for income-generating contracts"** means a written offer in the form determined by an organ of state in response to an invitation for the origination of income-generating contracts through any method envisaged in legislation that will result in a legal agreement between the organ of state and a third party that produces revenue for the organ of state, and includes, but is not limited to, leasing and disposal of assets and concession contracts, excluding direct sales and disposal of assets through public auctions; and

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

3. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES

3.1. POINTS AWARDED FOR PRICE

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

A maximum of 80 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 tender under consideration

Pt = Price of tender under consideration

Pmin = Price of lowest acceptable tender

3.2. FORMULAE FOR DISPOSAL OR LEASING OF STATE ASSETS AND INCOME GENERATING PROCUREMENT

3.2.1. POINTS AWARDED FOR PRICE

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

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

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

Where

Ps = Points scored for price of tender under consideration

Pt = Price of tender under consideration

Pmax = Price of highest acceptable tender

4. POINTS AWARDED FOR SPECIFIC GOALS

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

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

4.2. In cases where organs of state intend to use Regulation 3(2) of the Regulations, which states that, if it is unclear whether the 80/20 or 90/10 preference point system applies, an organ of state must, in the tender documents, stipulate in the case of—

(a) an invitation for tender for income-generating contracts, that either the 80/20 or 90/10 preference point system will apply and that the highest acceptable tender will be used to determine the applicable preference point system; or

(b) any other invitation for tender, that either the 80/20 or 90/10 preference point system will apply and that the lowest acceptable tender will be used to determine the applicable preference point system,

then the organ of state must indicate the points allocated for specific goals for both the 90/10 and 80/20 preference point system.

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

Table 1: Specific goals for the tender and points claimed are indicated per the table below.
***Note to tenderers: "The tenderer must indicate how they claim points for each preference point system. Points claimed will be verified by RLM using the CSD Report, and preference points will be allocated accordingly*. Bidders who fail to complete the table below will NOT be disqualified BUT will not be allocated preference points.**

The specific goals allocated points in terms of this tender	Number of points allocated (90/10 system)	Number of points claimed (90/10 system) (To be completed by the tenderer)	Means of Verification
Rustenburg Jurisdiction	2		Latest (from the previous month determined by the date of tender closure) Municipal Account/Traditional Council letter
Rural /Township Businesses	2		Latest (from the previous month determined by the date of tender closure) Municipal Account/Traditional Council letter
Black People	1		Full CSD Report
Persons with Disability	1		Full CSD Report
Youth	2		Full CSD Report
Women	1		Full CSD Report
SMME's	1		Full CSD Report
Total	**10**		

DECLARATION WITH REGARD TO COMPANY/FIRM

4.3. Name of company/firm…….

4.4. Company registration number: ……...

4.5. TYPE OF COMPANY/ FIRM

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

[TICK APPLICABLE BOX]

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

i) The information furnished is true and correct;

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

iii) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 1.4

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

and 4.2, the contractor may be required to furnish documentary proof to the satisfaction of the organ of state that the claims are correct.

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

(a) disqualify the person from the tendering process.
(b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct.
(c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation.
(d) recommend that the tenderer or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted from obtaining business from any organ of state for a period not exceeding 10 years, after the *audi alteram partem* (hear the other side) rule has been applied; and
(e) forward the matter for criminal prosecution, if deemed necessary.

…….
SIGNATURE(S) OF TENDERER(S)

SURNAME AND NAME: …….

DATE: **……**

ADDRESS: **……**

……

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

MBD 8

DECLARATION OF BIDDERS PAST SUPPLY CHAIN MANAGEMENT PRACTICES

RLM/RWST/OMM/0101/2024/25 - RE-ADVERT: APPOINTMENT OF A CONTRACTOR FOR THE CONSTRUCTION OF THE BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

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

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

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

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

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

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

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

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

CERTIFICATION

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

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

……...	**……..**
Signature	**Date**
…….	**……..**
Position	**Name of Bidder**

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

MBD 9
CERTIFICATE OF INDEPENDENT BID DETERMINATION

RLM/RWST/OMM/0101/2024/25 - RE-ADVERT: APPOINTMENT OF A CONTRACTOR FOR THE CONSTRUCTION OF THE BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

MBD 9: CERTIFICATE OF INDEPENDENT BID DETERMINATION

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

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

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

a. take all reasonable steps to prevent such abuse;

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

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

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

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

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

[2] Bid rigging (or collusive bidding) occurs when businesses, that would otherwise be expected to compete, secretly conspire to raise prices or lower the quality of goods and / or services for purchasers who wish to acquire goods and / or services through a bidding process. Bid rigging is, therefore, an agreement between competitors not to compete. I, the undersigned, in submitting the accompanying bid: **RLM/RWST/OMM/0101/2024/25 - RE-ADVERT: APPOINTMENT OF A CONTRACTOR FOR THE CONSTRUCTION OF THE BOSPOORT NORTH RESERVOIR AND ACCESS ROAD** (Bid Number and Description) in response to the invitation for the bid made by:

_____**RUSTENBURG LOCAL MUNICIPALITY** _____

(Name of Municipality / Municipal Entity)

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

I certify, on behalf of: _____ that:

(Name of Bidder): Bidders are required to fill in the name of their company in the space provided above.

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

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

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

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

6. The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However communication between partners in a joint venture or consortium[3] will not be construed as collusive bidding.
7. In particular, without limiting the generality of paragraphs 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

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

8. In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the products or services to which this bid invitation relates.
9. The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.

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

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

……	……
Signature	Date
……	……
Position	Name of Bidder

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

T2.2.1: Record of Addenda to tender documents

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

Attach additional pages if more space is required.

Signed ..... Date _____

Name ..... Position _____

Tenderer _____

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

T2.2.2: Compulsory Enterprise Questionnaire

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

Section 1: Name of enterprise: . . . . . .

Section 2: VAT registration number, if any: . . . . . .

Section 3: CIDB registration number, if any: . . . . . .

Section 4: Particulars of sole proprietors and partners in partnerships

Name*	Identity number*	Personal income tax number*

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

Section 5: Particulars of companies and close corporations

Company registration number . . . . . .

Close corporation number . . . . . .

Tax reference number . . . . . .

Section 6: Record of service of the state

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

□ a member of any municipal council
□ a member of any provincial legislature
□ a member of the National Assembly or National Council of Province
□ a member of the board of directors of any municipal entity
□ n official of any municipality or municial entity
□ an employee of any provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act 1 of 1999)
□ a member of an accounting authority of any national or provincial public entity
□ an employee of Parliament or a provincial legislature

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

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

*insert separate page if necessary

Section 7: Record of spouses, children and parents in the service of the state

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

□ a member of any municipal council
□ an employee of any provincial department, national or provincial public entity or constitutional institution within

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

□ a member of any provincial legislature
□ a member of the National Assembly or the National Council of Province
□ a member of the board of directors of any municipal entity
□ an official of any municipality or municipal entity
the meaning of the Public Finance Management Act, 1999 (Act 1 of 1999)
□ a member of an accounting authority of any national or provincial public entity
□ anemployee of Parliament ora provincial legislature

Name of spouse, childor parent	Name of institution, public office, board or organ ostate and position held	Status of service (tick appropriate column)	
		curent	Within last 12 months

*insert separate page if necessary

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

Signed ..... Date .....
Name Position
....
Enterprise name _____

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

T2.2.3: 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.

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

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

T2.2.4: Schedule of Proposed Subcontractors

We notify you that it is our intention to employ the following Subcontractors for work in this contract. If we are awarded a contract we agree that this notification does not change the requirement for us to submit the names of proposed Subcontractors in accordance with requirements in the contract for such appointments. If there are no such requirements in the contract, then your written acceptance of this list shall be binding between us. We confirm that all subcontractors who are contracted to construct a house are registered as home builders with the National Home Builders Registration Council.			
	Name and address of proposed Subcontractor	Nature and extent of work	Previous experience with Subcontractor.

Signed ..... Date _____

Name ..... Position _____

Tenderer .....

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

T2.2.5: Schedule of Plant and Equipment

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

(a) Details of major equipment that is owned by and immediately available for this contract.

Quantity	Description, size, capacity, etc.

Attach additional pages if more space is required.

(b) Details of major equipment that will be hired, or acquired for this contract if my/our tender is acceptable.

Quantity	Description, size, capacity, etc.

Attach additional pages if more space is required.

Signed ..... Date _____

Name ..... Position _____

Tenderer _____

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

T2.2.6: Schedule of the Tenderer's Experience

The following is a statement of similar work successfully executed / in progress by myself/ourselves in the last 5 years:

Employer, contact person and telephone number.	Description of contract	Value of work inclusive of VAT (Rand)	Date completed

Signed ..... Date _____

Name ..... Position _____

Tenderer .....

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

T2.2.7: FINANCIAL REFERENCES

(a) FINANCIAL STATEMENTS

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

(b) DETAILS OF COMPANY'S BANK

I/We hereby authorise the Employer/Engineer to approach all or any of the following banks for a reference:

DESCRIPTION OF BANK DETAIL	BANK DETAIL APPLICABLE TO COMPANY HEAD OFFICE	BANK DETAIL APPLICABLE TO THE SITE OF THE WORKS
Name of bank		
Branch name		
Branch code		
Street address		
Postal address		
Name of manager		
Telephone number	( )	( )
Fax number	( )	( )
Account number		

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

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

Tenderer .....

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

T2.2.8: Proposed amendments and qualifications

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

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

Page	Clause or item	Proposal

Signed ..... Date _____

Name ..... Position _____

Tenderer .....

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

T2.2.9: Supervisory and Safety Personnel

PREVIOUS EXPERIENCE ON WORKS OF A SIMILAR NATURE DURING THE LAST FIVE YEARS

Name % Time on Site Position
(Current) Service
(Years) Name of Project
And year executed Value of
Works Position
Occupied
Contracts Manager
Contractor's Site Agent 100%
Contractor's Foremen

Construction Health and Safety Officer 100%
Contractors Surveyor
Tenderers shall indicate the percentage of working time these persons will be engaged on site. Tenderers are required to provide copies of curriculum vitas of all supervisory and safety personnel.

Signed Date
Name Position
Tenderer

T2.2.10: Labour Utilisation
Labour Categories - Definitions

NOTE: These definitions serve as a guideline to complete the following table and will in no respect alter the Project Specifications or Standardised Specifications

1. General Foreman / Foreman

An employee who gives out work to and directly co-ordinates and supervises employees. His duties encompass any one or more of the following activities:

a) Supervision;
b) Maintaining discipline;
c) Ensuring safety on the workplace;
d) Being responsible to the Contractor for efficiency and production for his portion of the works; and
e) Performing skilled work, whether in an instructional capacity or otherwise.

2. Charge hand

An employee engaged in any one or more of the following activities:

a) Being primarily employed in a supervisory capacity, but who may also be doing the work of an artisan;
b) Giving out work to other employees under his control and supervision;
c) Ensuring safety on the workplace;

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

d) Maintaining discipline; and

e) Being directly responsible to a general foreman or foreman or the Contractor or the Contractor's representative for efficiency and production for his portion of the works.

3. Artisan

An employee who has successfully completed all prescribed courses at a practical institutional training centre for a particular trade and who has successfully completed the on-site period of training as prescribed and who has successfully passed the prescribed trade tests.

4. Team Leader

An employee engaged in any one or more of the following activities:

a) Being employed in a supervisory capacity, but who may also be doing the work of a skilled person;

b) Giving out work to other employees under his control and supervision;

c) Maintaining discipline;

d) Being directly responsible to a Charge hand or a foreman or a general foreman or the employer's authorised representative for efficiency and production for his portion of the works.

5. Skilled Employee

An employee engaged in an ancillary trade or an assistant artisan.

Semi-Skilled Employee

An employee with any specified skills, an apprentice or a trainee-artisan.

7. Unskilled Employee

An employee engaged on any task or operation not specified above.

8. Imported Employee

Personnel permanently employed by Contractor.

9. Local Employee

Temporary workforce employed through Labour Desk.

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

MAN DAYS

Categories	No. of Man Days		
	Imported	Local	HDI (Y/N)
Contracts Manager			
Site Agent			
Foreman/Supervisors (specify type)			
3.1 _ _ _ _ _ _ _ _ _ _ _ _ _ _ _			
3.2 _ _ _ _ _ _ _ _ _ _ _ _ _ _ _			
3.3 _ _ _ _ _ _ _ _ _ _ _ _ _ _ _			
Safety Inspectors (specify type)			
4.1 _ _ _ _ _ _ _ _ _ _ _ _ _ _ _			
4.2 _ _ _ _ _ _ _ _ _ _ _ _ _ _ _			
5. Charge hands			
6. Artisans			
7. Operators/Drivers			
8. Clerks/ Storeman			
9. Team Leader			

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

Categories	No. of Man Days		
	Imported	Local	HDI (Y/N)
10. Skilled Labour			
11. Semi-skilled Labour			
12. Unskilled Labour			

Signed ..... Date _____

Name ..... Position _____

Tenderer _____

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

T2.2.11: OCCUPATIONAL HEALTH AND SAFETY ACT:
STATEMENT BY TENDERING ENTITY

I, _____ duly authorised

to represent _____ (company name)

in my capacity as _____ hereby confirm that I accept full and exclusive responsibility for compliance by myself and all persons who perform work for me with the provisions of the Occupational Health and Safety Act, No. 85 of 1993 (as amended) and all regulations promulgated from time to time, whilst performing work on _____

_____

I confirm that all employees who perform work on the site shall be properly trained to do this in a manner which is safe and without risk to health and safety to themselves and others in the vicinity and undertake to have our activities adequately supervised in the interest of health and safety.

Signed Date
Name Position
Tenderer

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

T2.2.12: Site Inspection Certificate

As required by Clause 2.7 of the Tender Data, I/we certify that I/we have visited the site of the Works and attended the site visit and clarification meeting on the date certified below.

I/we further certify that I am / we are satisfied with the description of the Work and the explanations given by the Engineer at the site visit and clarification meeting.

_____ _____

Signature of Tenderer Date

Site Visit

This will certify that

representing

attended a Site Inspection for this Contract on 20_____

_____(signed)

For the Engineer

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

CONTRACT

PART 1 (OF 4) : Agreements and contract data

C1.1 Form of Offer and Acceptance

C1.2 Contract Data

C1.3 Deed of Guarantee (Pro Forma)

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

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 procurement of:

RLM/RWST/OMM/0101/2024/25: RE-ADVERT: APPOINTMENT OF A CONTRACTOR FOR CONSTRUCTION OF BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

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

THE OFFERED TOTAL OF THE PRICES INCLUSIVE OF VALUE ADDED TAX IS:

. . . . . Rand (in words); R . . . . . (in figures)

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

Signature . . . . . Date . . . . . .
Name . . . . . .
Capacity . . . . . .

for the tenderer
(Name and address of organization) . . . . . .

. . . . . .

Name and signature of witness . . . .

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

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 agreement)
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 Parts 1 to 4 above.

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

The tenderer shall within two weeks after receiving a completed copy of this agreement, including the schedule of deviations (if any), contact the employer's agent (whose details are given in the contract data) to arrange the delivery of any 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 fulfill any of these obligations in accordance with those terms shall constitute a repudiation of this agreement.

Notwithstanding anything contained herein, this agreement comes into effect on the date when the tenderer receives one fully completed original copy of this document, including the schedule of deviations (if any). Unless the tenderer (now contractor) within five 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 . . . . . .
Capacity . . . . . .

for the
Employer Rustenburg Local Municipality
Missionary Mpheni House
c/o Beyers Naude & Nelson Mandela Drive
Rustenburg

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

Name and signature of witness . . . . . Date. . . . . .

Schedule of Deviations

Notes :

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

1 Subject . . . . . .
Details . . . . . .
. . . . . .
. . . . . .
2 Subject . . . . . .
Details . . . . . .
. . . . . .
. . . . . .
3 Subject . . . . . .
Details . . . . . .
. . . . . .
. . . . . .
. . . . . .
4 Subject . . . . . .
Details . . . . . .
. . . . . .
. . . . . .
. . . . . .
5 Subject . . . . . .
Details . . . . . .
. . . . . .
. . . . . .
. . . . . .

By the duly authorised representatives signing this agreement, the employer and the tenderer agree to and accept the foregoing schedule of deviations as the only deviations from and amendments to the documents listed in the tender data and addenda thereto as listed in the tender schedules, as well as any confirmation,

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

clarification or changes to the terms of the offer agreed by the tenderer and the employer during this process of offer and acceptance.

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

for the tenderer

Signature . . . . Date . . . .
Name . . . .
Capacity . . . .

(Name and address of organization) . . . .
. . . .
. . . .

Name and signature of witness . . . .

for the Employer

Signature . . . . Date . . . .
Name . . . .
Capacity . . . .
Rustenburg Local Municipality
Missionary Mpheni House
c/o Beyers Naude & Nelson Mandela Drive
Rustenburg

Name and signature of witness . . . . Date. . . . .

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

T1.2 TENDER DATA

RLM/RWST/OMM/0101/2024/25 - RE-ADVERT: APPOINTMENT OF A CONTRACTOR FOR CONSTRUCTION OF BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

T1.2 Tender Data

The conditions of tender are the Standard Conditions of Tender as contained in Annex C of the Construction Industry Development Board's Board (contained in Government Gazette No. 42622 of 08 August 2019), bound into section T1.3.

The Standard Conditions of Tender makes several references to the Tender Data. The Tender Data also contains project specific amendments to the Standard Conditions of Tender applicable to this document. The Tender Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the Standard Conditions of Tender.

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

Reference to relevant clauses in Standard Conditions of Tender		Addition or Variation to Standard Condition of Tender
1.1	Actions	The Employer is the Rustenburg Water Services Trust, a municipal entity established by the Rustenburg Local Municipality in terms of the Municipal Systems Act. The term "bid" in the context of this standard is synonymous with term "tender".
1.2	Tender documents	Tender / Contract Document This document comprising the following volumes, in which are bound the Tendering Procedures, Returnable Documents, Agreements and Contract Data, Pricing Data, Scope of Work, Site Information and Additional Documents: Volume 1: General Clauses, Contract Data & Scope of Works, Pricing Data and Project Specifications Volume 2: Particular Specifications and Site Information Volume 3: Tender Drawings
1.3.2	Interpretation	*Replace this sub-clause with the following:* These Conditions of Tender, the Tender Data, List of Returnable Documents and Returnable Schedules which are required for tender evaluation purposes, shall form part of the Contract arising from the invitation to tender.
1.4	Communication and Employer's Agent	Rustenburg Consulting Consortium or RCC Allan Cormack Street. The Innovation Hub; Pretoria Fax (012) 843 9000/9001 Engineer: Mr Coenie van Eck Tel: 012 842 8706 e-mail: coenie.vaneck@bigengroup.com
2.1	Eligibility	Only those Tenderers who attended the compulsory tender briefing meeting and 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

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

Reference to relevant clauses in Standard Conditions of Tender		Addition or Variation to Standard Condition of Tender
		determined in accordance with the sum tendered for an **8CE** Class of construction work, are eligible to submit tenders. Joint Ventures (JVs) are eligible to submit tenders provided that: 1. One of the JV partners attended the compulsory briefing meeting; 2. Every member of the joint venture is registered with the CIDB within 10 days from the closing date of tenders; 3. The combined contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a contractor designation determined in accordance with the sum tendered for an **8CE** class of construction work, is eligible to submit tenders. The Employer may, in its discretion, subject to the provision of Section 4(1)(d) of the State Tender Board Act (Act 86 of 1968), condone any failure to comply with the foregoing condition.
2.2	Cost of tendering	*Add the following to the clause 2.2.1:* "Accept that the Employer will not compensate the tenderer for any costs incurred in attending interviews in the office of the Employer or the Employer's Agent."
2.5	Reference documents	The document *"Conditions of Contract for Construction – for Building and Engineering Works Designed by the Employer (FIDIC Red Book) First Edition, 1999".* Tenderers, Contractors and Sub-contractors shall obtain their own copies of this document for tendering purposes and for use for the duration of the Contract from the International Federation of Consulting Engineers (FIDIC) via their website www.fidic.org. All international standard specifications and codes listed and referenced in the Project and Particular Specifications.
2.7	Site visit and clarification meeting	A Compulsory Briefing Session and site visit with a representative of the Employer will take place as reflected on the tender invitation**.** Confirmation of attendance will be recorded on site in the attendance register to be signed by all tenderers. Tender documents will not be made available at the site visit and clarification meeting. Detail relating to the collection of tender documents is indicated in the Tender Notice and Invitation to Tender
2.8	Seek clarification	*Replace the contents of the clause with the following*: "Request clarification of the tender documents, if necessary, by notifying the Employer's Agent indicated in the Tender Notice and Invitation to Tender in writing at least seven (7) working days before the closing time stated in the Tender Data."

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

Reference to relevant clauses in Standard Conditions of Tender		Addition or Variation to Standard Condition of Tender
2.9	Insurance	*Add the following to the clause:* "The Contractor shall be responsible to affect all insurance as required for the purposes of executing the Contract."
2.11	Alterations to documents	*Replace the last sentence of the clause with the following*: "To correct errors made, draw a line through the incorrect entry and write the correct entry above in black ink and place the full signatures of the authorised signatories next to the correct entry. Corrections in terms of price may not be made by means of a correction fluid such as Tipp-Ex or a similar product. If correction fluid has been used on any specific item price, such item will not be considered. No correction fluid may be used in a Bill of Quantities where prices are calculated to arrive at a total amount. If correction fluid has been used the tender as a whole will not be considered. Tampering with or taking the documents apart is strictly prohibited."
2.12.1	Alternative Tender offers	*Add the following to the clause*: All alternative tender offers shall be referred to in Section T2.3.2: Alterations to Tender.
2.12.2	Alternative Tender offers	*Add the following to the clause*: Should the Tenderer wish to offer alternative designs and/or construction materials, he shall include with this Tender, full details thereof, including a complete bill of quantities, formal design calculations, and full details of all alternative components proposed to be included in the Works. Refer also to the Contract Data in this regard. Failure to properly comply with this clause, thereby preventing the Employer and/or the Engineer to properly assess the full implications of the alternative tender, is likely to disqualify the alternative offered from further consideration. No submission by the Contractor after award for additional payment or time for completion of Works relating to the alternative offer will be considered, the tendered rates submitted shall be considered to reflect the full and final cost implications of the alternative offer.
2.13.2	Returnable documents	*Replace the contents of the clause with the following:* Return the complete set of documents as listed in the Tender Data with all the required information supplied and completed in all respects. All volumes are to be left intact in its original format and no pages shall be removed or re-arranged.

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

Reference to relevant clauses in Standard Conditions of Tender		Addition or Variation to Standard Condition of Tender
2.13.3	Copy of Tender Offer	The original and one copy of the complete bid must be submitted. One (1) scanned copy of the document is also required on a memory stick.
2.13.4	Tender offer	*Add the following to the clause:* "Only authorised signatories may sign the original and all copies of the tender offer where required in terms of 2.13-3.
2.13.5	Tender packaging	The Employer's address for delivery of tender offers: Tender box location : **Bid box in foyer 6 of the Rustenburg Local Municipality Office Building** Physical address : **Missionary Mpheni House, Corner Nelson Mandela and Beyers Naude Drives** Identification details : **CONTRACT NO: RLM/RWST/OMM/0101/2024/25 – RE-ADVERT: CONSTRUCTION OF BOSPOORT NORTH RESERVOIR AND ACCESS ROAD** The name and address of the tenderer shall be entered on the back of the envelope.
2.13.6	Two envelope system	A two-envelope procedure **<u>will not be</u>** followed.
2.14	Information and Data to be completed in all respects	*Add the following to the clause:* The Tenderer is required to enter information in the following sections of the document: Section T2.1 : List of Returnable Documents Section T2.2 : Returnable Schedules Section T2.3 : Technical Schedules Section C1.1 : Form of Offer and Acceptance Section C1.2 : Contract Data (Part 2) Section C2.2 : Bill of Quantities Section C2.3 : Summary of Quantities The above sections shall be signed by the Tenderer (and witnesses where required). Individual pages should only be initialled by the successful Tenderer and by the witnesses after acceptance by the Employer of the Tender Offer. Accept that failure on the part of the Tenderer to submit any one of the Returnable Documents listed in clause 2.23 within the period stipulated, shall be just cause for the Employer to consider the tender offer as being regarded as non-responsive. "Accept that the Employer shall in the evaluation of tenders take due account of the Tenderers' past performance in executing of similar engineering works of comparable

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

Reference to relevant clauses in Standard Conditions of Tender		Addition or Variation to Standard Condition of Tender
		magnitude, and the degree to which he possesses the necessary technical, financial and other resources to enable him to complete the Works successfully within the contract period. Satisfy the Employer and Engineer as to his ability to perform and complete the Works timeously, safely and with satisfactory quality, by furnishing details in Section T2.2. Accept that the Employer is restricted in accordance with clause 4.(4) of the Construction Regulations, 2003, to only appoint a contractor whom he is satisfied has the necessary competencies and resources to carry out the work safely. Accept that submitting inferior and inadequate information relating to health and safety (as required in clause 2.23) shall be regarded as justifiable and compelling reasons not to award a contract to a Tenderer."
2.15	Closing time	The closing time for submission of tender offers is: As reflected in the Tender Advertisement.
2.16	Tender Offer validity	The Tender Offer validity period is **90 days**.
2.16.1		*Add the following to the clause:* "If the tender validity expires on a Saturday, Sunday or public holiday, the Tender Offer shall remain valid and open for acceptance until the closure of business on the following working day."
2.16.5	Withdrawal of Tender offer	*Add the following new clause*: Accept that should the Tenderer unilaterally withdraw a tender during the tender validity period, the Employer shall, without prejudice to any other rights he may have, be entitled to accept any less favourable tender for the Works from those received, or to call for fresh tenders, or to otherwise arrange for execution of the Works, and the Tenderer shall pay on demand any additional expense incurred by the Employer on account of the adoption of the said courses, as well as either the difference in cost between the tender withdrawn (as corrected in terms of clause 3.9 of the Conditions of Tender) and any less favourable tender accepted by the Employer, or the difference between the tender withdrawn (as corrected) and the cost of execution of the Works by the Employer as well as any other amounts the Employer may have to pay to have the Works completed.
2.17	Clarification of Tender Offer after Submission	*Replace the contents of the clause with the following clause:* "Provide clarification of a Tender Offer in response to a request to do so from the Employer during the evaluation of Tender Offers. This may include providing a breakdown of rates or prices and correction of arithmetical errors resulting from the product of the unit rate and the quantity by the adjustment of certain line-item totals. No change in the unit rate or prices or substance of the Tender Offer is sought, offered, or permitted. The total of the prices shall be adjusted to reflect the arithmetically correct summation of corrected line-item totals and shall be binding upon the Tenderer."
2.18.1	Financial Standing	*Add the following to the clause*:

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

Reference to relevant clauses in Standard Conditions of Tender		Addition or Variation to Standard Condition of Tender
		Accept that if requested, the Tenderer shall within 7 days of the date upon which he is requested to do so, submit a full report from the Tenderer's banker as to the company's financial standing. The Employer may, in its discretion, and subject to the provisions of Section 4(1) (d) of the State Tender Board Act 86 of 1968, condone any failure to comply with the foregoing condition. Accept that the Employer or the Employer's agent, reserves the right to approach the Tenderer's banker or guarantor(s) as indicated in the tender document, or the bankers of each of the individual members of any joint venture that is constituted for purposes of this Contract, with a view to ascertaining whether the required guarantee will be furnished, and for purposes of ascertaining the financial strength of the Tenderer or of the individual member of such venture.
2.19	Inspections, tests and analysis	The Tenderer must provide access during working hours to his premises for inspections on request.
2.22	Return of other tender documents	Return all retained tender documents prior to the closing time for the submission of Tender Offers.
2.23	Certificates	All the certificates/information/documents listed in section T2 must be provided with the tender offer. In cases where the tenderer has failed to submit any of the non-mandatory documents above with the tender, the Employer reserves the right to, at any time after the closure of the tender, but before the award of the tender, request the tenderer to provide the outstanding documents within 7 (seven) calendar days from date of notification.
Add the following new clause: "2.24	Canvassing and obtaining of additional information by tenderers	Accept that no Tenderer shall make any attempt either directly or indirectly to canvass any of the Employers officials or the Employer's agent in respect of his tender, after the opening of the tenders but prior to the Employer arriving at a decision thereon. No Tenderer shall make any attempt to obtain particulars of any relevant information, other than that disclosed at the opening of tenders."
Add the following new clause: "2.25	Prohibitions on awards to persons in service of the state	Accept that the Employer is prohibited to award a tender to a person:- a) who is in the service of the state; or b) if that person is not a natural person, of which any director, manager, principal shareholder or stakeholder is a person in the service of the state; or c) a person who is an advisor or consultant contracted with the municipality or municipal entity. **"In the service of the state"** means to be – a) a member of – • any municipal council;

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

Reference to relevant clauses in Standard Conditions of Tender		Addition or Variation to Standard Condition of Tender
		• any provincial legislature; or the National Assembly or the National Council of Provinces; b) a member of the board of directors of any municipal entity; c) an official of any municipality or municipal entity; d) an employee of any national or provincial department; e) provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No.1 of 1999); f) a member of the accounting authority of any national or provincial public entity; or g) an employee of Parliament or a provincial legislature."
Add the following new clause: "2.26	Awards to close family members of persons in the service of the state	Accept that the notes to the Employer's annual financial statements must disclose particulars of any award of more than R2000 to a person who is a spouse, child or parent of a person in the service of the state (defined in clause 2.25), or has been in the service of the state in the previous twelve months, including – a) the name of that person; b) the capacity in which that person is in the service of the state; and c) the amount of the award. In order to give effect to the above, the questionnaire for the declaration of interests in the tender of persons in service of state in Section T2.2 must be completed.
3.1	Respond to clarification	*Replace the contents of the clause with the following:* "Respond to a request for clarification received up to five (5) calendar days before the tender closing time stated in the tender data and notify all Tenderers who drew procurement documents"
3.4	Opening of Tender submissions	Tenders will be opened immediately after the closing time for tenders, at the same venue.
3.9 3.9.1	Arithmetical errors	*Replace the contents of the clause with the following:* "Check responsive Tender Offers for arithmetical errors, correcting them in the following manner: a) Where there is a discrepancy between the amounts in figures and in words, the amount in words shall govern.

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

Reference to relevant clauses in Standard Conditions of Tender		Addition or Variation to Standard Condition of Tender
		b) If a bill of quantities (or schedule of quantities or schedule of rates) applies and there is an error in the line-item total resulting from the product of the unit rate and the quantity, the rate shall govern, and the line-item total shall be corrected. c) Where there is a discrepancy between the amount indicated in the tender offer and the corrected amount obtained after completing the above steps, the corrected amount shall govern. d) Where there is an error in the total of the prices either as a result of corrections required by this checking process or in the Tenderer's addition of prices, the total of the prices shall be adjusted to reflect the arithmetically correct summation of corrected line-item totals. Consider the rejection of a Tender Offer if the Tenderer does not accept the correction of the arithmetical errors in the manner described above."
3.11	Evaluation of Tenders	All eligible bids received will be evaluated in two stages - first in terms of functionality as described below. All bids that obtain the minimum score for functionality will subsequently be assessed in accordance with the 90/10 preference point systems prescribed in the Preferential Procurement Regulations.
3.11.1	General	Points for functionality shall be allocated on the basis as detailed in the table below and 70 points will be required as a minimum to proceed to the second and last stage of the tender evaluation. Refer to Functionality Criteria. Scoring preference Refer to MBD 6.1 The tenderer is required to submit valid proof of required documentation.
3.11.2		Add the following sub-clause: Subject to paragraph 3.13, the contract must be awarded to the tender who scores the highest total number of points. The points scoring for price and specific goals will be a function of the financial value in accordance with: a) Clause 3.11.3 where the financial value inclusive of VAT of one or more responsive tender offers equals or is less than R50 000 000; or b) Clause 3.11.4 where the financial value inclusive of VAT of all responsive tenders received have a value in excess of R50 000 000.
3.11.3		*Add the following sub-clause:* Scoring preference

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

Reference to relevant clauses in Standard Conditions of Tender		Addition or Variation to Standard Condition of Tender
		Refer to MBD 6.1
3.11.4		*Add the following sub-clause:* Scoring preference Refer to MBD 6.1
3.12		*Replace the contents of the clause with the following:* "If requested by any tenderer, submit for the tenderer's information the policies or certificates of insurance (or both) which the Conditions of Contract identified in the Contract Data require the Employer to provide."
3.13	Acceptance of Tender Offer	A Tender Offer will only be accepted on condition that such acceptance is not prohibited in terms of clause 44 of the Municipal Supply Chain Management Regulations published in terms of the Municipal Finance Management Act, 2003
3.16.2	Non-acceptance of tender	*Replace the contents of the clause with the following*: Notice of non-acceptance of tender will not be sent to individual unsuccessful tenderers. Particulars of the accepted tender can be obtained from the employer's agent.
3.17	Copies of Contract	One signed copy of the contract shall be provided by the Employer to the successful Tenderer.

END OF SECTION

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

CONTENTS LIST

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T1.3 STANDARD CONDITIONS OF TENDER

RLM/RWST/OMM/0101/2024/25 - RE-ADVERT: APPOINTMENT OF A CONTRACTOR FOR CONSTRUCTION OF BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

Annexure C: Standard Conditions of Tender as contained in Annex C of the CIDB Standard for Uniformity in Construction Procurement (contained in Government Gazette No. 42622 of 08 August 2019)

T1.3 STANDARD CONDITIONS OF TENDER

1. GENERAL

1.1 Actions

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

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

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

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

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

1.2 Tender Documents

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

1.3 Interpretation

1.3.1 The tender data and additional requirements contained in the tender schedules that are included in the returnable documents are deemed to be part of these conditions of tender.

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

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

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

b) **comparative offer** means the price after the factors of a non-firm price and all unconditional discounts it can be utilised to have been taken into consideration;

c) **corrupt practice** means the offering, giving, receiving or soliciting of anything of value to influence the action of the employer or his staff or agents in the tender process;

d) **fraudulent practice** means the misrepresentation of the facts in order to influence the tender process or the award of a contract arising from a tender offer to the detriment of the employer, including collusive practices intended to establish prices at artificial levels;

1.4 Communication and employer's agent

Each communication between the employer and a tenderer shall be to or from the employer's agent only, and in a form that can be readily read, copied and recorded. Communications shall be in the English language. The employer shall not take any responsibility for non-receipt of communications from or by a tenderer. The name and contact details of the employer's agent are stated in the tender data.

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

1.5.1 An organ of state may, prior to the award of the tender, cancel a tender if-

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

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

1.5.3 An employer may only with the prior approval of the relevant treasury cancel a tender invitation for the second time.

1.6 Procurement procedures

1.6.1 General

Unless otherwise stated in the tender data, a contract will, subject to 3.13, be concluded with the tenderer who in terms of 3.11 is the highest ranked or the tenderer scoring the highest number of tender evaluation points, as relevant, based on the tender submissions that are received at the closing time for tenders.

1.6.2 Competitive negotiation procedure

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

1.6.2.2 All responsive tenderers, or not less than three responsive tenderers that are highest ranked in terms of the evaluation method and evaluation criteria stated in the tender data, shall be invited in each round to enter into competitive negotiations, based on the principle of equal treatment and keeping confidential the proposed solutions and associated information. Notwithstanding the provisions of

2.17, the employer may request that tenders be clarified, specified and fine-tuned in order to improve a tenderer's competitive position provided that such clarification, specification, fine-tuning or additional information does not alter any fundamental aspects of the offers or impose substantial new requirements which restrict or distort competition or have a discriminatory effect.

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

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

1.6.3 Proposal procedure using the two stage-system

1.6.3.1 Option 1

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

1.6.3.2 Option 2

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

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

2. TENDERER'S OBLIGATIONS

2.1 Eligibility

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

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

2.2 Cost of tendering

2.2.1 Accept that, unless otherwise stated in the tender data, the employer will not compensate the tenderer for any costs incurred in the preparation and submission of a tender offer, including the costs of any testing necessary to demonstrate that aspects of the offer complies with requirements.

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

2.3 Check documents

Check the tender documents on receipt for completeness and notify the employer of any discrepancy or omission.

2.4 Confidentiality and copyright of documents

Treat as confidential all matters arising in connection with the tender. Use and copy the documents issued by the employer only for the purpose of preparing and submitting a tender offer in response to the invitation.

2.5 Reference documents

Obtain, as necessary for submitting a tender offer, copies of the latest versions of standards, specifications, conditions of contract and other publications, which are not attached but which are incorporated into the tender documents by reference.

2.6 Acknowledge addenda

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

2.7 Clarification meeting

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

2.8 Seek clarification

Request clarification of the tender documents, if necessary, by notifying the employer at least five working days before the closing time stated in the tender data.

2.9 Insurance

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

2.10 Pricing the tender offer

2.10.1 Include in the rates, prices, and the tendered total of the prices (if any) all duties, taxes (except Value Added Tax (VAT), and other levies payable by the successful tenderer, such duties, taxes and levies being those applicable 14 days before the closing time stated in the tender data.

2.10.2 Show VAT payable by the employer separately as an addition to the tendered total of the prices.

2.10.3 Provide rates and prices that are fixed for the duration of the contract and not subject to adjustment except as provided for in the conditions of contract identified in the contract data.

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

2.11 Alterations to documents

Do not make any alterations or additions to the tender documents, except to comply with instructions issued by the employer, or necessary to correct errors made by the tenderer. All signatories to the tender offer shall initial all such alterations.

2.12 Alternative tender offers

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

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

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

2.13 Submitting a tender offer

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

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

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

2.13.4 Sign the original and all copies of the tender offer where required in terms of the tender data. The employer will hold all authorized signatories liable on behalf of the tenderer. Signatories for tenderers

proposing to contract as joint ventures shall state which of the signatories is the lead partner whom the employer shall hold liable for the purpose of the tender offer.

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

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

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

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

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

2.14 Information and data to be completed in all respects

Accept that tender offers, which do not provide all the data or information requested completely and in the form required, may be regarded by the employer as non-responsive.

2.15 Closing time

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

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

2.16 Tender offer validity

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

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

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

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

2.17 Clarification of tender offer after submission

Provide clarification of a tender offer in response to a request to do so from the employer during the evaluation of tender offers. This may include providing a breakdown of rates or prices and correction of arithmetical errors by the adjustment of certain rates or item prices (or both). No change in the competitive position of tenderers or substance of the tender offer is sought, offered, or permitted.

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

2.18 Provide other material

2.18.1 Provide, on request by the employer, any other material that has a bearing on the tender offer, the tenderer's commercial position (including notarized joint venture agreements), preferencing arrangements, or samples of materials, considered necessary by the employer for the purpose of a full and fair risk assessment. Should the tenderer not provide the material, or a satisfactory reason as to why it cannot be provided, by the time for submission stated in the employer's request, the employer may regard the tender offer as non-responsive.

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

2.19 Inspections, tests and analysis

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

2.20 Submit securities, bonds, policies, etc.

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

2.21 Check final draft

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

2.22 Return of other tender documents

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

2.23 Certificates

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

3. THE EMPLOYER'S UNDERTAKINGS

3.1 Respond to requests from the tenderer

3.1.1 Unless otherwise stated in the tender Data, respond to a request for clarification received up to five working days before the tender closing time stated in the Tender Data and notify all tenderers who drew procurement documents.

3.1.2 Consider any request to make a material change in the capabilities or formation of the tendering entity (or both) or any other criteria which formed part of the qualifying requirements used to

prequalify a tenderer to submit a tender offer in terms of a previous procurement process and deny any such request if as a consequence:

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

3.2 Issue Addenda

If necessary, issue addenda that may amend or amplify the tender documents to each tenderer during the period from the date that tender documents are available until three days before the tender closing time stated in the Tender Data. If, as a result a tenderer applies for an extension to the closing time stated in the Tender Data, the Employer may grant such extension and, shall then notify all tenderers who drew documents.

3.3 Return late tender offers

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

3.4 Opening of tender submissions

3.4.1 Unless the two-envelope system is to be followed, open valid tender submissions in the presence of tenderers' agents who choose to attend at the time and place stated in the tender data. Tender submissions for which acceptable reasons for withdrawal have been submitted will not be opened.

3.4.2 Announce at the meeting held immediately after the opening of tender submissions, at a venue indicated in the tender data, the name of each tenderer whose tender offer is opened and, where applicable, the total of his prices, number of points claimed for its BBBEE status level and time for completion for the main tender offer only.

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

3.5 Two-envelope system

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

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

3.6 Non-disclosure

Not disclose to tenderers, or to any other person not officially concerned with such processes, information relating to the evaluation and comparison of tender offers, the final evaluation price and recommendations for the award of a contract, until after the award of the contract to the successful tenderer.

3.7 Grounds for rejection and disqualification

Determine whether there has been any effort by a tenderer to influence the processing of tender offers and instantly disqualify a tenderer (and his tender offer) if it is established that he engaged in corrupt or fraudulent practices.

3.8 Test for responsiveness

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

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

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

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

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

3.9 Arithmetical errors, omissions and discrepancies

3.9.1 Check responsive tenders for discrepancies between amounts in words and amounts in figures. Where there is a discrepancy between the amounts in figures and the amount in words, the amount in words shall govern.

3.9.2 Check the highest ranked tender or tenderer with the highest number of tender evaluation points after the evaluation of tender offers in accordance with 3.11 for:

a) the gross misplacement of the decimal point in any unit rate;
b) omissions made in completing the pricing schedule or bills of quantities; or
c) arithmetic errors in:
   i) line-item totals resulting from the product of a unit rate and a quantity in bills of quantities or schedules of prices; or
   ii) the summation of the prices.

3.9.3 Notify the tenderer of all errors or omissions that are identified in the tender offer and either confirm the tender as tendered or accept the corrected total of prices.

3.9.4 Where the tenderer elects to confirm the tender offer as tendered, correct the errors as follows.

a) If bills of quantities or pricing schedules apply and there is an error in the line item total resulting from the product of the unit rate and the quantity, the line item total shall govern and

the rate shall be corrected. Where there is an obviously gross misplacement of the decimal point in the unit rate, the line-item total as quoted shall govern, and the unit rate shall be corrected.

b) Where there is an error in the total of the prices either as a result of other corrections required by this checking process or in the tenderer's addition of prices, the total of the prices shall govern, and the tenderer will be asked to revise selected item prices (and their rates if bills of quantities apply) to achieve the tendered total of the prices.

3.10 Clarification of a tender offer

Obtain clarification from a tenderer on any matter that could give rise to ambiguity in a contract arising from the tender offer.

3.11 Evaluation of tender offers

The Standard Conditions of Tender standardize the procurement processes, methods and procedures from the time that tenders are invited to the time that a contract is awarded. They are generic in nature and are made project specific through choices that are made in developing the Tender Data associated with a specific project. Conditions of tender are by definition the document that establishes a tenderer's obligations in submitting a tender and the employer's undertakings in soliciting and evaluating tender offers. Such conditions establish the rules from the time a tender is advertised to the time that a contract is awarded and require employers to conduct the process of offer and acceptance in terms of a set of standard procedures.

The CIDB Standard Conditions of Tender are based on a procurement system that satisfies the following system requirements:	
Requirement	**Qualitative interpretation of goal**
Fair	The process of offer and acceptance is conducted impartially without bias, providing simultaneous and timely access to participating parties to the same information.
Equitable	Terms and conditions for performing the work do not unfairly prejudice the interests of the parties.
Transparent	The only grounds for not awarding a contract to a tenderer who satisfies all requirements are restrictions from doing business with the employer, lack of capability or capacity, legal impediments and conflicts of interest.
Competitive	The system provides for appropriate levels of competition to ensure cost effective and best value outcomes.
Cost effective	The processes, procedures and methods are standardized with sufficient flexibility to attain best value outcomes in respect of quality, timing and price, and least resources to effectively manage and control procurement processes.

The activities associated with evaluating tender offers are as follows:

a) Open and record tender offers received
b) Determine whether or not tender offers are complete
c) Determine whether or not tender offers are responsive
d) Evaluate tender offers
e) Determine if there are any grounds for disqualification
f) Determine acceptability of preferred tenderer
g) Prepare a tender evaluation report
h) Confirm the recommendation contained in the tender evaluation report

3.11.1 General

The employer must appoint an evaluation panel of not less than three persons conversant with the proposed scope of works to evaluate each responsive tender offer using the tender evaluation methods and associated evaluation criteria and weightings that are specified in the tender data.

3.12 Insurance provided by the employer

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

3.13 Acceptance of tender offer

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

a) is not under restrictions, or has principals who are under restrictions, preventing participating in the employer's procurement,
b) can, as necessary and in relation to the proposed contract, demonstrate that he or she possesses the professional and technical qualifications, professional and technical competence, financial resources, equipment and other physical facilities, managerial capability, reliability, experience and reputation, expertise and the personnel, to perform the contract,
c) has the legal capacity to enter into the contract,

d) is not insolvent, in receivership, under Business Rescue as provided for in chapter 6 of the Companies Act, 2008, bankrupt or being wound up, has his affairs administered by a court or a judicial officer, has suspended his business activities, or is subject to legal proceedings in respect of any of the foregoing,
e) complies with the legal requirements, if any, stated in the tender data, and
f) is able, in the opinion of the employer, to perform the contract free of conflicts of interest.

3.14 Prepare contract documents

3.14.1 If necessary, revise documents that shall form part of the contract and that were issued by the employer as part of the tender documents to take account of:

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

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

3.15 Complete adjudicator's contract

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

3.16 Registration of the award

An employer must within twenty-one (21) days from the date on which a contractor's offer to perform a construction works contract is accepted in writing by the employer, register and publish the award on the CIDB Register of Projects.

3.17 Provide copies of the contracts

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

3.18 Provide written reasons for actions taken

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

END OF SECTION

T2.1 LIST OF RETUNABLE DOCUMENTS

RLM/RWST/OMM/0101/2024/25 - RE-ADVERT: APPOINTMENT OF A CONTRACTOR FOR CONSTRUCTION OF BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

T2.1 List of Additional Returnable Documents

1. Tenderers are required to submit the following with their tenders.

   (a) Certified copy of a Workmen's Compensation Certificate, Act 4 of 2002,

   (b) Certified copy of Unemployment Insurance Certificate, Act 4 of 2002,

   (c) Curriculum vitae of the person who prepares the Contractor's Health and Safety Plan.

   (d) Curriculum vitae of the Health and Safety Officer the successful tenderer intends appointing in accordance with the Occupational Health and Safety Act (Act 85 of 1993).

   (e) Curriculum Vitae of all supervisory staff.

   (f) Contractors Project Quality Plan.

   (g) Proof of validity and accreditation of its quality management system for the Contractor

END OF SECTION

T2.2 RETUNABLE SCHEDULES

RLM/RWST/OMM/0101/2024/25 - RE-ADVERT: APPOINTMENT OF A CONTRACTOR FOR CONSTRUCTION OF BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

CONTRACT NO: RLM/RWST/OMM/0101/2024/25 – RE-ADVERT:
CONSTRUCTION OF BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

T2.2.1: Record of Addenda to tender documents

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

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

Attach additional pages if more space is required.

Signed ..... Date _____

Name ..... Position _____

Tenderer _____

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

T2.2.2: Compulsory Enterprise Questionnaire

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

Section 1: Name of enterprise: . . . . . .

Section 2: VAT registration number, if any: . . . . . .

Section 3: CIDB registration number, if any: . . . . . .

Section 4: Particulars of sole proprietors and partners in partnerships

Name*	Identity number*	Personal income tax number*

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

Section 5: Particulars of companies and close corporations

Company registration number . . . . . .

Close corporation number . . . . . .

Tax reference number . . . . . .

Section 6: Record of service of the state

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

- □ a member of any municipal council
- □ a member of any provincial legislature
- □ a member of the National Assembly or the National Council of Province
- □ a member of the board of directors of any municipal entity
- □ n official of any municipality or municipal entity
- □ an employee of any provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act 1 of 1999)
- □ a member of an accounting authority of any national or provincial public entity
- □ an employee of Parliament or a provincial legislature

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

Name of sole proprietor, partner, director, manager, principal shareholder or stakeholder	Name of institution, public off e, board or organ of state and position held	Status of service (tick appropriate column)	
		current	Within last 12 months

*insert separate page if necessary

Section 7: Record of spouses, children and parents in the service of the state

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

- □ a member of any municipal council
- □ a member of any provincial legislature
- □ a member of the National Assembly or the National Council of Province
- □ a member of the board of directors of any municipal entity
- □ an official of any municipality or municipal entity
- □ an employee of any provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act 1 of 1999)
- □ a member of an accounting authority of any national or provincial public entity
- □ an employee of Parliament or a provincial legislature

Name of spouse, child or parent	Name of institution, public office, board or organ o state and position held	Status of service (tick appropriate column)	
		cu rent	Within last 12 months

*insert separate page if necessary

CONTRACT NO: RLM/RWST/OMM/0101/2024/25 – RE-ADVERT:
CONSTRUCTION OF BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

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

i) authorizes the Employer to obtain a tax clearance certificate from the South African Revenue Services that my / our tax matters are in order;

ii) confirms that the neither the name of the enterprise or the name of any partner, manager, director or other person, who wholly or partly exercises, or may exercise, control over the enterprise appears on the Register of Tender Defaulters established in terms of the Prevention and Combating of Corrupt Activities Act of 2004;

iii) confirms that no partner, member, director or other person, who wholly or partly exercises, or may exercise, control over the enterprise appears, has within the last five years been convicted of fraud or corruption;

iv) confirms that I / we are not associated, linked or involved with any other tendering entities submitting tender offers and have no other relationship with any of the tenderers or those responsible for compiling the scope of work that could cause or be interpreted as a conflict of interest;

iv) confirms that the contents of this questionnaire are within my personal knowledge and are to the best of my belief both true and correct.

Signed ..... Date _____

Name ..... Position _____

Tenderer .....

T2.2.3: 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.

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

T2.2.4: Schedule of Proposed Subcontractors

We notify you that it is our intention to employ the following Subcontractors for work in this contract.

If we are awarded a contract we agree that this notification does not change the requirement for us to submit the names of proposed Subcontractors in accordance with requirements in the contract for such appointments. If there are no such requirements in the contract, then your written acceptance of this list shall be binding between us.

We confirm that all subcontractors who are contracted to construct a house are registered as home builders with the National Home Builders Registration Council.

	Name and address of proposed Subcontractor	Nature and extent of work	Previous experience with Subcontractor.	% Allocation
1.				
2.				
3.				
4.				
5.				

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

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

Tenderer .....

T2.2.5: Schedule of Plant and Equipment

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

(a) Details of major equipment that is owned by and immediately available for this contract.

Quantity	Description, size, capacity, etc.

Attach additional pages if more space is required.

(b) Details of major equipment that will be hired, or acquired for this contract if my/our tender is acceptable.

Quantity	Description, size, capacity, etc.

Attach additional pages if more space is required.

Signed ..... Date _____

Name ..... Position _____

Tenderer _____

T2.2.6: Schedule of the Tenderer's Experience - Reservoirs

The Tenderer shall list in the spaces provided below similar and comparative projects, i.e construction of reinforced concrete reservoirs larger than 20 Mℓ.

(Note: Points for each completed project to be scored with attachment of appointment letter and a signed completion certificate, failure to attach both will result in zero scoring).

The information provided below must be provided in sufficient detail to allow the evaluation of the tender in terms of functionality criteria pre-scribed for the tender and it is therefore imperative that the schedule is completed as comprehensively as possible.

CONTRACT NO: RLM/RWST/OMM/0101/2024/25 – RE-ADVERT:
CONSTRUCTION OF BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

Employer, contact person and telephone number.	Description of contract	Value of work inclusive of VAT (Rand)	Date completed

Signed ..... Date _____

Name ..... Position _____

Tenderer .....

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

T2.2.7: Schedule of the Tenderer's Experience – Paved Access Roads

The Tenderer shall list in the spaces provided below similar and comparative projects, i.e construction of paved access road longer than 1.5 km.

(Note: Points for each completed project to be scored with attachment of appointment letter and a signed completion certificate, failure to attach both will result in zero scoring).

The information provided below must be provided in sufficient detail to allow the evaluation of the tender in terms of functionality criteria pre-scribed for the tender and it is therefore imperative that the schedule is completed as comprehensively as possible.

Employer, contact person and telephone number.	Description of contract	Value of work inclusive of VAT (Rand)	Date completed

Signed ..... Date _____

Name ..... Position _____

Tenderer .....

T2.2.8: Financial References

(a) FINANCIAL STATEMENTS

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

(b) DETAILS OF COMPANY'S BANK

I/We hereby authorise the Employer/Engineer to approach all or any of the following banks for a reference:

DESCRIPTION OF BANK DETAIL	BANK DETAIL APPLICABLE TO COMPANY HEAD OFFICE	BANK DETAIL APPLICABLE TO THE SITE OF THE WORKS
Name of bank		
Branch name		
Branch code		
Street address		
Postal address		
Name of manager		
Telephone number	( )	( )
Fax number	( )	( )
Account number		

Signed ..... Date _____

Name ..... Position _____

Tenderer _____

T2.2.9: Proposed amendments and qualifications

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

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

Page	Clause or item	Proposal

Signed ..... Date _____

Name ..... Position _____

Tenderer .....

T2.2.10: Supervisory and Safety Personnel

PREVIOUS EXPERIENCE ON WORKS OF A SIMILAR NATURE DURING THE SPECIFIED NUMBER OF YEARS

Name	% Time on Site	Position (Current)	Service (Years)	Name of Project And year executed	Value of Works	Position Occupied
Contracts Manager						
Contractor's Site Agent	100%					
Contractor's Foremen						
Construction Health and Safety Officer	100%					

Tenderers shall indicate the percentage of working time these persons will be engaged on site. Tenderers are required to provide copies of curriculum vitas of all supervisory and safety personnel.

Signed _____ Date .....

Name _____ Position .....

Tenderer .....

T2.2.11: Labour Utilisation

Labour Categories - Definitions

NOTE: These definitions serve as a guideline to complete the following table and will in no respect alter the Project Specifications or Standardised Specifications

1. General Foreman / Foreman

An employee who gives out work to and directly co-ordinates and supervises employees. His duties encompass any one or more of the following activities:

a) Supervision;
b) Maintaining discipline;
c) Ensuring safety on the workplace;
d) Being responsible to the Contractor for efficiency and production for his portion of the works; and
e) Performing skilled work, whether in an instructional capacity or otherwise.

2. Charge hand

An employee engaged in any one or more of the following activities:

a) Being primarily employed in a supervisory capacity, but who may also be doing the work of an artisan;
b) Giving out work to other employees under his control and supervision;
c) Ensuring safety on the workplace;
d) Maintaining discipline; and
e) Being directly responsible to a general foreman or foreman or the Contractor or the Contractor's representative for efficiency and production for his portion of the works.

3. Artisan

An employee who has successfully completed all prescribed courses at a practical institutional training centre for a particular trade and who has successfully completed the on-site period of training as prescribed and who has successfully passed the prescribed trade tests.

4. Team Leader

An employee engaged in any one or more of the following activities:

a) Being employed in a supervisory capacity, but who may also be doing the work of a skilled person;
b) Giving out work to other employees under his control and supervision;
c) Maintaining discipline;
d) Being directly responsible to a Charge hand or a foreman or a general foreman or the employer's authorised representative for efficiency and production for his portion of the works.

5. Skilled Employee

An employee engaged in an ancillary trade or an assistant artisan.

6. Semi-Skilled Employee

An employee with any specified skills, an apprentice or a trainee-artisan.

7. Unskilled Employee

An employee engaged on any task or operation not specified above.

8. Imported Employee

Personnel permanently employed by Contractor.

9. Local Employee

Temporary workforce employed through Labour Desk.

MAN DAYS

Categories	**a)** No. of Man Days		
	b) Imported	**c)** Local	**d)** HDI (Y/N)
1. Contracts Manager			
2. Site Agent			
3. Foreman/Supervisors (specify type)			
3.1 _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _			
3.2 _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _			
3.3 _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _			
4. Safety Inspectors (specify type)			
4.1 _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _			
4.2 _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _			
5. Charge hands			

Categories	**a)** No. of Man Days		
	b) Imported	**c)** Local	**d)** HDI (Y/N)
6. Artisans			
7. Operators/Drivers			
8. Clerks/ Storeman			
9. Team Leader			
10. Skilled Labour			
11. Semi-skilled Labour			
12. Unskilled Labour			

Signed _____ Date .....

Name _____ Position .....

Tenderer .....

T2.2.12: Occupational Health and Safety Act: Statement by Tendering Entity

I, _____ duly authorised

to represent _____ (company name)

in my capacity as _____ hereby confirm that I accept full and exclusive responsibility for compliance by myself and all persons who perform work for me with the provisions of the Occupational Health and Safety Act, No. 85 of 1993 (as amended) and all regulations promulgated from time to time, whilst performing work on _____

_____

I confirm that all employees who perform work on the site shall be properly trained to do this in a manner which is safe and without risk to health and safety to themselves and others in the vicinity and undertake to have our activities adequately supervised in the interest of health and safety.

Signed _____ Date _____

Name _____ Position _____

Tenderer _____

T2.2.13: Site Inspection Certificate

As required by Clause 2.7 of the Tender Data, I/we certify that I/we have visited the site of the Works and attended the site visit and clarification meeting on the date certified below.

I/we further certify that I am / we are satisfied with the description of the Work and the explanations given by the Engineer at the site visit and clarification meeting.

_____ _____

Signature of Tenderer Date

Site Visit

This will certify that _____

representing _____

attended a Site Inspection for this Contract on _____ 20_____

_____(signed)

For the Engineer

T2.2.14: Authority of Signatory

With reference to Clause 2.13.4 of the Tender Data, I/we herewith certify that this tender is submitted by: *(Mark applicable block)*

a company, and attach hereto a certified copy of the required resolution of the Board of Directors ☐

a partnership, and attach hereto a certified copy of the required resolution by all partners ☐

a close corporation, and attach hereto a certified copy of the required resolution of the Board of Officials ☐

a one-man business, and attach hereto certified proof that I am the sole owner of the business submitting this tender ☐

a joint venture, and attach hereto ☐

- an notarially certified copy of the original document under which the joint venture was constituted; and
- certified authorisation by the participating members of the undersigned to submit tenders and conclude contracts on behalf of the joint venture

SIGNED ON BEHALF OF TENDERER: ……..

PLEASE NOTE:

Failure to complete all blank spaced on this form or attend to other details mentioned therein will render the Bid liable to rejection.

The signatory shall confirm his/her authority thereto by attaching on the tendering company's letterhead a duly signed and dated copy of the relevant resolution of the board of directors / partners.

T2.3 TECHNICAL SCHEDULES

RLM/RWST/OMM/0101/2024/25 - RE-ADVERT: APPOINTMENT OF A CONTRACTOR FOR CONSTRUCTION OF BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

T2.3.1 CIVIL TECHNICAL SCHEDULES

IMPORTANT NOTE:
Refer to the Particular Specifications

No.	Item	Technical Particulars
1.	**RESILIENT SEAL GATE VALVE**	
1.1	**General Data**	
1.1.1	Country of origin	
1.1.2	Manufacturer (name & country)	
1.1.3	Supplier	
1.1.4	Product name	
1.2	**Materials**	
1.2.1	Valve body	
1.2.2	Spindle	
1.2.3	Disc	
1.2.4	Valve seat	
2.	**WEDGE GATE VALVE**	
2.1	**General data**	
2.1.1	Country of origin	
2.1.2	Manufacturer (name & country)	
2.1.3	Supplier	
2.1.4	Product name	
2.2	**Materials**	
2.2.1	Valve body	
2.2.2	Spindle	
2.2.3	Disc	
2.2.4	Valve seat	

No.	Item	Technical Particulars
3.	**BUTTERFLY VALVES**	
3.1	**General Data**	
3.1.1	Country of origin	
3.1.2	Manufacturer (name & country)	
3.1.3	Supplier	
3.1.4	Product name	
3.2	**Materials**	
3.2.1	Valve body	
3.2.2	Sub-shaft	
3.2.3	Disc	
3.2.4	Valve seat	
4.	**CHECK/NON-RETURN VALVES**	
4.1	**General data**	
4.1.1	Country of origin	
4.1.2	Manufacturer (name & country)	
4.1.3	Supplier	
4.1.4	Product name	
4.2	**Materials**	
4.2.1	Valve body	
4.2.2	Spindle	
4.2.3	Disc	
4.2.4	Valve seat	
5.	**AIR VALVES**	
5.1	**General data**	

No.	Item	Technical Particulars
5.1.1	Country of origin	
5.1.2	Manufacturer (name & country)	
5.1.3	Supplier	
5.1.4	Model number	
5.1.5	Product name	
5.2	**Materials**	
5.2.1	Valve body	
5.2.2	Float	
6.	**HYDRAULIC CONTROL VALVES**	
6.1	**General Data**	
6.1.1	Country of origin	
6.1.2	Manufacturer (name & country)	
6.1.3	Product name	
6.2	**Materials**	
6.2.1	Valve body	
6.2.2	Spindle	
6.2.3	Disc	
6.2.4	Valve seat	
6.2.5	Others (Tenderer to specify)	
7.	**ULTRASONIC FLOW METERS**	
7.1	Manufacturer (name & country)	
7.2	Supplier	
7.3	Type	
7.4	Model	

No.	Item	Technical Particulars
7.5	Country of manufacturer	
7.6	Installation contractor	
8. TURBINE FLOW METERS		
8.1	Manufacturer (name & country)	
.2	Supplier	
8.3	Type	
8.4	Model	
8.5	Country of manufacturer	
8.6	Installation contractor	
9. MAGNETIC FLOW METERS		
9.1	Manufacturer (name & country)	
9.2	Supplier	
9.3	Type	
9.4	Model	
9.5	Country of manufacturer	
9.6	Installation contractor	
10. PIPE FITTINGS AND SPECIALS		
10.1	**Steel**	
10.1.1	Country of origin	
10.1.2	Manufacturer (name & country)	
10.1.3	Place of manufacture	
10.1.4	Supplier	
10.1.5	Material grade	
10.2	**Stainless Steel**	

No.	Item	Technical Particulars
10.2.1	Country of origin	
10.2.2	Manufacturer (name & country)	
10.2.3	Place of manufacture	
10.2.4	Supplier	
10.2.5	Material grade	
10.3	**Coating and Lining**	
10.3.1	Application factory name	
10.3.2	Location of factory	
10.3.3	Epoxy lining product name	
10.3.4	Epoxy coating product name	
10.3.5	UV-Resistant multi-purpose epoxy product name	
10.3.6	Aliphatic polyurethane product name	
10.3.7	Polymer modified bitumen (Bituguard or Densotherm) product name	
10.3.8	Rigid polyurethane product name	
11. STEEL PIPE LENGTHS		
11.1	**General Data**	
11.1.1	Country of origin	
11.1.2	Manufacturer (name & country)	
11.1.3	Place of manufacture	
11.1.4	Supplier	
11.1.5	Material grade	
11.2	**Coating**	
11.2.1	Polymer modified bitumen (Bituguard)	

No.	Item	Technical Particulars
	Application factory	
	Name of product	
11.2.2	3 Layer high density polyethylene	
	Application factory	
	Names of products	
11.2.3	Fusion bonded medium density polyethylene (Sintakote)	
	Application factory	
	Name of product	
11.2.4	Rigid Polyurethane	
	Application factory	
	Name of product	
11.3	**Lining**	
11.3.1	Epoxy (product name)	
11.3.2	Epoxy application factory	
11.3.3	Cement mortar application factory	

T2.3.2 ELECTRICAL TECHNICAL SCHEDULES

LV CABLE SYSTEMS FOR MOTOR AND EQUIPMENT				
Item no.	**Description**	**Units**	**Specified**	**Offered**
1	**LOW VOLTAGE CABLES**			
1.1	Manufacturer		SABS Approved	
1.2	Country of Origin		RSA	
1.3	Operating Voltage	*V*	600/1000	
1.4	Number of Cores	*No*	Refer to Project Specs and BOQ	
1.5	Size	mm^2		
1.6	Conductor Type	*Cu/Al*		
1.7	Cable Type			
1.8	Full Load Current	*A*		
1.9	Armouring	*Yes/No*	Yes, SWA	
2	**CABLE LADDER**			
2.1	Manufacturer		SABS Approved	
2.2	Country of Origin		RSA	
2.3	Type			
2.4	Material		Galvanised	
2.5	Duty	Heavy / Medium	Heavy	
2.6	Application		LV cables	
3	**WIRED MESH**			
3.1	Manufacturer		SABS Approved	
3.2	Country of Origin		RSA	
3.3	Type			
3.4	Material		Galvanised	

3.5	Duty	Heavy / Medium	Heavy	
3.6	Application		LV cables	
4	**INSTALLATION**			
4.1	Depth	*mm*	750	
4.2	Outdoor Cable Markers [Refer to Particular Specification]	*Yes/No*	Yes	
4.3	Cable Concrete Slabs [Refer to Particular Specification]	*Yes/No*	Yes	
5	**DATA SHEET OF ALL CABLES**	*Yes/No*	Yes	

LV SWITCHGEAR AND CONTROLGEAR ASSEMBLIES - MCCs and Distribution Boards				
Item no.	**Description**	**Units**	**Specified**	**Offered**
1	**ASSEMBLY CONSTRUCTION**			
1.1	Manufacturer			
1.2	Access	*Back/Front/ Side*	Refer to PS	
			Various	
1.3	Doors / Removable Panels		Doors	
1.4	Hinges	*Yes / No*	Yes	
1.5	Hinges - Type		Refer to project and particular specification [PS - Project specification]	
1.6	Hinges - Material			
1.7	Stays at 95˚ opening	*Yes / No*		
1.8	Door Locks	*Yes / No*		
1.9	Door Locks - Type			
1.10	Door Locks - Material			
1.11	Door Interlock per compartment	*Yes / No*	Yes	
1.12	Cable Entry	*Top / Bottom*	Bottom	
1.13	Size of Panel:			
1.13.1	*Height*	*mm*	Max 2100	
1.13.2	*Length*	*mm*		
1.13.3	*Width*	*mm*		
1.14	Spare Space Required	*%*	>=	
1.15	Estimated Weight	*kg*		
1.16	Type Tested with Stated Deviations to SANS 1973-1, 3 & 8	*Yes/No*	Yes	
1.17	Deviations from original Type Tested Assembly:	*Specify*		
1.18	Type Test Certificate Required	*Yes / No*	Yes	

1.19	Motor Starter Circuits	*Withdrawable / Fixed*	Fixed	
1.20	Ingress Protection (doors closed)	*IP*	Refer to PS	
1.21	Form of Internal Separation		Refer to PS	
1.22	Method of Installation: *Floor standing / Wall mounted / Flush / Pedestal Mounted / Kiosk / Architrave / Surface Mounted*		Floor Standing	
1.23	Material of Construction: 2*mm Mild Steel /* 2.0mm Mild Steel / Electro Galvanized / Stainless Steel / 3CR12 / Fibre Glass		3CR12	
1.24	Epoxy Powder Coated	*Yes / No*	Yes	
1.25	Incomer Section Required	*Yes / No*	Yes	
1.26	Essential Section Required	*Yes / No*	Yes	
1.27	UPS Section Required	*Yes / No*	Yes	
1.28	Colour of Assembly:			
1.28.1	*Doors*		electric orange	
1.28.2	*Normal Section*		electric orange	
1.28.3	*Essential Section*		Purple	
1.28.4	*UPS Section*		Purple	
2	**COMPONENTS**			
2.1	**Busbars**			
2.1.1	Material		Copper	
2.1.2	Tinned	*Yes / No*	Yes	
2.1.3	Current Density	*A/mm²*	As type test require	
2.2	**Air Circuit Breakers**	-	-	
2.2.1	Manufacturer			
2.2.2	Type		Fixed	
2.2.3	Model			
2.2.4	Rated Current	*A*		

2.2.5	Service short-circuit breaking capacity (Ics)	*kA*		
2.2.6	Overload release		Electronic	
2.2.7	Short-circuit release		Electronic	
2.2.8	Motorised	*Yes/No*	Refer to PS	
2.3	**Moulded Case Circuit Breakers**	-	-	
2.3.1	Manufacturer			
2.3.2	Type		Fixed	
2.3.3	Model			
2.3.4	Rated Current	*A*		
2.3.5	Service short-circuit breaking capacity (Ics)	*kA*		
2.3.6	Overload release		Refer to PS	
2.3.7	Short-circuit release		Refer to PS	
2.4	**Miniature Circuit Breakers**	-	-	
2.4.1	Manufacturer			
2.4.2	Type			
2.4.3	Model			
2.4.4	Rated Current	*A*	Refer to PS	
2.4.5	Service short-circuit breaking capacity (Ics)	*kA*	Refer to PS	
2.4.6	Tripping Curve		Refer to PS	
2.5	**Fuse-Switch-Disconnector**	-	-	
2.5.1	Manufacturer			
2.5.2	Model			
2.6	**High Rupture Capacity (HRC) Fuse Links**	-	-	

2.6.1	Manufacturer			
2.6.2	Model			
2.7	**Contactors**	-	-	
2.7.1	Manufacturer			
2.7.2	Model			
2.7.3	Contactor rating		Refer to PS	
2.7.4	Coordination		Type 2	
2.8	**Overload Relays**	-	-	
2.8.1	Manufacturer			
2.8.2	Type			
2.8.3	Model			
2.8.4	Rated Current	*A*	Refer to PS	
2.8.5	Resettable from front of Panel	*Yes / No*	Refer to PS	
2.9	**Miniature Relays**	-	-	
2.9.1	Manufacturer			
2.9.2	Model			
2.10	**Pushbutton and Selector Switches**	-	-	
2.10.1	Manufacturer			
2.10.2	Model			
2.11	**Indicator Lamps**	-	-	
2.11.1	Manufacturer			
2.11.2	Model			

2.12	**Surge Arrestors**	-	-	
2.12.1	Power Circuits - Manufacturer			
2.12.2	Power Circuits - Model			
2.12.3	Power Circuits - Rating	*kA*	Refer to PS	
2.12.4	Remote Indication to PLC	*Yes / No*	No	
2.12.5	Control Circuits - Manufacturer		Refer to PS	
2.12.6	Control Circuits - Model		Refer to PS	
2.12.7	Remote Indication to PLC	*Yes / No*	No	
3	**POWER FACTOR CORRECTION**			
3.1	Controller			
3.1.1	Manufacturer			
3.1.2	Model			
3.2	Capacitors		Refer to PS	
3.2.1	Manufacturer		Refer to PS	
4	**ACTIVE HARMONIC FILTER (if applicable)**			
4.1	Manufacturer			
4.2	Model			
4.3	Type			
5	**SOFT STARTERS**			
5.1	Manufacturer			
5.2	Model			
5.3	Integrated bypass contactor	*Yes / No*	Yes	

6	**FIELD E-STOP/START LOCAL CONTROL STATIONS**			
6.1	Method of Installation: Wall mounted / Flush / Pedestal Mounted		Pedestal	
6.2	Manufacturer			
6.3	Model			
6.4	Height above final ground level	*mm*	See Project Specs	
6.5	Keyswitch Required	*Yes / No*	No	
6.6	Canopy required	*Yes / No*	Yes	
6.7	Material		304 S/S	
6.8	IP rating	*IP*	Refer to Particular specification	
7	**AIR CONDITIONING MCC'S ROOM**			
7.1	Manufacturer			
7.2	Model			
7.3	Rating			
7.4	Type			
7.5	Number of units			
8	**DATA SHEET**	*Yes/No*		

LV SWITCHGEAR AND CONTROLGEAR ASSEMBLIES - LOCAL CONTROL PANELS				
Item no.	**Description**	**Units**	**Specified**	**Offered**
1	**GENERAL**			
1.1	Distribution Board Manufacturer			
1.2	Control Voltage	230V/ 24VDC	Refer to PS	
	-			
2	**CONSTRUCTION REQUIREMENTS**			
2.1	Steel Work Manufacturer			
2.2	Form of Internal Separation		1	
2.3	Material of Construction		3CR12	
2.4	Ingress Protection (doors closed)	*IP*	54	
2.5	Method of Installation		Floor	
2.6	Epoxy Powder Coated	*Yes / No*	Yes	
2.7	Colour of Assembly			
2.8	Size of Panel	*HxWxD*		
2.9	Spare Space Required	*%*	5	
2.10	Access	*Back / Front / Side*	Front	
2.11	Cable Entry	*Top / Bottom*	Top	
2.12	Doors / Removable Panels		Doors	
2.13	Door Locks	*Yes / No*	Yes	
2.14	Door Locks - Type			
2.15	Door Locks - Material		Refer to PS	
2.16	Incomer Section Required	*Yes / No*	Yes	
2.17	Corrosion protection		Yes	
2.18	Gland Plates		3CR12, Not painted	

3	**ELECTRICAL COMPONENTS**			
3.1	**Moulded Case Circuit Breakers**	-	-	
3.1.1	Manufacturer		Refer to PS	
3.1.2	Type		Refer to PS	
3.1.3	Model		Refer to PS	
3.1.4	Rated Current	*A*	Refer to PS	
3.1.5	Service short-circuit breaking capacity (Ics)	*kA*	Refer to PS	
3.1.6	Overload release		Refer to PS	
3.1.7	Short-circuit release		Refer to PS	
3.2	**Miniature Circuit Breakers**	-	-	
3.2.1	Manufacturer		Refer to PS	
3.2.2	Type		Refer to PS	
3.2.3	Model		Refer to PS	
3.2.4	Rated Current	*A*	Refer to PS	
3.2.5	Service short-circuit breaking capacity (Ics)	*kA*	Refer to PS	
3.2.6	Tripping Curve		Refer to PS	
3.3	**Fuse-Switch-Disconnector**	-	-	
3.3.1	Manufacturer	Refer to PS	Refer to PS	
3.3.2	Model	Refer to PS	Refer to PS	
3.4	**High Rupture Capacity (HRC) Fuse Links**	-	-	
3.4.1	Manufacturer		Refer to PS	
3.4.2	Model		Refer to PS	
3.5	**Surge Arrestors**	-	-	

3.5.1	Power Circuits - Manufacturer	Refer to PS	Refer to PS	
3.5.2	Power Circuits - Model	Refer to PS	Refer to PS	
3.5.3	Power Circuits - Rating	*kA*	Refer to PS	
3.5.4	Remote Indication	*Yes / No*	Refer to PS	
3.5.5	Control Circuits - Manufacturer		Refer to PS	
3.5.6	Control Circuits - Model		Refer to PS	
3.5.7	Remote Indication	*Yes / No*	Refer to PS	
3.6	**Contactors**	-	-	
3.6.1	Manufacturer		Refer to PS	
3.6.2	Model		Refer to PS	
3.6.3	Contactor rating		Refer to PS	
3.6.4	Coordination		Type 2	
3.7	**Overload Relays**	-	-	
3.7.1	Manufacturer		Refer to PS	
3.7.2	Type		Refer to PS	
3.7.3	Model		Refer to PS	
3.7.4	Rated Current	*A*	Refer to PS	
3.7.5	Resetable from front of Panel	*Yes / No*	Yes	
3.8	**Miniature Relays**	-	-	
3.8.1	Manufacturer		Refer to PS	
3.8.2	Model		Refer to PS	
3.9	**Control switches and pushbuttons**	-	-	
3.9.1	Manufacturer			

3.9.2	Model			
3.10	**Indicating Lamps**	-	-	
3.10.1	Manufacturer		Refer to PS	
3.10.2	Model		Refer to PS	
3.10.3	Type		LED	
3.11	**Control-Circuit and auxiliary supply transformer**			
3.11.1	Manufacturer		Refer to PS	
4	**FIELD E-STOP/START LOCAL CONTROL STATIONS**			
4.1	Method of Installation		Refer to PS	
4.2	Material of Construction		Refer to PS	
4.3	Manufacturer		Refer to PS	
4.4	Keyswitch Required	*Yes / No*	No	
4.5	IP rating	*IP*	refer to the particular	
			specification	
5	**DATA SHEET**	*Yes/No*	Yes	

STREETLIGHTS				
Item no.	**Description**	**Units**	**Specified**	**Offered**
4	**HIGH MAST**			
4.1	Manufacturer		Beka or similar and approved	
4.2	Type			
4.3	Power	*W*	135	
4.4	Lamp Type	*LED*	LED	
4.5	Switching		Timer	
5	**HIGH MAST**			
5.1	Material	*GRP / Steel*	Refer to PS	
5.2	Manufacturer /Supplier		BEKA or similar and approved	
5.3	Height		15m	
6	**DATA SHEET**	*Yes/No*	Yes	

CONTROL, INSTRUMENTATION AND DATA CABLES				
Item no.	**Description**	**Units**	**Specified**	**Offered**
1	**CONTROL CABLES**			
1.1	Manufacturer			
1.2	Size (minimum size)	*mm²*	Refer to BOQ	
1.3	Rated Voltage	*V*	24VDC/230VAC	
1.4	Number of Cores	*No*	See Project Specs and BOQ	
1.5	Size	*mm²*		
1.6	Conductor Type	*Cu/Al*		
1.7	Cable Type			
1.8	Full Load Current	*A*		
1.9	Armouring	*Yes/No*	Yes, SWA	
2	**INSTRUMENTATION CABLES**			
2.1	Manufacturer			
2.2	Rated Voltage	*V*	24VDC/230VAC	
2.3	Size (minimum size)	*mm²*	Refer to BOQ	
2.4	Cable Type		Twisted Pair	
2.5	Screened		Individually and Overall	
			(Aluminium)	
2.6	Armouring	*Yes/No*	Yes / SWA	
3	**WIRE MESH CABLE TRAY**			
3.1	Manufacturer			
3.2	Type			
3.3	Material		(outdoors) / Galvanised	
			(outdoors) / Galvanised	

			Steel (indoors)	
3.4	Duty	Heavy / Medium	Medium	
3.5	Application		Instrumentation Cables	
4	**FIBRE OPTIC**			
4.1	Manufacturer			
4.2	Type		Single Mode	
4.3	Armouring	Yes/No	Yes, for all outdoor and	
			exposed cables	
4.3	Cores	No.	Refer to BOQ	
4.4	Termination Type		ST / Industrial LC	
4.7	Cable Category		min OM 2	
4.8	Modal Bandwidth	*MHz.km*	min 500 / 500	
5	**ETHERNET COPPER CABLES**			
5.1	Manufacturer			
5.2	Type		CAT6	
5.3	Armouring	Yes/No	Yes	
5.4	Termination Type		Industrial Earthed RJ45	
6	**FIELDBUS CABLING**			
6.1	Fieldbus Protocol			
6.2	Manufacturer			

PROGRAMMABLE LOGIC CONTROLLER				
Item no.	**Description**	**Units**	**Specified**	**Offered**
1	**PROGRAMMABLE LOGIC CONTROLLERS**			
1.1	Manufacturer		Refer to PS	
1.2	Model		Refer to PS	
1.3	Digital Inputs	No.		
1.4	Digital Outputs	No.		
1.5	Analogue Inputs	No.		
1.6	Analogue Outputs	No.		
1.7	Fieldbus interface	Yes/No	Yes	
1.8	Fieldbus protocol	E.g. Profibus,		
		Modbus		
1.9	ASI Bus interface	Yes/No	No	
1.7	Spare I/O	%	10%	
1.8	Ports			
1.8.1	Ethernet	No.		
1.8.2	Serial	No.		
1.8.3	Other	No.		
1.9	Software			
1.10	All engineering software included with PLC	*Yes / No*	Yes	
1.11	Annual Software License renewal required	*Yes / No*	No, should be once	
			off fee	
1.12	Programming Language		Refer to PS	
1.13	Backplate		Refer to PS	
			I/O module	
1.14	**Datasheets included with tender**	***Yes / No***	Yes	
		-		

2	**PLC PANEL**			
2.1	Enclosure Material		inside MCC	
2.2	Enclosure Colour		Orange	
2.3	Enclosure Rating	*IP*	Refer to PS	
2.4	Enclosure Mounting	*Floor Standing / wall mounted*	Floor Standing	
2.5	Supply and Control Circuit Voltages	*V*	230V AC	
2.6	Wire Colours			
2.7	Termination Preferences		Phoenix screw terminals	
			(or approved equivalent)	
2.8	Glanding preferences		Pratley (or approved equivalent)	
2.9	Power Supply Unit vendor preferences		Phoenix (or approved equivalent)	
2.10	Panel light required	*Yes / No*	Yes, LED	
2.11	Socket outlet required	*Yes / No*	Yes	
2.12	Physical spare space	*%*	Refer to PS	-
		-		-
3	**HUMAN MACHINE INTERFACE (HMI)**			
3.1	Manufacturer		Refer to PS	
3.2	Model		Refer to PS	
3.3	Screen Size	*Inches*	Refer to PS	
3.1	Screen Type	Colour/		
		Monochrome	Refer to PS	
3.2	Resolution	Pixels	Refer to PS	
3.5	Touch Screen	*Yes / No*	Yes	
3.6	Type of Touch Screen	*Capacitive/*		
		Resistive	Refer to PS	
3.7	Touch Screen grid size		Refer to PS	

3.3	Backlight		Refer to PS	
3.5	Memory (Flash EPROM)		Refer to PS	
3.6	Data Backup (SRAM)		Refer to PS	
3.7	Interfaces Protocol		Refer to PS	
3.8	Interface Port		Refer to PS	
3.9	Sound (for Alarm)		Refer to PS	
3.10	Data Transfer		Refer to PS	
3.11	Printer Port		Refer to PS	
3.12	Enclosure Rating	*IP*	Refer to PS	
3.13	Position of Installation	*Inside Panel /*		
		Flush Fronted /		
		Front Access	Flush Fronted	
3.14	Software			
3.15	**Datasheets included with tender**	***Yes / No***	**Yes**	
4 UPS				
4.1	Manufacturer			
4.2	Model			
4.3	Place of manufacture			
4.4	Type		Industrial inline double	
			conversion with full	
			static bypass; floor	
			standing box type	
4.5	Power	W	Refer to PS	
4.6	Backup Time	min	Refer to PS	
4.7	Output Voltage	V	230V +-5%	

4.8	Nominal Frequency	Hz	50	
4.9	Output Waveform		Pure sine wave	
4.9	Number of Phases	1 or 3	Refer to PS	
4.10	Communication		Serial/Ethernet	
4.11	Battery Life	Years		
4.12	Battery Type		Refer to PS	
4.13	**Datasheets included with tender**	***Yes / No***	**Yes**	
5	**NETWORK SWITCHES**			
5.1	Manufacturer			
5.2	Model			
5.3	Type		Industrial	
5.4	Ports - RJ45	*No.*		
5.5	Fibre ports - SFP	*No.*	Refer to PS	
5.6	Rack mounted	*Yes/No*	DIN rail box type	
5.7	Power Supply	*VAC*	230V	
5.8	Speed	*Mbit*	1000	
5.9	**Datasheet included with tender**	***Yes / No***	**Yes**	
6	**FIELDBUS GATEWAYS (if applicable)**			
6.1	Manufacturer			
6.2	Model			
6.3	Type			

INSTRUMENTATION				
Item no.	**Description**	**Units**	**Specified**	**Offered**
2	**TURBINE FLOW METER**			
2.1	Manufacturer			
2.2.	Model			
2.3	Pipe Diameter	*mm / DN*	Refer to mechanical spec	
2.4.	Flow range	m^3/hr	Refer to PS	
2.5	Process Connection		Refer to PS	
2.6.	Number of Relay outputs	*No.*		
2.7	Industrial Ethernet Enabled	*Yes / No*	No	
2.8.	Local Indication Required	*Yes / No*	Yes	
2.9	Surge Protection Required	*Yes / No*	Yes	
2.10	**Additional datasheet from manufacturer included with tender for each flow meter type**	***Yes / No***	**Yes**	
8	**LEVEL METER : ULTRASONIC TYPE**			
8.1	Manufacturer		Endress Hausser,	
			similar or equivalent	
8.2	Sensor Model		Refer to PS	
8.3	Transmitter Model		Refer to PS	
8.4	Number of Relay outputs	*No.*	Refer to PS	
8.5	Level Range	m	Refer to PS	
8.6	Accuracy	%	Refer to PS	
8.7	Resolution	%/mm	Refer to PS	
8.8	Repeatability	%	Refer to PS	
8.9	Dead band	%	Refer to PS	
8.10	Ambient temperature fluctuation	%/span/10°C	Refer to PS	

8.11	Industrial Ethernet Enabled	*Yes / No*	No	
8.12	Surge Protection Required	*Yes / No*	No	
8.13	Local Indication Required	*Yes / No*	No	
8.14	**Additional datasheet from manufacturer**			
	included with tender for each ultrasonic level			
	meter type	***Yes / No***	**Yes**	
9.11	Industrial Ethernet Enabled	*Yes / No*	Yes	
9.12	Surge Protection Required	*Yes / No*	Yes	
9.13	Local Indication Required	*Yes / No*	Yes	
9.14	**Additional datasheet from manufacturer**			
	included with tender for each hydrostatic level			
	meter type	***Yes / No***	**Yes**	
16	**SURGE PROTECTION**			
16.1	Instrument Power Supply Circuits - Manufacturer			
16.2	Instrument Power Supply Circuits - Model			
16.3	Instrument Signal Loop - Manufacturer			
16.4	Instrument Signal Loop Circuits - Model			
16.5	Instrument Transducer Loop - Manufacturer			
16.6	Instrument Transducer Loop Circuits - Model			
17	**INSTRUMENT CONTROLLER KIOSKS**			
17.1	Manufacturer			
17.2	Material of Construction: 1.6mm Mild Steel /		2mm 3CR12 minimum	
	2.0mm Mild Steel / Electro Galvanized /			
	Stainless Steel / 3CR12 / Fibre Glass			

17.3	Epoxy Powder Coated	*Yes / No*	Yes	
17.4	Colour		Electric Orange	
17.5	IP Rating (Indoor)	*IP*	54	
17.6	IP Rating (Outdoor)	*IP*	54	
17.6	Vent Plug	*Yes/No*	Yes	

TENDERER

....
Name Date

....
Position Signature

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

Telephone : .....

END OF SECTION

C1 AGREEMENT AND CONTRACT DATA

RLM/RWST/OMM/0101/2024/25 - RE-ADVERT: APPOINTMENT OF A CONTRACTOR FOR THE CONSTRUCTION OF BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

CONTRACT
PART 1 (OF 4): 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 in respect of the following works:

CONTRACT No.: RLM/RWST/OMM/0101/2024/25 - RE-ADVERT: CONSTRUCTION OF BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

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

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

The offered Total of the Prices inclusive of Value Added Tax is

.....Rand (in words)

R ..... (in figures)

This Offer may be accepted by the Employer by signing the Acceptance part of this Form of Offer and Acceptance and returning one copy of this document to the Tenderer before the end of the period of validity stated in the Tender Data, whereupon the Tenderer becomes the party named as the Contractor in the Conditions of Contract identified in the Contract Data.

For the Tenderer:

Signature(s) _____ _____

Name(s) _____ _____

Capacity _____ _____

Name and address of organisation:

_____

_____

Signature and Names of witnesses:

Signature(s) _____ _____

Name(s) _____ _____

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 T2 Returnable documents

- Section T2.1 List of Returnable Documents
- Section T2.2 Returnable Schedules
- Section T2.3 Technical Schedules

Part C1 Agreements and Contract Data, (which includes this agreement)

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 Parts C1 to C4 above.

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Tender Schedules as well as any changes to the terms of the Offer agreed by the Tenderer and the Employer during this process of Offer and Acceptance, are contained in the Schedule of Deviations attached to and forming part of this Agreement. No amendments to or deviations from said documents are valid unless contained in this Schedule, which must be duly signed by the authorised representative(s) of both parties.

The Tenderer shall within two weeks after receiving a completed copy of this Agreement, including the Schedule of Deviations (if any), contact the Employer's agent (whose details are given in the Contract Data) to arrange the delivery of any bonds, guarantees, proof of insurance and any other documentation

to be provided in terms of the Conditions of Contract identified in the Contract Data, or just after the date this Agreement comes into effect. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this Agreement.

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

For the Employer:

Signature(s) _____ _____

Name(s) _____ _____

Capacity _____ _____

Name and address of organisation:

_____

_____

Signature and Names of witnesses:

Signature(s) _____ _____

Name(s) _____ _____

Date _____

SCHEDULE OF DEVIATIONS

Notes:

1. The extent of deviations from the Tender Document issued by the Employer prior to the Tender closing date is limited to those permitted in terms of the Conditions of Tender.
2. The Tenderer covering letter shall form part of the final Contract Document. Should any matter in such letter, which constitutes a deviation as aforesaid become the subject of agreements reached during the process of Offer and Acceptance, the outcome of such agreement shall be recorded here.
3. Any other matter arising from the process of Offer and Acceptance either as a confirmation, clarification or change to the Tender Documents and which it is agreed by the Parties becomes an obligation of the Contract shall also be recorded here.
4. Any change or addition to the Tender Documents arising from the above agreements and recorded here shall also be incorporated into the final draft of the Contract.

1. **Subject** .....
   Details .....

2. **Subject** .....
   Details .....

3. **Subject** .....
   Details .....

4. **Subject** .....
   Details .....

5. **Subject** .....
   Details .....

6. **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 the amendments to the documents listed in the Tender Data and Addenda thereto as listed in the Tender Schedules, as well as any confirmation, clarification or change to the terms of the offer agreed by the Tenderer and the Employer

during this process of Offer and Acceptance.

It is expressly agreed that no other matter whether, oral communication or implied during the period between the issue of the Tender Documents and the receipt by the Tenderer of a completed signed copy of this Agreement shall have any meaning or effect in the Contract between the parties arising from this Agreement.

For the Tenderer:

Signature(s) _____ _____

Name(s) _____ _____

Capacity _____ _____

Name and address of organisation:

_____

Signature and Names of witnesses:

Signature(s) _____ _____

Name(s) _____ _____

Date _____

For the Employer:

Signature(s) _____ _____

Name(s) _____ _____

Capacity _____ _____

Name and address of organisation:

Signature and Names of witnesses:

Signature(s) _____ _____

Name(s) _____ _____

Date _____

C1.2 CONTRACT DATA

C1.2.1 GENERAL CONDITIONS OF CONTRACT

The General Conditions of Contract applicable to this Contract shall be the *Conditions of Contract for Construction – for Building and Engineering Works Designed by the Employer (*FIDIC (Red Book) *First Edition, 1999)*, which shall be read together with the Variations and Additions to the Conditions of Contract (referred to as Particular Conditions of Contract) as well as the Data provided by Employer and the Contractor.

Tenderers, Contractors and Subcontractors shall obtain their own copies of the abovementioned document for tendering purposes and for use for the duration of the Contract from the International Federation of Consulting Engineers (FIDIC) (refer to website www.fidic.org) and shall bear all expenses in this regard.

The General Conditions make reference to the Appendix to Tender and Particular Conditions (contained in the Contract Data) which together with these conditions collectively describe the risks, liabilities and obligations of the contracting parties and the procedures for the administration of the Contract. The Contract Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the general conditions of contract.

The General Conditions shall be read in conjunction with the variations, amendments and additions set out in the Appendix to Tender and Particular Conditions below. Each item of data given below is cross-referenced to the Clause or Sub-Clause in the General Conditions to which it mainly applies.

C1.2.2 VARIATIONS AND ADDITIONS TO THE GENERAL CONDITIONS OF CONTRACT (PARTICULAR CONDITIONS)

In terms of Clause 1(1) of the **General Conditions of Contract for Building and Engineering Works Designed by the Employer – FIDIC (Red Book) First Edition (1999)**, the following Particular Conditions shall apply to the Contract. Certain standard forms of agreement that are contained in the FIDIC Red Book are replaced by new forms of agreement bound into this document.

CLAUSE/ SUB-CLAUSE	PARTICULAR CONDITION
1.1.1.1	*Replace this Sub-Clause with*: "**Contract**" means the Form of Offer and Acceptance, Contract Data, these Conditions, the Specifications, the Drawings, the Schedules, and the further documents (if any), which are listed in the Form of Offer and Acceptance, and further includes drawings and documents or parts thereof, which any of the aforesaid documents incorporate by reference.
1.1.1.2	*Replace this Sub-Clause with*: "**Contract Agreement**" means the document called *C1.1 Form of Offer and Acceptance*.
1.1.1.3	*Replace the Sub-Clause with*: "**Letter of Acceptance**" means that section of form C1.1 Form of Offer and Acceptance called 'Acceptance'.
1.1.1.4	*Replace the Sub-Clause with*: "**Letter of Tender**" means that section of form C1.1 Form of Offer and Acceptance called 'Offer'.
1.1.1.5	*Replace the Sub-Clause with*: "**Specifications**" means the document entitled Scope of Works, as included in the Contract, and any additions and modifications to the Scope of Work in accordance with the Contract. Such document specifies the Works.
1.1.1.7	*Replace the Sub-Clause with*: "**Schedules**" means the document(s) entitled Tender Schedules, completed by the Contractor and submitted with his Tender Offer, as included in the Contract. Such document(s) may include the Bill of Quantities, data, lists and schedules of rates and/or prices.
1.1.1.8	*Replace the Sub-Clause with*:

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

CLAUSE/ SUB-CLAUSE	PARTICULAR CONDITION
	"**Tender**" means that section of form C1.1 Form of Offer and Acceptance called 'Offer' and all other documents which the Contractor submitted as Returnable Documents, as included in the Contract.
1.1.1.9	*Replace the Sub-Clause with*: "**Appendix to Tender**" means the completed section entitled Appendix to Tender included in this Contract Data.
1.4	**Law and Language** The law of the Contract shall be the law of the Republic of South Africa. The parties hereby consent to the jurisdiction of the High Court of South Africa (Gauteng local division) in respect of any proceedings instituted under this Contract.
1.5	**Priority of Documents** *Replace the Sub-Clause with*: "The documents forming the Contract are to be taken as mutually explanatory of one another. For the purposes of interpretation, the priority of the documents shall be in accordance with the following sequence: (a) the Form of Offer and Acceptance. (b) the Appendix to Tender within the Contract Data. (c) the Particular Conditions within the Contract Data. (d) the General Conditions of Contract. (e) the Specifications in descending order: Project Specification, Particular Specification, Standard Specification. (f) the Drawings. (g) the Schedules. (h) any other documents forming part of Contract contained in the Scope of Work and the Site Information. All Addenda, if any, which modify the terms of the Tender Documents take precedence only over the document to which they relate. If an ambiguity or discrepancy is found in the documents, the Engineer shall issue any necessary clarification or instruction."
1.13	**Compliance with Laws** *Add the following at the end of this Sub-Clause*:

CLAUSE/ SUB-CLAUSE	PARTICULAR CONDITION
	The Contractor shall comply with the Occupational Health and Safety Specification prepared by the Employer in terms of the Construction Regulations, 2014 promulgated in terms of Section 43 of the Occupational Health and Safety Act (Act No. 85 of 1993). The Contractor shall submit its Health and Safety Plan to the Engineer within 14 days from the Commencement Date. Without limiting the Contractor's obligations in terms of the Contract, the Contractor shall before commencement of the Works or any part thereof, be in the possession of an approved Health and Safety Plan.
1.14	**Joint and Several Liability** *Add the following at the end of this Sub-Clause*: "(d) In case of a joint venture agreement the particular agreement which was included in the Tender and accepted by the Employer shall be incorporated in the Contract."
1.15	*Add the following new clause:* **Contractor's liability as mandatory** Notwithstanding any actions which the Employer may take, the Contractor accepts sole liability for due compliance with the relevant duties, obligations, prohibitions, arrangements and procedures imposed by the Occupational Health and Safety Act, 1993 (Act 85 of 1993), and all its regulations, including the Construction Regulations, 2014, for which he is liable as mandatory. By entering into this Contract it shall be deemed that the parties have agreed to the above provisions in terms of Section 37 (2) of the Act and shall complete and sign the Occupational Health and Safety Agreement in Section C1.4.
3.1	**Engineer's Duties and Authority** *At the end of Sub-Clause 3.1 add the following:* "(d) The Engineer shall obtain the specific approval of the Employer before carrying out the following duties in accordance with the Contract: (i) Giving notice of the Commencement Date in terms of Sub-Clause 8.1 [Commencement of Works]. (ii) Issuing an instruction in terms of Sub-Clause 8.8 [Suspension of Work] to suspend the progress of part or all of the Works. (iii) Instructing or approving a Variation in terms of Sub-Clause 13.1 [Right to Vary], the estimated effect of which will be to increase the Contract Price by an amount exceeding R250 000.

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	Provided that such approval by the Employer shall not be required for instructions or notices which, in the sole opinion of the Engineer, are required to meet an emergency or are otherwise required to ensure the safety or security of the Works or of any person or property."
3.2	**Delegation by the Engineer** *In the last paragraph, delete the text of sub-paragraph (b) and substitute:* "if the Contractor questions any certificate, determination, instruction, opinion or valuation of an assistant, the Contractor shall refer the matter to the Engineer, who shall, promptly confirm, reverse or vary the certificate, determination, instruction, opinion or valuation."
4.1	**Contractor's General Obligations** *At the end of the first paragraph, add:* "Although the Engineer has specified the equipment to be provided for tendering purposes, the Contractor shall be responsible for the detail design of all proprietary Plant and Materials in order to ensure that these are appropriately selected for their intended use and installed to meet the particular installation conditions on Site. When completed, the parts of the Works designed by the Contractor, to the extent specified in the Contract, shall be fit for the purposes for which the Works are intended." *After the third paragraph, add a new paragraph:* "The Contractor shall liaise and co-operate with the Engineer and his assistants and provide them with such access, information and facilities as they may reasonably require in order to enable them to perform their duties under the Contract." *Add the following to Sub-Clause 4.1(a):* "The Contractor's Documents shall include: (i) A Certificate of Stability of the Works signed by a registered Professional Engineer confirming that all such works have been designed in accordance with the appropriate codes of practice. (ii) Proof of registration and of adequate and current professional indemnity insurance cover held by the Contractor's designer(s) (iii) Design calculations should the Engineer request a copy thereof." *Add the following to Sub-Clause 4.1(b):* "Engineering drawings and workshop details (both signed by the relevant professional

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	engineer) shall be submitted in order to allow the Engineer to compare the design with the specified requirements and to record any comments he may have with respect thereto." *Add the following at the end of this Sub-Clause* "Unless otherwise stated in the Employer's Requirements or the Specification, each review period shall not exceed 21 days, calculated from the date on which the Engineer receives a Contractor's Document and the Contractor's notice. This notice by the Contractor shall state that the Contractor's Document is considered ready, both for review (and approval, if so specified) in accordance with this Sub-Clause and for use in the Contract. The notice shall also state that the Contractor's Document complies with the Contract, or the extent to which it does not comply. Execution of such part of the Works shall not commence prior to the expiry of the review periods for all the Contractor's Documents which are relevant to its design and execution. If the Engineer instructs that further Contractor's Documents are required, the Contractor shall prepare them promptly. Any such approval or consent, or any review (under this Sub-Clause or otherwise), shall not relieve the Contractor from any obligation or responsibility."
4.2	**Performance Security** *Add the following to the second paragraph:* "Guarantees submitted must be issued by either an insurance company duly registered in terms of the Short-Term Insurance Act, 1998 (Act 35 of 1998) or by a bank duly registered in terms of the Banks Act, 1990 (Act 94 of 1990) on the pro-forma referred to above. No alterations or amendments of the wording of the pro-forma will be accepted. The institution providing the performance security [Bank or Insurance Company] will be subject to the sole approval of the Employer."
4.4	**Sub-contractors** *Add the following to this Sub-Clause:* "The Contractor shall employ the specific Sub-Contractors proposed in the Schedules [at tender stage] and included in the Contract and he shall include these Sub-Contractor in his arrangements for the execution of the Works."

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4.12	**Unforeseeable Physical Conditions** *At the end of the first paragraph add after" …climatic conditions…" the words* "…and conditions arising as a consequence of climatic conditions."
6.5	**Working hours** *Amend* "locally recognised days of rest" *to* "Sundays, South African statutory holidays and the annual December builder's break as recommended by the South African Federation of Civil Engineering Contractors (SAFCEC)".
8.4	**Extension of Time due to Abnormal Rainfall** *At the end of sub-paragraph (c), add:* "including conditions arising as a consequence of exceptionally adverse climatic conditions, in excess of the number of working days' delay per annum as stated in the Appendix to Tender, which must be allowed for by the Contractor in his programme on a cumulative basis over the whole Contract period,". *Add the following to the end of this Sub-Clause:* "With reference to sub-paragraph (c) above the Contractor shall make allowance in his programmes (submitted pursuant to Sub-Clause 8.3 [Programme]) for delay to the progress of the whole of the Works or a Section due to climatic conditions or conditions arising as a consequence of climatic conditions for the number of working days as stated in the Appendix to Tender. Any delay in excess of the number of working days stated in the Appendix to Tender shall, for the purpose of this Sub-Clause, constitute exceptionally adverse climatic conditions. Provided that all such delays shall be recorded and agreed with the Engineer daily from the commencement to the conclusion of each occurrence and the allowance shall be cumulative over the entire Contract period up to the commencement of the Defects Notification Period for the whole of the Works. Extension of Time for Completion of the Contract in the event of abnormal rainfall shall only be allowed in accordance with the formula below. No additional Extension of Time for Completion caused by abnormal climatic conditions will be allowed, irrespective of the cause thereof or the effect it may have on the execution of the Works: $V = (N_w - N_n) + (R_w - R_n)/20$ *Where:* V = Extension of time in calendar days for the calendar month under consideration

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	N_w = Actual number of days during the calendar month under consideration on which a rainfall of 10mm and more is recorded R_w = Actual total rainfall in mm recorded during the calendar month under consideration N_n = Average number of days, derived from rainfall records, on which a rainfall of 10mm and more was recorded during the relevant calendar month as per the data tabulated hereinafter R_n = Average total rainfall in mm for the relevant calendar month, derived from rainfall records, as tabulated hereinafter Where the extension of time due to abnormal rainfall has to be calculated for portion of a calendar month, pro rata values shall be used. Should V be negative for any particular month, and should its absolute value exceed the corresponding value of N_n, then V shall be taken as being equal to minus N_n. The total extension of time to be granted shall be the algebraic sum of all the monthly extensions, less the amount of days allowed in the Appendix to Tender, provided that if this total is negative then the time for completion shall not be reduced due to subnormal rainfall. Rainfall records for the period of construction shall be taken on Site. The Contractor shall provide and install all the necessary equipment for accurately measuring the rainfall. The Contractor shall also provide, erect and maintain a security fence plus gate, padlock and keys at each measuring station, all at his own cost. The Engineer or his delegated assistant shall take and record the daily rainfall readings. The Contractor shall be permitted to attend these readings, in the company of the Engineer or his assistant. Access to the measuring gauge(s) shall at all times be under the Engineer's control. Notwithstanding anything to the contrary in the Contract, the Contractor shall not be entitled to an extension of the Time for Completion where he has not used all reasonable endeavours to prevent, reduce or mitigate the delay, including providing such temporary measures as may be necessary to enable work to continue and the Works and Contractor's Equipment to be protected during exceptionally adverse climatic conditions Notwithstanding anything contained elsewhere in the Contract no extension of the Time for Completion of the Works or any Section or part thereof on account of exceptionally adverse climatic conditions or conditions arising as a consequence of climatic conditions will be considered as cause for additional payment to the Contractor. The rainfall records applicable to this Contract are those recorded at Weather Station Rustenburg AGR 0511/672. The following values of N_n and R shall apply:

CLAUSE/ SUB-CLAUSE	PARTICULAR CONDITION

Month	R_n (mm)	N_n (days)
January	130,1	4
February	94,2	3
March	75,1	2
April	60,3	2
May	9,8	0
June	5,9	0
July	1,6	0
August	7,2	0
September	18,8	0
October	57,5	2
November	89,4	3
December	105,8	3
Total	655,7	19

13.8 Adjustment for Changes in Cost

Replace this Sub-Clause in its entirety with new heading **Contract Price Adjustment** for Civil, Mechanical and Electrical Plant.

Any reference to "Adjustment for Changes in Cost" in the Contract shall have the same meaning as Contract Price Adjustment.

"Except as hereinafter provided for in this Sub-Clause and subject to Clause 12.3, the rates and prices in the Contract shall be final and binding throughout the Contract.

Where in this Sub-Clause 13.8 reference is made to the indices published by Statistics South Africa or by the Steel and Engineering Industries Federation of South Africa (SEIFSA), such indices shall be final and binding on the Parties unless one of the Parties queries any such index to the engineer within 28 days of its final publication. The Engineer shall [at its sole discretion] employ its best endeavours to obtain clarification, ratification or modification to such index from Statistics South Africa or SEIFSA, whereupon the index shall become final and binding on the Parties. If no such clarification, ratification or modification is received within 90 days of the query to the Engineer then the last published index shall be final and binding on the Parties.

As sole compensation for any/all variations in the cost of labour and materials excluding any amount subject to variance in rate of exchange as per new Sub-Clause 13.9, from any cause whatsoever after the date of tendering, adjustment of the Contract Price shall be calculated for each monthly statement pursuant to Sub-Clause 14.3, the Statement at Completion pursuant to Sub-Clause 14.10 and the final Statement pursuant to Sub-Clause 14.11 in accordance with

CLAUSE/ SUB-CLAUSE	PARTICULAR CONDITION
	the provisions of this Sub-Clause as detailed below. If the Contractor fails to complete the Works within the Time for Completion, adjustment of prices thereafter shall be made using either (i) each index or price applicable on the date 30 days prior to the expiry of the Time for Completion of the Works, or (ii) the current index or price: whichever is more favourable to the Employer. Price adjustment of preliminary and general charges as measured under the schedule shall be as described under point (vi) of Sub-Section (b) Mechanical and Electrical Works. **Civil Engineering and Building Works** (i) The value of the Civil Engineering works portion of the certificate issued in terms of Clause 14.3 hereof, shall be increased or decreased by the amount obtained by multiplying "Ac" defined in (x) below by the Contract Price adjustment factor (f_1) determined according to the formula: $$f_1 = (1 - x)(a\frac{L_t}{L_o} + b\frac{P_t}{P_o} + c\frac{M_t}{M_o} + d\frac{F_t}{F_o} - 1)$$ In which the symbols have the following meaning: (ii) "x" shall be the proportion of "Ac" which is not subject to adjustment. This proportion shall be 0.15 (iii) "a", "b", "c" and "d" shall be the coefficients nominated by the Engineer in the Contract Data (Part C1.2.2: Appendix to Tender)), which are deemed, irrespective of the actual constituents of the work, to represent the proportionate value of respectively, labour, Contractor's Equipment, materials and fuel. The arithmetical sum of "a", "b", "c" and "d" shall in all cases be unity. "L" is the "Labour Index" and shall be the "Consumer Price Index" for the urban area nearest to the Site as specified by the Engineer in the Appendix to the Tender and as published in SAFCEC, P0141, Table A. (iv) "P" is the "Plant Index" and shall be the "Civil Engineering Materials, Mining and Construction Plant and Equipment Index" as published in SAFCEC, P0151.1, Table 4. (v) "M" is the "Materials Index" and shall be the "Civil Engineering Materials Total Index" as published in the SAFCEC, P0151.1, Table 6. (vi) "F" is the "Fuel Index" and shall be the "Diesel Fuel Index" as published in the SAFCEC, P0142.1, Table 1.

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	(vii) The suffix "o" denotes the base indices applicable to the base month which shall be the month prior to the month in which falls the closing date for the tender. (viii) The suffix "t" denotes the current indices applicable to the month in which falls the last day of the period to which the relevant payment certificate relates, which shall not be earlier than the twentieth day of the month unless otherwise agreed by the Engineer in writing. (ix) For the purpose of calculating the adjustment to the value of the relevant certificates, the amount "Ac" shall be determined by the formula: $Ac = T - S - D - E - Ap$ in which the symbols have the following meanings: (x) "T" shall be the total value of the portion of the certificate under consideration excluding any advance payments before the deduction of any retention monies, delay damages, or repayment of advances and before any adjustments made in terms of the Sub-Clause 13.8. (xi) "S" shall be the aggregate of (a), (b) and (c) referred to below and included in "T". (a) the value of any work done by Nominated Subcontractor/s and not subject to the Contractor price adjustment provision of the principal Contractor; (b) the value of any extra or additional work; (c) the value of any work done against Provisional Sums; where special arrangements for price adjustments in respect of these amounts were made and recorded at the time the work was ordered. (xii) "D" shall be the value of work included in "T" done at new rates or prices fixed in terms of Sub-Clause 12.3 where those rates or prices are not based on labour, Contractor's Equipment or material costs in force at the time of tendering. When new rates or prices are based on tendered rates or prices applicable at the base month of the indices, the value of work done at such new rates or prices shall not be included in the value of "D". (xiii) "E" shall be the amount included in "T" paid for any daywork executed at current rates plus percentage allowances as set out in Sub-Clause 13.6, where those rates are not based on Labour Contractor's Equipment or Material costs in force at the time of tendering and indicated in the Daywork Schedule which is included in **Volume 1** hereof. Generally when Daywork rates are based on tendered rates or on current costs de-escalated to the base month of the indices, the value of work done at these rates shall not be included in the value of "E". (xiv) "Ap" shall be the sum of "Ac" amounts determined in terms of this Sub-Clause for all

CLAUSE/ SUB-CLAUSE	PARTICULAR CONDITION
	certificates issued in accordance with Clause 14 preceding in time the certificate under consideration. (xv) Save only for additional work or variations ordered to be carried out after the Time for Completion, (as extended, if applicable under Sub-Clause 8.4) if the Contractor fails to complete the Works within the Time for Completion, adjustment of prices thereafter shall be made using either (i) each index or price appliance on the date 49 days prior to the expiry of the Time for Completion of the Works, or (ii) the current index or price: whichever is more favourable to the Employer. (xvi) If any index relevant to any particular certificate is not known at the time the certificate is valued the latest available index shall be used and an adjustment made when the index relevant to that particular certificate is published.
13.9	***Adjustment in prices due to Variations in Rates of Exchange [ROE]*** *Add new Sub Clause 13.9:* "Where prices are liable to be affected by variations in Rates of Exchange [RoE], including devaluation of currencies, the Contractor shall state: (1) the specific items, (2) the affected amounts, (3) the applicable foreign currency, (4) the associated rate of exchange, (5) the date at which the rates of exchange were determined and (6) the value in South African Rand in his Proposal. Provided this information is furnished in the tender and the Contract is completed within the Time for Completion, the Employer will accept for its account in respect of the amounts involved, as a result of the variations between the Rate of Exchange stated in the tender, the forward cover rate or the actual Rate of Exchange. Any increase/decrease in these rates must be substantiated with a bank certificate. The Contractor will be required to provide the Engineer with a quotation to procure forward cover on all Plant subject to ROE [within 30 days after the Commencement Date] for consideration by the Employer. Failure to provide such quotation will transfer the risk of the full cost impact of any Rate of Exchange fluctuation on the Contractor. The Employer may elect to either pay the forward cover costs or the actual change in costs as a result of the fluctuation of the ROE. Plant listed as subject to Rate of Exchange will not qualify for Contract Price Adjustment in terms of Sub Clause 13.8.

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14.5	**Plant and Materials intended for the Works** *Delete the second paragraph and replace with the following:* "The relevant plant and materials are all those plant and materials: (i) Brought to Site by or on behalf of the Contractor for incorporating into the Permanent Works, or (ii) Fabricated and stored at places other than the Site and agreed in writing by the Employer and the Contractor that it is intended for incorporating into the Permanent Works, provided that (iii) The Contractor has produced documentary evidence of ownership of such pant and materials and has delivered to the Employer an indemnity, approved in writing by the Employer, against any claim to or in respect of such plant and materials by reason of the Contractor's sequestration or liquidation, or of any defect in the Contractor's title to the plant and materials, and (iv) That the plant and materials shall immediately on delivery to Site or, immediately on the conclusion of the said written agreement, be deemed to have become the Employer's property and have been delivered to the Contractor to be held by him on behalf of the Employer, and (v) That the plant and materials are covered by the insurance specified in Sub Clause 18.2." *Delete Sub-Clause 14.5(b) and Sub-Clause 14.5(c)*
14.6	**Issue of Interim Payment Certificates** *Change* "28 days" *in the first paragraph to* "7 days".
14.7	**Payment** *Change* "56 days" *in sub-clause (b) to* "42 days".
14.8	*Add the following to this sub-clause*: No interest shall be payable to the Contractor on any Retention Money retained in terms of the Contract up to the limit of Retention Money.
17.2	**Contractor's Care of the Works** *Add the following at the end of this Sub-Clause:* The Contractor is required to insure the Works with SASRIA.

CLAUSE/ SUB-CLAUSE	PARTICULAR CONDITION
17.6	**Limitation of Liability** *Delete the second paragraph of Sub-Clause 17.6 and replace with:* "The total liability of the Contractor to the Employer, under or in connection with the Contract, other than under Sub-Clause 4.19 [Electricity, Water and Gas]", Sub-Clause 4.20 [Employer's Equipment and Free Issue Material], Sub-Clause 17.1 [Indemnities] and Sub-Clause 17.5 [Intellectual and Industrial Property Rights], and for any latent defects shall not exceed the Accepted Contract Amount. The Employer shall have no claim under this clause against the Contractor for latent defects which manifest itself later than 10 years after the issue of the Taking Over Certificate by the Engineer."
20.1	**Contractor's Claims** *Change* "28 days" *in the first and second paragraph to* "7 days".
20.6	**Arbitration** *Replace the first paragraph of this Sub-Clause with the following:* "Unless settled amicably, any dispute in respect of which the DAB's decision (if any) has not become final and binding shall be finally settled by arbitration in the Country in which the Site is located. Unless otherwise agreed by both Parties: a) the dispute shall be settled by a single arbitrator to be agreed upon between the Parties or, failing such agreement within 28 days after the request by either Party for arbitration on the matter, a person nominated by the President of the Association of Arbitrators (Southern Africa); b) arbitration shall take place in accordance with the Rules for the Conduct of Arbitrations issued by the Association of Arbitrators (Southern Africa) ; a) the arbitration shall be conducted in the language for communications defined in Sub-Clause 1.4 [*Law and Language*]; and d) the arbitrator shall, in his award, set out the facts and the provisions of the Contract upon which his award is based."

C1.2.3 APPENDIX TO TENDER

(CONTRACT DATA COMPLETED BY EMPLOYER)

Item	Clause	Entry
Employer's Name and Address	1.1.2.2 & 1.3	**Rustenburg Water Services Trust** Postal Address: PO Box 16 RUSTENBURG 0300 Physical Address: 1A Kock Street RUSTENBURG 0300
Engineer's Name and Address	1.1.2.4 & 1.3	**Rustenburg Consulting Consortium** Postal Address: PO Box 29 The Innovation Hub PRETORIA 0087 Physical Address: Allan Cormack Street, The Innovation Hub PRETORIA
Time for Completion of the Works	1.1.3.3	24 months max [730 calendar days] The maximum time for completion stated includes any/all builders holidays and non-working days.
Defects Notification Period	1.1.3.7	12 months [365 calendar days]
Electronic Transmission System	1.3	E-mail
Governing Law	1.4	Republic of South Africa

Item	Clause	Entry
Ruling language	1.4	English
Language of communications	1.4	English
Time for access to the Site	2.1	On the Commencement Date
Amount of Performance Security	4.2	10% of the Accepted Contract Amount (excl. VAT).
Normal working hours	6.5	Monday to Saturday from sunrise to sunset, not exceeding 45 hours/week
Number of working days delay to be allowed for in programme	8.4	60 calendar days belonging to the Employer for purposes of accommodating potential Employer's delays due to unforeseen circumstances and the application of the work permit.
Delay damages for the Works	8.7 & 14.15(b)	0.10% of the Accepted Contract Amount per calendar day
Maximum Amount of Delay Damages	8.7	Limited to 10% of Accepted Contract Amount
Percentage for adjustment of Provisional Sums	13.5(b)	7.5% if not specifically stated
Adjustment for Changes in Cost	13.8	<u>Civil Works</u> The value of 'x' shall be 0.15. Values of coefficients: 'a' = 0.25 (labour) 'b' = 0.15 (plant) 'c' = 0.55 (materials) 'd' = 0.05 (fuel) <u>General</u> The base month shall be the month prior to the closing of tenders.
Advance Payment	14.2	Nil

Item	Clause	Entry
Percentage of retention	14.3	10% deduction A retention money guarantee *in lieu* of retention will not be accepted.
Limit of Retention Money	14.3	10% of Accepted Contract Amount
Minimum amount of Interim Payment Certificate	14.6	No minimum
Currency of payment	14.15	South African Rand (ZAR)
Periods for submission of insurance: (a) Evidence of insurance (b) Relevant policies	18.1	The Contractor shall be the insuring Party. 14 days 35 days
Minimum amount of third-party insurance	18.3	R 15 million per occurrence
Date by which the DAB shall be appointed	20.2	Ad Hoc appointment (If/when required by parties)
The DAB shall be	20.2	A single mutually agreed specialist adjudicator
Appointment (if not agreed) to be made by	20.3	The President of Consulting Engineers South Africa (CESA)

C1.2.4 APPENDIX TO TENDER (continued)

(CONTRACT DATA PROVIDED BY THE CONTRACTOR)

Item	Clause	Entry
Contractor's Name and Address	1.1.2.3 & 1.3	....
Time for Completion (offered)	1.1.3.3	..... Months (subject to acceptance by Employer)
Contract Price Adjustment	13.8	For Civil Works: x = 0.15 Default / Contractor a (labour) = 0.25 ..... b (plant) = 0.15 ..... c (materials) = 0.55 ..... d (fuel) = 0.05 ..... 1.00 ..... *Above values must total to one (1).*
Special Materials	13.9 (new)	Special Materials or Items / Rate/Price at Base Month (a)..... ..... (b)..... ..... (c)..... ..... (d)..... ..... Method by which variations shall be determined: ....

Item	Clause	Entry
		…… ……
Items subject to rate of exchange variations	13.9 (new)	Only items indicated in the table below will qualify for adjustment in terms of this Sub-Clause

Sub-Clause 13.9 - Items subject to Adjustment in prices due to Variations in Rates of Exchange

Item	Amount (Rand)	Foreign Currency	Rate of Exchange [ROE]		Date
……	……	……	R 1.00 =	……	……
……	……	……	R 1.00 =	……	……
……	……	……	R 1.00 =	……	……
……	……	……	R 1.00 =	……	……
……	……	……	R 1.00 =	……	……
……	……	……	R 1.00 =	……	……
……	……	……	R 1.00 =	……	……
……	……	……	R 1.00 =	……	……

Signature ……

On behalf of ……

Date: ……

C1.3 FORM OF GUARANTEE

WHEREAS

RUSTENBURG WATER SERVICES TRUST
(hereinafter referred to as the "Employer"),

enters into a Contract RLM/RWST/OMM/0101/2024/25 with

. . . . . .
(hereinafter referred to as the "Contractor")

For *CONSTRUCTION OF BOSPOORT NORTH RESERVOIR AND ACCESS ROAD*

WHEREAS in terms of the General Conditions of the Contract the Contractor is required to furnish an acceptable security for the due and proper fulfilment by him of all his duties and obligations in terms of the Contract.

NOW THEREFORE, we the undersigned .....

..... [full names of authorized agent(s)]

and acting in my/our capacity as .....and as such duly authorized thereto, do hereby bind the said (hereinafter referred to as the "Guarantor") as guarantor and co-principal debtor in solidum for the sum of

R ..... (.....

.....)

for the due and proper fulfilment by the Contractor of all or any of his duties and obligations in terms of the said Contract.

The Guarantor further undertakes, in the event of the Contractor failing duly and properly to fulfil any of his duties and obligations in terms of the said Contract or in the event of termination of the Contract by the Employer in terms of the General Conditions of Contract, to
pay to the Employer the said sum of R ..... (.....

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

.....) or such portion thereof as may be required by the Employer, immediately upon receiving written demand from the Employer which written demand shall be addressed to the Guarantor at
(domicilium address)

.....

.....

The Guarantor further hereby renounces the benefits of the legal exceptions:

Exceptio non numerate pecuniae
Exception non causa debiti
Beneficium duobus vel pluribus reis debendi
Beneficium ordinis deu excussionis
Beneficium Divisionis

and all other defence which could be pleaded against the validity of this security, with the meaning and effect of which the Guarantor declares itself to be fully acquainted.

This undertaking shall remain in full force and effect up to and including the date of issue of the Performance Certificate, as provided for in the General Conditions of Contract, unless the Guarantor is advised in writing by the Employer of his intention to institute claims, and the particulars thereof, in which event this security shall remain in full force and effect until all such claims have been paid or liquidated.

This document is not negotiable or transferable.

SIGNED AT ..... on this ..... day of ..... 20 .....

.....
Signature of authorized agent(s)

.....
Full name and capacity of authorized agent(s)

AS WITNESSES:

1. ..... 2. .....

PERFORMANCE GUARANTEE

1. The Guarantor's liability shall be limited to the amount of the Guaranteed Sum
2. The Guarantor's period of liability shall be from and including the date of issue of this performance Guarantee and up to and including the Expiry Date or the date of issue by the Engineer of the Certificate of Completion of the Works or the date of payment in full of the Guaranteed sum, whichever occurs first. The Engineer and/or the Employer shall advise the Guarantor in writing of the date on which the Certificate of Completion of the Works has been issued.
3. The Guarantor hereby acknowledges that:

3.1 any reference in this Performance Guarantee to the Contract is made for the purpose of convenience and shall not be construed as any intention whatsoever to create an accessory obligation or any intention whatsoever to create a suretyship;

3.2 its obligation under this Performance Guarantee is restricted to the payment of money.

4. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor hereby undertakes to pay the Employer the sum certified upon receipt of the documents identified in 4.1 to 4.3:

4.1 A copy of a first written demand issued by the Employer to the Contractor stating that payment of a sum Certified by the Engineer in an Interim or Final Payment Certificate has not been made in terms of the Contract and failing such payment within seven (7) calendar days, the Employer intends to call upon the Guarantor to make payment in terms of 4.2;

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

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

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

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

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

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

6. It is recorded that the aggregate amount of payments required to be made by the Guarantor in terms of 4 and 5 shall not exceed the Guarantor's maximum liability in term 1.
7. Where the Guarantor has made payment in term 5, the Employer shall upon the date of issue of the final Payment Certificate submit an expense account to the Guarantor showing how all monies received in terms of this Performance Guarantee have been expended and shall refund to the Guarantor any resulting surplus. All monies refunded to the Guarantor in terms of this Performance Guarantee shall bear interest at the prime overdraft rate of the Employer's bank compounded monthly and calculated from the date payment was made by the Guarantor to the Employer until the date of refund.
8. Payment by the Guarantor in terms of 4 or 5 shall be made within seven (7) calendar days upon receipt of the first written demand to the Employer.

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

9. Payment by the Guarantor in terms of 5 will only be made against the return of the original Performance Guarantee by the Employer.
10. The Employer shall have the absolute right to arrange his affairs with the Contractor in any manner which the employer may deem fit and the Guarantor shall not have the right to claim his release from this Performance Guarantee on account of any conduct alleged to be prejudicial to the Guarantor.
11. The Guarantor chooses the physical address as stated above for the services of all notices for all purposes in connection herewith.
12. This Performance Guarantee is neither negotiable nor transferable and shall expire in terms of 2, where after no claims will be considered by the Guarantor after it has expired.
13. This Performance Guarantee, with the required demand notices in terms of 4 or 5, shall be regarded as a liquid document for the purposes of obtaining a court order.
14. Where this Performance Guarantee is issued in the Republic of South Africa the Guarantor hereby consents in terms of Section 45 of the Magistrate's Courts Act No 32 of 1944, as amended, to the jurisdiction of the Magistrate's Court of any district having jurisdiction in terms of Section 28 of the said Act, notwithstanding that the amount of the claim may exceed the jurisdiction of the Magistrate's court.

Signed at…….

Date…….....

Guarantor's signatory (1)…….....

Capacity…….....

Guarantor's signatory (2)……...

Capacity…….

Witness signatory (1)……

Witness signatory (2)……

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

C1.4 OCCUPATIONAL HEALTH AND SAFETY AGREEMENT

AGREEMENT IN TERMS OF SECTION 37(2) OF THE OCCUPATION AL HEALTH ANDSAFETY ACT NO 85 OF 1993

THIS AGREEMENT is made between **RUSTENBURG WATER SERVICES TRUST (RWST)** (hereinafter called the Employer) of the one part, herein represented by:

_____

in his capacity as:_____

(hereinafter called the Contractor) of the other part, herein represented by _____

_____

in his capacity as: _____

duly authorized to sign on behalf of the Contractor.

WHEREAS the CONTRACTOR is the Mandatary of the EMPLOYER in consequence of an agreement between the CONTRACTOR and the EMPLOYER in respect of

CONTRACT NO: **RLM/RWST/OMM/0101/2024/25**

CONTRACT TITLE: **RE-ADVERT: CONSTRUCTION OF BOSPOORT NORTH RESERVOIR AND ACCESS ROAD**

for the construction, completion and maintenance of the works;

AND WHEREAS the EMPLOYER and the CONTRACTOR have agreed to enter into an agreement in terms of the provisions of Section 37(2) of the Occupational Health and Safety Act No 85 of 1993, as amended by OHSA Amendment Act No 181/1993 (hereinafter referred to as the ACT);

NOW THEREFORE the parties agree as follows:

1. The CONTRACTOR undertakes to acquaint the appropriate officials and employees of the contractor with all relevant provisions of the act and the regulations promulgated in terms thereof.

2. The CONTRACTOR undertakes to fully comply with all relevant duties, obligations and prohibitions imposed in terms of the ACT and Regulations: Provided that should the Employer have prescribed certain arrangements and procedures that same shall be observed and adhere to by the

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

CONTRACTOR, his officials and employees. The CONTRACTOR shall bear the onus of acquainting himself/herself/itself with such arrangements and procedures.

3. The CONTRACTOR hereby accepts sole liability for such due compliance with the relevant duties, obligations, prohibitions, arrangements and procedures, if any, imposed by the ACT and Regulations, and the CONTRACTOR expressly absolves the EMPLOYER and the Employer's CONSULTING ENGINEERS from being obliged to comply with any of the aforesaid duties, obligations, prohibitions, arrangements and procedures in respect of the work included in the contract.

4. The CONTRACTOR agrees that any duly authorized officials of the EMPLOYER shall be entitled, although not obligated, to take such steps as may be necessary to ensure that the CONTRACTOR has complied with his undertakings as more fully set out in paragraphs 1 and 2 above, which steps may include, but shall not be limited to, the right to inspect any appropriate site or premises occupied by the CONTRACTOR, or to take such steps it may deem necessary to remedy the default of the CONTRACTOR at the cost of the CONTRACTOR.

5. The CONTRACTOR shall be obliged to report forthwith to the EMPLOYER any investigations, compliant or criminal charge which may arise as a consequence of the provisions of the ACT and Regulations, pursuant to work performed in terms of this agreement, and shall, on written demand, provide full details in writing of such investigations, compliant or criminal charge.

Thus signed at _____ for and on behalf of the **CONTRACTOR**

on this the _____ day of _____ 20 ____ .

SIGNATURE: _____

NAME AND SURNAME: _____

CAPACITY:_____

WITNESSES: 1. _____

2. _____

Thus signed at _____ for and on behalf of the **EMPLOYER**

on this the _____ day of _____ 20 ____ .

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

SIGNATURE: _____

NAME AND SURNAME: _____

CAPACITY:_____

WITNESSES: 1. _____

2. _____

C2 PRICING DATA

RLM/RWST/OMM/0101/2024/25 - RE-ADVERT: APPOINTMENT OF A CONTRACTOR FOR THE CONSTRUCTION OF BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

C2.1 PRICING INSTRUCTIONS

1. GENERAL

These pricing instructions provide the Tenderer with guidelines and requirements with regard to the completion of the bill of quantities. The Schedule has to be completed in black ink and the tenderer is referred to the Tender Specifications in regard to the corrections of errors.

The Bill of Quantities shall be read with all the documents which form part of this Contract.

The following words have the meaning hereby assigned to them:

Unit	:	The unit of measurement for each item of work in terms of the Specifications and the Project Specifications
Quantity	:	The number of units for each item.
Rate	:	The payment per unit of work at which the tenderer tenders to do the work.
Amount	:	The product of the quantity and the rate tendered for an item.
Lump sum (L.Sum)	:	An amount tendered for an item, the extend of which is described in the Pricing Instructions, Bill of Quantities, the Specifications and the Project Specifications, but the quantity of work of which is not measured in any units.

Reference shall be made to the General and Special Conditions of Contract regarding Provisional and Prime Cost items

The Contractor shall determine the contract skills participation goals, expressed in Rand, which shall not be less than the sub-total multiplied by a percentage factor given in Table 2 in the Standard for the applicable class of construction works. This is indicated by the percentage factor in the Final Tender Summary section. Minimum Contract Skills Development Goal (CSDG) = sum Civil Engineering (Infrastructure) CE (0.25%) x Sub-total of the tender amount.

2. PAY ITEMS

The method of measurement published by the South African Bureau of Standards in Clause 8 of the Standardised Specifications for Civil Engineering Construction (SABS 1200) is applicable, subject to the variations and amendments contained in section C3.4.2.

Descriptions in the Bill of Quantities are abbreviated and comply generally with those in the Standard Specifications. The measurement and payment clause of each Standard Specification, read together with the relevant clauses of the Scope of Work, set out what ancillary or associated activities are included in the rates for the operations specified. Should any requirements of the measurement and payment clause of the applicable Standard Specification, or the Scope of Work, conflict with the terms of the Bill of Quantities, the requirements of the Standard Specification or Scope of Work, as applicable, shall prevail.

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

mm	=	millimetre	h	=	hour
m	=	metre	kg	=	kilogram
km	=	kilometre	t	=	ton (1000kg)
m²	=	square metre	No.	=	number
m².pass	=	square metre pass	sum	=	lump sum
ha	=	hectare	MN	=	meganewton
m³	=	cubic metre	MN.m	=	meganewton-metre
m³.km	=	cubic metre-kilometre	PC sum	=	Prime Cost Sum
l	=	litre	Prov sum	=	Provisional sum
kl	=	kilolitre	%	=	per cent
MPa	=	megapascal	kW	=	kilowatt
kPa	=	kilopascal	wt	=	wall thickness
dia	=	diameter			

3. QUANTITIES

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

3.2 The quantities set out in the Bill of Quantities are the estimated quantities of the Works, and do not necessarily represent the actual amount of work to be done. The quantities certified for payment, and not the quantities given in the Bill of Quantities, shall be used for determining payments to the Contractor. The Contract Price for the completed contract shall be computed from the actual quantities of work done, valued at the relevant unit rates and prices.

4. RATES

4.1 The prices and rates to be inserted in the Bill of Quantities are to be full inclusive prices for the work described under the several items. Such prices and rates shall cover all costs and expenses that may be required in and for the execution of the work described, and shall cover the cost of all general risks, liabilities, and obligations set forth or implied in the documents on which the tender is based, as well as overhead charges and profit. Reasonable prices shall be inserted as these will be used as a basis for assessment of payment for additional work that may have to be carried out.

4.2 A price or rate is to be entered against each item in the Bill of Quantities, whether the quantities are stated or not. An item against which no price is entered or where a word or phrase such as "included" or "provided elsewhere" will be accepted as a rate of nil (R0,00) having been entered against such items and covered by the other prices or rates in the schedule.

Any work executed to which such a pay item applies, shall be measured under the appropriate items in the Bill of Quantities and valued at a rate of nil (R0,00). The rate of nil shall be valid irrespective of any change in the quantities during the execution of the Contract.

4.3 The Tenderer shall fill in a rate against all items where the words "rate only" appears in the amount column. The intention is that, although no work is foreseen under such item and no quantities are consequently given in the quantity column, the tendered rate shall apply should work under this item be actually required.

4.4 Except where rates only are required, the Tenderer shall insert all amounts to be included in his total tendered price in the "Amount" column and show the corresponding total tendered price.

4.5 All rates and sums of money quoted in the Bill of Quantities shall be in rands and whole cents. Fractions of a cent shall be discarded.

4.6 All prices and rates entered in the Bill of Quantities must be **excluding Value Added Tax (VAT)**. VAT will be added last on the summary page of the Bill of Quantities.

4.7 Should excessively high unit prices be tendered, such prices may be of sufficient importance to warrant rejection of a tender by the Employer.

4.8 Where the Contractor is required to furnish detailed drawings and designs or other information in terms of the Contract Documents, all costs thereof shall be deemed to have been provided for

and included in the unit rates and sum amounts tendered for the items scheduled in the Bill of Quantities, and separate additional payments will not be made.

4.9 The Contractor shall determine the Contract Skills Development Goal (CSDG), expressed in Rand, which shall not be less than the sub-total multiplied by a percentage (%) factor given in Table 2 of the Standard for Developing Skills through Infrastructure Contracts (Government Gazette No 48491 of 28 April 2023) for applicable class of construction works.

END OF SECTION

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 A	**SCHEDULE: 1.1** **PRELIMINARY AND GENERAL**				
		FIXED-CHARGE ITEMS				
1.1.1	8.3.1	Contractual Requirements	sum			
		Establishment of Facilities on Site				
	8.3.2	.1 Facilities for the Engineer Dwg LSO-086-M-TD02				
1.1.2	PSAB2/7	(a,f,h) Furnished offices, latrines and carports	sum			
1.1.3	PSAB3	(b) Telephone (Telkom landline)	sum			
1.1.4	PSAB1	(c) Nameboards	no			
1.1.5	PSAB5	(d) Survey assistant	sum			
1.1.6	PSAB6	(e) Survey equipment	sum			
1.1.7	PSAB4.2	(g) Laboratory equipment	sum			
	8.3.2	.2 Facilities for the Contractor				
1.1.8		(a) Offices and storage sheds	sum			
1.1.9		(b) Workshops	sum			
1.1.10		(c) Laboratories	sum			
1.1.11		(d) Living accommodation	sum			
1.1.12		(e) Ablution and latrine facilities	sum			
1.1.13		(f) Tools and equipment	sum			
1.1.14		(g) Water supplies, power and communication	sum			
1.1.15		(h) Dealing with water (Sub-clause 5.5)	sum			
1.1.16		(i) Access (Sub-clause 5.8)	sum			
1.1.17		(j) Plant	sum			
1.1.18	8.3.3	Other fixed-charge obligations	sum			
1.1.19	8.3.4	Removal of Contractor's and Engineers site establishment on completion	sum			
	8.3.5	Occupational Health and Safety				
1.1.20	PSA7	Compliance with Occupational Health and Safety Act (Act 85 of 1993) and its regulations and with the Employers Health and Safety Specification	sum			
	8.3.6	Environmental Managemant				
1.1.21	PSA9	Compliance with Environmental Management plan	sum			
					Carried Forward	

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
		TIME-RELATED ITEMS				
1.1.22	8.4.1	Contractual requirements	sum			
		Operation and maintenance of facilities on the Site for the duration of construction				
	8.4.2	.1 Facilities for the Engineer Dwg LSO-086-M-TD02				
1.1.22	PSAB2/7	(a,f,h Furnished offices, latrines and carports	sum			
1.1.23	PSAB3	(b) Telephone (Telkom landline)	sum			
1.1.24	PSAB1	(c) Nameboards	sum			
1.1.25	PSAB5	(d) Survey assistant	sum			
1.1.26	PSAB6	(e) Survey equipment	sum			
1.1.27	PSAB4.2	(g) Laboratory equipment	sum			
	8.4.2	.2 Facilities for the Contractor				
1.1.28		(a) Offices and storage sheds	sum			
1.1.29		(b) Workshops	sum			
1.1.30		(c) Laboratories	sum			
1.1.31		(d) Living accommodation	sum			
1.1.32		(e) Ablution and latrine facilities	sum			
1.1.33		(f) Tools and equipment	sum			
1.1.34		(g) Water supplies, power and communication	sum			
1.1.35		(h) Dealing with water (Sub-clause 5.5)	sum			
1.1.36		(i) Access (Sub-clause 5.8)	sum			
1.1.37		(j) Plant	sum			
1.1.38	8.4.3	Supervision for duration of construction	sum			
1.1.39	8.4.4	Company and head office overhead costs for the duration of the contract	sum			
1.1.40	8.4.5	Other time-related obligations	sum			
	8.4.6	Occupational Health and Safety				
1.1.41	PSA8	Compliance with Occupational Health and Safety Act (Act 85 of 1993) and its regulations and with the Employers Health and Safety Specification	sum			
	8.4.7	Environmental Managemant				
1.1.42	PSA9	Compliance with Environmental Management plan	sum			
					Carried Forward	

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
	8.4.7	<u>Local Economic Participation Plan</u>				
1.1.43	PSA10	Provision of a suitable Local Economic Participation Plan, auditing and monthly reports	sum			
		<u>Other General Charges</u>				
1.1.44	PPG 8.3.1	Temporary Storage of Equipment	sum			
1.1.45	PPG 8.3.4	Training	sum			
1.1.46	PPG 8.3.5	Charges and Profit on Maintenance Spares (R50 000)	%			
		<u>SCHEDULE:</u> 1.1 **<u>PRELIMINARY AND GENERAL</u>**				
		Carried forward to Summary of Schedules			**Total**	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 A	**BILL NO: 1.2** **PROVISIONAL SUMS AND PRIME COST ITEMS** **SUMS STATED PROVISIONALLY BY THE ENGINEER**				
		Note: Expenditure under the following Provisional Sums is for work executed by the Contractor\Sub-contractor or Supplier during the construction phase of the contract. Values paid under these items shall be "nett values excluding discount and VAT"				
		Invoices shall be supplied for each expenditure and attached to the payment certificates.				
		For work to be executed by the Contractor and valued in terms of the "Valuation of Variations" clause in the Conditions of Contract				
		ALLOWANCES				
		Allowances				
	8.5	(a) .1 Community requirements				
1.2.1	PSA10.3	.1 CLO/LDO remuneration	Prov sum	1	350,000.00	R350,000.00
1.2.2		.2 Overheads, charges and profit on above	%	350,000		
1.2.3		.3 Accredited training courses for selected local and other labourers	Prov sum	1	150,000.00	R150,000.00
1.2.4		.4 Overheads, charges and profit on above	%	150,000		
1.2.5	PSA10.11	.5 Wages and salaries of local and other labourers employed during training	Prov sum	1	150,000.00	R150,000.00
1.2.6		.6 Overheads, charges and profit on above	%	150,000		
1.2.7		.7 Social facilitation	Prov sum	1	2,000,000.00	R2,000,000.00
1.2.8		.8 Overheads, charges and profit on above	%	2,000,000		
		ENGINEERS REQUIREMENTS				
	8.5	(a) .1 Engineers requirements				
1.2.9	PSA10.5	.1 Cellular phones and IT Equipment	Prov sum	1	45,000.00	R45,000.00
1.2.10		.2 Overheads, charges and profit on above	%	45,000		
1.2.11	PSA10.6	.3 Acceptance control testing	Prov sum	1	200,000.00	R200,000.00
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
1.2.12		.4 Overheads, charges and profit on above	%	200,000		
1.2.13		.5 Transport (km charges)	Prov sum	1	300,000.00	R300,000.00
1.2.14		.6 Overheads, charges and profit on above	%	300,000		
1.2.15	PSA10.7	.7 Site office consumables and personal protective equipment	Prov sum	1	35,000.00	R35,000.00
1.2.16		.8 Overheads, charges and profit on above	%	35,000		
1.2.17	PSA10.8	.9 Electronic office equipment for Engineers site office	Prov sum	1	30,000.00	R30,000.00
1.2.18		.10 Overheads, charges and profit on above	%	30,000		
1.2.19	PSA10.9	.11 Engineers accommodation at remote construction site	Prov sum	1	400,000.00	R400,000.00
1.2.20		.12 Overheads, charges and profit on above	%	400,000		
1.2.21		.13 Locating existing services	Prov sum	1	50,000.00	R50,000.00
1.2.22		.14 Overheads, charges and profit on above	%	50,000		
1.2.23		.15 Relocating existing services	Prov sum	1	50,000.00	R50,000.00
1.2.24		.16 Overheads, charges and profit on above	%	50,000		
1.2.25	PSA10.10	.17 Specialised services	Prov sum	1	100,000.00	R100,000.00
1.2.26		.18 Overheads, charges and profit on above	%	100,000		
1.2.27		.19 Relocating existing arhaeological remains	Prov sum	1	200,000.00	R200,000.00
1.2.28		.20 Overheads, charges and profit on above	%	200,000		
1.2.29		.21 Specialised security services, PSiRA registered	Prov sum	1	R1,500,000.00	R1,500,000.00
1.2.30		.22 Overheads, charges and profit on above	%	1,500,000		
1.2.31		.23 Allowance for the management of local sub-contractors (SMME's) to cover any additional costs incurred, including rate variance	Prov sum	1	R1,000,000.00	R1,000,000.00
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
1.2.32		.3 Supply of material, construction, testing and commissioning of temporary and permanent CP systems, by a sub-subcontractor to be approved by the Engineer	Prov sum	1	150,000.00	R150,000.00
1.2.33		.4 Overheads, charges and profit on above	%			
		(c) .1 Surveyor				
1.2.34		.1 Surveyor service (towers and pegs)	Prov sum	1	75,000.00	R75,000.00
1.2.35		.2 Overheads, charges and profit on above	%	75,000		
1.2.36	PPG8.4.1	(d) .1 Maintenance Spares	Prov sum	1	50,000.00	R50,000.00
1.2.37	PPG8.4.2	(e) .1 Specialist External Inspectorate	Prov sum	1	500,000.00	R500,000.00
		.2 Overheads, charges and profit on above	%	500,000		
	8.5	(f) .1 For work to be executed by the Employer or a Nominated Sub-contractor				
1.2.39		.1 Lightning protection	Prov sum	1	200,000.00	R200,000.00
1.2.40		.2 Overheads, charges and profit on above	%			
1.2.41		.3 Telemetry	Prov sum	1	500,000.00	R500,000.00
1.2.42		.4 Overheads, charges and profit on above	%			
		PRIME COST ITEMS				
		Note: Expenditure under the following Prime Cost Item is for material purchases by the Contractor in the execution of dayworks only. Values paid under these items shall be "nett values excluding discount and VAT" Invoices shall be supplied for each expenditure and attached to the payment certificates.				
	8.6	Materials for dayworks				
1.2.43	PSA11.1	(a) Materials used in the execution of dayworks	PC item	1	50,000.00	R50,000.00
1.2.44		(b) Overheads, charges and profit on above	%	50,000		
					Carried Forward	

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
	8.5	**SUMS STATED PROVISIONALLY BY THE ENGINEER**				
	8.5	a. For work to be executed by the Contractor and valued in terms of the "Valuation of Variations" clause in the Conditions of Contract				
	8.5	b. Specialist services				
1.2.45		b.1 Surveyor service (towers and pegs)	Prov sum	1	25,000.00	25,000.00
1.2.46		b.2 Overheads, charges and profit on above	%			
1.2.47		b.3 Programming of existing system	Prov sum	1	250,000.00	250,000.00
1.2.48		b.4 Overheads, charges and profit on above	%			
1.2.49		b.3 CCTV Security System and Link to Security	Prov sum	1	400,000.00	400,000.00
1.2.50		b.4 Overheads, charges and profit on above	%			
		BILL NO 2 **PROVISIONAL SUMS AND PRIME COST ITEMS**				
		Carried forward to Summary 1			**Total**	

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 A	**BILL NO 1.3** **DAYWORKS AND TEMPORARY WORKS**				
		DAYWORKS				
		Note: Dayworks executed on instruction of the Engineer only. Supervision of dayworks is not payable under this section and is deemed to be included under Preliminary and General items in 1200A Daywork sheets shall be delivered to the Engineer at the end of each day for approval, failing this, the Engineer will reject the dayworks.				
	8.7.1	**LABOUR**				
1.3.1		(a) Skilled	hr	50		
1.3.2		(b) Semi-skilled	hr	100		
1.3.3		(c) Un-skilled	hr	150		
1.3.4		(d) Artisan	hr	20		
1.3.5		(e) Boilermaker (Pipe Fabricator)	hr	20		
1.3.6		(f) Boilermaker Assistant	hr	20		
1.3.7		(g) Qualified Welder	hr	20		
1.3.8		(h) Welder Assistant	hr	20		
1.3.9		(i) Fitter	hr	20		
1.3.10		(j) Fitter Assistant	hr	20		
1.3.11		(k) Grinder	hr	20		
1.3.12		(l) Qualified Electrician	hr	20		
1.3.13		(m) Electrician Assistant	hr	20		
1.3.14		(n) Shutter hand	hr	20		
1.3.15		(o) Steel Fixer	hr	20		
1.3.16		(p) Rigger	hr	20		
1.3.17		(q) Quality Inspector	hr	20		
1.3.18		(r) Quality Inspector Technician	hr	20		
1.3.19		(s) Mechanic	hr	20		
1.3.20		(t) General Operator	hr	20		
1.3.21		(u) LDV Driver	hr	20		
1.3.22		(v) Bus Driver	hr	20		
		TRUCKS				
	8.7.2	.1 Tipper trucks (specify capacity)				
1.3.23		(a) Capacity_____m³ (small)	hr	10		
1.3.24		(b) Capacity_____m³ (medium)	hr	10		
1.3.25		(c) Capacity_____m³ (large)	hr	10		
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
	8.7.2	.2 Off highway dump trucks (specify capacity)				
1.3.26		(a) Capacity_____m³ (medium)	hr	10		
1.3.27		(b) Capacity_____m³ (large)	hr	10		
	8.7.2	.3 Flatbed trucks (specify capacity)				
1.3.28		(a) Capacity_____m³ (small)	hr	10		
1.3.29		(b) Capacity_____m³ (medium)	hr	10		
1.3.30		(c) Capacity_____m³ (large)	hr	10		
		LDV'S				
	8.7.2	.4 LDV (specify size)				
1.3.31		(a) LDV_____ton	km	250		
		WATER TANKERS				
	8.7.2	.5 Water tankers (specify capacity)				
1.3.32		(a) Capacity_____liter (small, towable)	hr	10		
1.3.33		(b) Capacity_____liter (medium)	hr	10		
1.3.34		(c) Capacity_____liter (large)	hr	10		
		LOADERS				
	8.7.2	.6 Wheel loaders (specify capacity)				
1.3.35		(a) Capacity_____m³ (small)	hr	10		
1.3.36		(b) Capacity_____m³ (medium)	hr	10		
1.3.37		(c) Capacity_____m³ (large)	hr	10		
		GRADERS				
	8.7.2	.7 Motor graders (specify model/kw)				
1.3.38		(a) Model _____/_____kw	hr	10		
		BULLDOZERS				
	8.7.2	.8 Bulldozers (specify model/mass/kw)				
1.3.39		(a) Model____/_____/kg____kw (small)	hr	10		
1.3.40		(b) Model____/_____/kg____kw (medium)	hr	10		
1.3.41		(c) Model____/_____/kg____kw (large)	hr	10		
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
		EXCAVATORS				
	8.7.2	.9 Crawler excavators (specify model/mass/kw)				
1.3.42		(a) Model____/_____/kg____kw (small)	hr	10		
1.3.43		(b) Model____/_____/kg____kw (medium)	hr	10		
1.3.44		(c) Model____/_____/kg____kw (large)	hr	10		
		TLB'S				
	8.7.2	.10 Tractor loader backhoe (TLB)(specify model)				
1.3.45		(a) Model_____	hr	50		
		RIDE-ON ROLLERS				
	8.7.2	.11 Self propelled vibrating rollers (smooth drum) (specify mass)				
1.3.46		(a) Mass_____kg (medium)	hr	10		
1.3.47		(b) Mass_____kg (large)	hr	10		
	8.7.2	.12 Self propelled vibrating rollers (padfoot) (specify mass)				
1.3.48		(a) Mass_____kg (medium)	hr	10		
1.3.49		(b) Mass_____kg (large)	hr	20		
	8.7.2	.13 Pneumatic tyred rollers (specify mass)				
1.3.50		(a) Mass > 9 ton / medium (Dry rate = _____)	hr	10		
1.3.51		(b) Mass > 15 ton / large (Dry rate = _____)	hr	10		
		WALK BEHIND ROLLERS				
	8.7.2	.14 Walk behind vibrating rollers (specify model)				
1.3.52		(a) Model_____(BW 61) (small)	hr	10		
1.3.53		(b) Model_____(BW 76) (medium)	hr	10		
1.3.54		(c) Model_____(BW 90) (large)	hr	10		
		COMPACTORS				
	8.7.2	.15 Plate compactors (specify model)				
1.3.55		(a) Model_____	hr	10		
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
	8.7.2	.16 Wackers (specify model)				
1.3.56		(a) Model_____	hr	10		
		CONCRETE MIXERS				
	8.7.2	.17 Concrete mixers (specify mixing volume)				
1.3.57		(a) Volume_____liter (small, towable)	hr	10		
1.3.58		(b) Volume_____liter (medium)	hr	10		
1.3.59		(c) Volume_____liter (large)	hr	10		
	8.7.2	.18 Concrete mixer truck				
1.3.60		(a) Capacity > 5m³ (Dry rate = _____)	hr	10		
		COMPRESSORS				
	8.7.2	.18 Portable diesel compressors (specify capacity)				
1.3.61		(a) Capacity_____cfm (small)	hr	10		
1.3.62		(b) Capacity_____cfm (medium)	hr	10		
1.3.63		(c) Capacity_____cfm (large)	hr	10		
		WATERPUMPS				
	8.7.2	.19 Waterpump (specify capacity)				
1.3.64		(a) Capacity_____ liter/sec (small)	hr	10		
1.3.65		(b) Capacity_____ liter/sec (medium)	hr	10		
1.3.66		(c) Capacity_____ liter/sec (large)	hr	10		
	8.7.2	**WELDING UNIT**				
		.21 Welding Unit				
1.3.67		(a) Size > 200 Amp / small (Dry rate=_____)	hr	10		
1.3.68		(b) Size > 300 Amp / medium (Dry rate=_____)	hr	10		
1.3.69		(c) Size > 800 Amp / large (Dry rate=_____)	hr	10		
		GENERATORS				
	8.7.2	.21 Mobile generator set (specify KVA)				
1.3.70		(a) _____KVA (small)	hr	20		
1.3.71		(b) _____KVA (medium])	hr	20		
1.3.72		(c) _____KVA (large)	hr	20		
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
		TRANSPORT (COST TO AND FROM SITE)				
		Note: Distance shall be measured one way only (tender rates shall include for transport in both directions to and from site)				
	8.7.3	.1 Low bed				
1.3.73		(a) Low-bed (suitable for the largest piece of equipment above)	km	100		
	8.7.3	.2 Tipper truck				
1.3.74		(a) Small	km	100		
1.3.75		(b) Medium	km	100		
1.3.76		(c) Large	km	100		
	8.7.3	.3 Flatbed truck				
1.3.77		(a) Small	km	100		
1.3.78		(b) Medium	km	100		
1.3.79		(c) Large	km	100		
	8.7.3	.4 Water tanker				
1.3.80		(a) Small	km	100		
1.3.81		(b) Medium	km	100		
1.3.82		(c) Large	km	100		
		ACCOMMODATION OF TRAFFIC				
	PSD7	Accommodation of traffic during construction where work is constructed where public traffic needs to be accommodated during the construction				
1.3.83	8.8.2	Accommodation of traffic	sum			
					Carried Forward	

Contractor | Witness 1 | Witness 2 | Employer | Witness 1 | Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
		WORK TO EXISTING SERVICES				
	8.8.4	Existing services				
1.3.84		(a) Supply or hire specialist equipment for the detection of services	sum			
1.3.85		(b) The use of equipment referred to above	day			
1.3.86		(c) Excavation by hand in soft material to expose services	m³	50		
		BILL NO 1.3 **DAYWORKS AND TEMPORARY WORKS**				
		Carried forward to Summary of Bills			**Total**	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 C	**BILL NO 2.1** **SITE CLEARANCE**				
		CLEAR AND GRUB SITE				
	8.2.1	(a) Clear and grub area for				
2.1.1		.2 Roads servitudes	m²	31,500		
		REMOVE LARGE TREES AND STUMPS				
	8.2.2	Remove and grub large trees and tree stumps, including filling in of holes, levelling of site and compaction, with trees of girth				
		(a) Exceeding 1m and up to and including 2m				
2.1.2			no	5		
2.1.3		(b) Exceeding 2m and up to and including 3m	no	5		
		REMOVE TOPSOIL				
	8.2.10	(a) Remove topsoil to a depth of 150mm and				
2.1.4		.1 Stockpile on site and maintain	m³	500		
2.1.5		.2 Spoil at spoil site established by the Contractor	m³	100		
	SANS 1200 D	**FINISHING, TOPSOILING AND GRASSING**				
	8.3.10	Topsoiling with material from stockpiles on site				
2.1.6		(a) Spread over site	m³	500		
		BILL NO 2.1 **SITE CLEARANCE**				
		Carried forward to Summary of Bills			**Total**	

Contractor | Witness 1 | Witness 2 | Employer | Witness 1 | Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 D	**BILL NO 2.2** **EARTHWORKS**				
		MASS EXCAVATION				
	8.3.2	(a) .1 Excavate in all materials and spoil off site at a site established by the Contractor for				
2.2.1		.2 Open channels	m³	1,300		
	8.3.2	(a) .2 Excavate in all materials and stockpile on site for				
2.2.2		.2 Open channels	m³	100		
	8.3.2	(a) .4 Excavate in all materials and use as fill, compacted to 93% mod AASHTO density for				
2.2.3		.2 Open channels	m³	100		
		ROCK EXCAVATION				
	8.3.2	(b) Extra over reference 8.3.2 (a) for				
2.2.4		.2 Hard rock excavation	m³	300		
2.2.5		.3 Boulder excavation class A	m³	50		
2.2.6		.4 Boulder excavation class B	m³	50		
2.2.7	PSD11	Hard rock boulders (all sizes) left on site by previous mining Contractors to be moved off the roadway area and pushed into surrounding dongas using a suitable size Dozer (volume of rock will be agreed prior to start of this operation)	m³	20,000		
		BILL NO 2.2 **EARTHWORKS**				
		Carried forward to Summary of Bills			**Total**	

Contractor | Witness 1 | Witness 2 | Employer | Witness 1 | Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 DM	**BILL NO 2.3** **EARTHWORKS (ROADS , SUBGRADE)**				
		TREATMENT OF ROADBED				
	8.3.3	(a) Roadbed preparation and compaction of material to				
2.3.1		.3 Minimum of 93% mod AASHTO density	m³	690		
	8.3.3	(b) In-place treatment of roadbed in hard rock material by				
2.3.2	PSDM1	.2 Blasting below roads	m³	2,820		
		CUT OR BORROW TO FILL				
	8.3.4	(a) Cut or borrow to fill				
2.3.3		.2 Compacted to 93% mod AASHTO density	m³	2,040		
	8.3.4	(b) Rockfill				
2.3.4		.1 Rockfill, processed and compacted	m³	50		
		CONSTRUCT FILL WITH COMMERCIAL MATERIAL SUPPLIED BY THE CONTRACTOR				
		G7 material				
2.3.5		.2 Compacted to 93% mod AASHTO density in roads	m³	19,000		
		SELECTED LAYERS FROM CUT				
		Excavate from road prism, select, load, transport to point of use and construct layerworks as follows				
		Selected layers				
	8.3.5	(a) Compacted to 93% mod AASHTO density				
2.3.6		.1 150mm Thick below roads	m³	100		
	8.3.5	(b) Compacted to 95% mod AASHTO density				
2.3.7		.1 150mm Thick below roads	m³	100		
				Carried Forward		

Contractor | Witness 1 | Witness 2 | Employer | Witness 1 | Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
		CONSTRUCT LAYERWORKS WITH COMMERCIAL MATERIAL SUPPLIED BY THE CONTRACTOR				
		G7 Selected				
	8.3.5	(e) .1 Compacted to 95% mod AASHTO density				
2.3.8		.1 150mm Thick below roads	m³	2,700		
	8.3.5	(e) .2 Compacted to 97% mod AASHTO density				
2.3.9		.1 150mm Thick below roads	m³	2,100		
		EXTRA OVER				
	8.3.6	Extra over reference 8.3.4 and 8.3.5 for excavating and breaking down material in				
2.3.10		(b) Hard rock excavation	m³	200		
2.3.11		(c) Boulder excavation class A	m³	10		
2.3.12		(d) Boulder excavation class B	m³	10		
		CUT TO SPOIL				
	8.3.7	Cut to spoil off site (spoil site established by the the Contractor) from				
2.3.13		(a) Soft excavation	m³	4,000		
2.3.14		(c) Hard rock excavation (spoil in dongas on site)	m³	26,000		
2.3.15		(d) Boulder excavation class A	m³	500		
2.3.16		(e) Boulder excavation class B	m³	500		
		CUT TO STOCKPILE				
	8.3.7	Cut to stockpile on site from				
2.3.17		(f) Soft excavation	m³	500		
2.3.18		(h) Hard rock excavation	m³	200		
2.3.19		(i) Boulder excavation class A	m³	100		
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
2.3.20		(j) Boulder excavation class B	m³	100		
		REMOVE OVERSIZE MATERIAL				
2.3.21	8.3.8	Removal of oversize material	m³	200		
		STOCKPILING MATERIAL ON SITE (FILL AND SELECTED LAYERS)				
2.3.22	8.3.11	Extra over reference 8.3.4 (a) & (b) and 8.3.5 (a) & (b) for temporary stockpiling of material on site	m³	500		
		BILL NO 2.3 EARTHWORKS (ROADS , SUBGRADE)				
		Carried forward to Summary of Bills			**Total**	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
		BILL NO 2.4 **CABLE DUCTS**				
	SANS 1200 DB	**EXCAVATION AND BACKFILLING**				
		Excavate in all materials, backfill and compact to 90% mod AASHTO density, and dispose of surplus and unsuitable materials within the freehaul distance for trenches				
	8.2.2	(a) .1 Up to 1m wide				
2.4.1		.2 Over 1m and up to 2m deep	m³	250		
	8.2.2	(b) Extra over reference 8.2.2 (a) for				
2.4.2		.2 Hard rock excavation	m³	200		
		DEFICIENCY IN BACKFILL MATERIAL				
	8.3.3	Excavation ancillaries				
		.1 Make up deficiency in backfill material				
2.4.3		(a) From other necessary excavations on site	m³	50		
2.4.15		(c) By importation of G7 material from commercial sources selected by the Contractor	m³	100		
		ADDITIONAL COMPACTION				
	8.3.3	.3 Additional compaction in road reserves				
2.4.5		.1 Additional compaction (90% compaction included elsewhere) to obtain 93% mod AASHTO density	m³	100		
	SANS 1200 LC	**CABLE DUCTS SUPPLIED BY THE CONTRACTOR**				
	8.2.5	(b) Supply, lay, bed, and prove Kabelflex ducts including providing draw wires complete				
2.4.6		.1 110mm Diameter	m	100		
2.4.7		.2 160mm Diameter	m	100		
				Carried Forward		

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
	8.2.5	(c) Supply, lay, bed, and prove uPVC class 6 ducts including providing draw wires complete				
2.4.8		.2 160mm Diameter	m	100		
	8.2.5	(d) uPVC end caps to ducts				
2.4.9		.1 110mm Duct	no	10		
2.4.10		.2 160mm Duct	no	10		
		BEDDING FROM COMMERCIAL SOURCES				
	8.2.2	(b) Provision of bedding material by importation from commercial sources selected by the Contractor				
2.4.11		(a) Selected granular material	m³	50		
2.4.12		(b) Selected fill material	m³	100		
		MANHOLES				
	8.2.7.b	Manholes				
2.4.13		.1 600 x 600 x 1000mm Precast concrete manhole	no	5		
		CABLE MARKERS				
	8.2.8	(a) Route markers				
2.4.14		.1 Route marker	no	10		
		KERB MARKINGS				
	8.2.8	(b) Inscribed and painted marking on kerbing				
2.4.15		.1 Kerb marking	no	10		
		SOILCRETE				
		Soilcrete (5% OPC)				
2.4.16		.1 Backfilling around pipes	m³	5		
		BILL NO 2.4 **CABLE DUCTS**				
		Carried forward to Summary of Bills			**Total**	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
		BILL NO 2.5 **SUBSOIL DRAINAGE**				
	SANS 1200 DB	**EXCAVATION AND BACKFILLING**				
		Excavate in all materials, backfill and compact to 90% mod AASHTO density, and dispose of surplus and unsuitable materials within the freehaul distance for trenches				
	8.2.2	(a) .1 Up to 1m wide				
2.5.1		.2 Over 1m and up to 2m deep	m³	700		
	8.2.2	(b) Extra over reference 8.2.2 (a) for				
2.5.2		.2 Hard rock excavation	m³	400		
	SANS 1200 LC	**SUBSOIL DRAINS**				
		.1 Supply, lay, bed, and test Kaytech perforated subsoil pipes complete				
2.5.3		.1 110mm Diameter	m	250		
2.5.4		.2 160mm Diameter	m	250		
	SANS 1200 DK	**GEOTEXTILES**				
	8.2.4	Supply and lay geotextile fabric				
2.5.5		(b) Bidim A2 wrapped around stone encasement to pipes	m²	1,000		
	SANS 1200 LB	**STONE FROM COMMERCIAL SOURCES**				
	8.2.2	.3 19mm Crushed stone from commercial sources supplied by the Contractor for				
2.5.6		(c) Encasement of pipes	m³	200		
		BILL NO 2.5 **SUBSOIL DRAINAGE**				
		Carried forward to Summary of Bills			**Total**	

Contractor | Witness 1 | Witness 2 | Employer | Witness 1 | Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 ME	**BILL NO 2.6** **SUBBASE**				
		EXCAVATE AND STOCKPILE MATERIAL ON SITE OR PLACE MATERIAL ON THE ROAD				
		Excavate from designated excavation, select and stockpile material on site or place on road for use in layerworks				
2.6.1	8.3.2	(a) Selected material for subbase	m³	500		
		CONSTRUCT LAYERWORKS WITH STOCKPILED MATERIAL ON SITE				
		Select and load from stockpile under 8.3.2(a) above, transport to point of use, offload material and construct layerworks as follows				
		Subbase				
	8.3.2	(b) .1 .2 Compacted to 95% mod AASHTO density				
2.6.2		.2 150mm Thick below roads	m³	250		
	8.3.2	(b) .1 .3 Compacted to 98% mod AASHTO density				
2.6.3		.2 150mm Thick below roads	m³	250		
		EXTRA OVER				
	8.3.4	Extra over reference 8.3.2 (a) for excavating and breaking down material in				
2.6.4		(b) Hard rock excavation	m³	50		
2.6.5		(c) Boulder excavation class A	m³	20		
2.6.6		(d) Boulder excavation class B	m³	20		
		CONSTRUCT LAYERWORKS WITH COMMERCIAL MATERIAL SUPPLIED BY THE CONTRACTOR				
		G5 Subbase				
	8.3.3	.1 .2 Compacted to 95% mod AASHTO density				
2.6.7		.4 150mm Thick below concrete V-drains	m³	250		
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
	8.3.3	.1 .3 Compacted to 97% mod AASHTO density				
2.6.8		.2 150mm Thick below roads	m³	1,200		
		G5 Shoulders				
	8.3.3	.2 .1 Compacted to 93% mod AASHTO density				
2.6.9		.1 150mm Thick on roads	m³	310		
		G5 Wearing course				
	8.3.3	.3 .1 Compacted to 97% mod AASHTO density				
2.6.10		.1 150mm Thick on roads	m³	870		
		PROCESSING				
		Process layerwork material by the following process				
2.6.11	8.3.5	(d) Stabilization (all layer thicknesses)	m³	1,200		
		STABILIZATION				
	8.3.8	Stabilizing agent				
2.6.12		(b) Portland cement	ton	105		
		BILL NO 2.6 **SUBBASE**				
		Carried forward to Summary of Bills			**Total**	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 MK	**BILL NO 2.7** **KERBING, CHANNELLING, EDGE BEAMS, ETC**				
		PRECAST CONCRETE KERBING				
		Supply and install precast concrete kerbing				
	8.2.1	(a) .2 Fig 7 kerbing				
2.7.1		.1 Straight sections	m	1,460		
2.7.2		.2 Curved sections, radius over 20m	m	10		
2.7.3		.3 Curved sections, radius over 4m, but up to and including 20m	m	10		
2.7.4		.4 Curved sections, radius over 1m, but up to and including 4m	m	10		
		CAST-IN-SITU CONCRETE EDGE BEAMS				
		Supply and install cast-in-situ concrete edge beams				
	8.2.1	(c) .3 Cast-in-situ strength concrete 30Mpa/19mm edge beam size 200mm wide x 250mm high, wood floated on top, angle rounded edges and 10mm thick expansion joints at 3m centres Dwg 086-RD-TD01				
2.7.5		.1 Straight sections	m	40		
2.7.6		.2 Curved sections, radius over 20m	m	10		
2.7.7		.3 Curved sections, radius over 4m, but up to and including 20m	m	10		
2.7.8		.4 Curved sections, radius over 1m, but up to and including 4m	m	10		
		TRANSITIONS TO KERBS				
	8.2.6	.1 .3 Cast-in-situ strength concrete 30Mpa/19mm transitions				
2.7.9		.1 Transitions 2m long (all types of kerbs)	no	5		
		BILL NO 2.7 **KERBING, CHANNELLING, EDGE BEAMS, ETC**				
		Carried forward to Summary of Bills			**Total**	

Witness 1 | Witness 2 | Employer | Witness 1

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 MM	**BILL NO 2.8** **ANCILLARY ROADWORKS**				
		HOT DIP GALVANIZED STEEL GUARDRAILS				
	8.2.1	(a) Supply and erect hot dip galvanized steel guardrails on bitumen treated timber posts, including excavation, backfilling, timber spacer blocks, bolts, etc, complete Dwg 086-RD-TD04/TD05/TD06/TD07				
2.8.1		.1 Straight sections	m	930		
		CIRCULAR GUARDRAILS				
	8.2.2	Extra over reference 8.2.1 (a) and 8.2.1 (b) for horizontally curved guardrails factory bent to radius of less than 150m				
2.8.2		(a) Hot dip galvanized guardrails	m	200		
		END UNITS				
	8.2.3	Supply and fix hot dip galvanised steel end units complete				
2.8.3		(a) End wings	no	22		
		TERMINAL SECTIONS				
	8.2.3	Supply and fix terminal sections including all rails, posts, etc complete Dwg 086-RD-TD04/TD05/TD06/TD07				
2.8.4		(b) Single terminal sections	no	0		
		REFLECTOR PLATES				
	8.2.5	Supply and fix reflector plates complete				
2.8.5		(a) Standard type reflectors	no	500		
		TRAFFIC SIGNS ERECTED COMPLETE				
	8.3.6	Statutory signs, street names, etc supplied and erected complete, including posts, excavation, etc				
	8.3.6	(a) Provision and erection of regulatory traffic signs for 60km/h design standard, complete				
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
2.8.6		.1 Stop sign (R1)	no	4		
2.8.7		.2 4-Way Stop sign (R1.4)	no	2		
2.8.8		.3 Stop/yield sign (R1.2)	no	2		
2.8.9		.4 Yield sign (R2)	no	2		
2.8.10		.6 Speed limit (R201)	no	4		
	8.3.6	(b) Provision and erection of warning traffic signs for 60km/h design standard, complete				
2.8.11		.1 T-junction (W104)	no	2		
2.8.12		.4 Gentle curve-right/left (W202/3)	no	4		
2.8.13		.5 Single sharp curve chevron (W405/6)	no	4		
2.8.14		.6 Dead end/road closed chevron (W410)	no	2		
	8.3.6	(c) Provision and erection of information traffic signs for 60km/h design standard, complete				
2.8.15		.1 Cul-de-sac (IN4)	no	2		
		WORK TO EXISTING SIGNAGE				
	8.3.7	Dismantle and re-erect road signs with surface area of				
2.8.16		(a) Up to 2m²	no	4		
2.8.17		(b) Exceeding 2m² up to 10m²	no	4		
		RETRO-REFLECTIVE ROAD MARKINGS				
		Retro-reflective paint applied at a nominal rate of 0,42l/m²				
	8.4.1	(a) White lines (broken or unbroken)				
2.8.18		.1 100mm Lines	m	200		
2.8.19		.2 150mm Lines	m	200		
2.8.20		.3 200mm Lines	m	200		
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
2.8.21		.4 300mm Lines	m	200		
2.8.22	8.4.1	(c) White characters and symbols	m²	20		
2.8.23	8.4.1	(d) Yellow characters and symbols	m²	20		
2.8.24	8.4.1	(e) Traffic island markings (any colour)	m²	20		
		SETTING OUT AND PREMARKING				
		Setting out and premarking				
	8.4.4	(a) Lines (excluding traffic island, symbols, etc.)				
2.8.25		.1 Lines	km	1.0		
		BILL NO 2.8 **ANCILLARY ROADWORKS**				
		Carried forward to Summary of Bills			**Total**	

Contractor | Witness 1 | Witness 2 | Employer | Witness 1 | Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 DB	**BILL NO 2.9** **EARTHWORKS (PIPE TRENCHES)**				
		EXCAVATION AND BACKFILLING				
		Excavate in all materials, backfill and compact to 90% mod AASHTO density, and dispose of surplus and unsuitable materials for trenches				
	8.3.2	(a) .2 Over 1m and up to 2m wide				
2.9.1		.2 Over 1m and up to 2m deep	m³	700		
2.9.2		.3 Over 2m and up to 3m deep	m³	200		
	8.3.2	(b) Extra over reference 8.3.2 (a) for				
2.9.3		.2 Hard rock excavation	m³	500		
	8.3.2	(c) Excavate unsuitable material from trench bottom, dispose of material, and re-fill with suitable imported material compacted to 90% mod AASHTO density				
2.9.4			m³	10		
		DEFICIENCY IN BACKFILL MATERIAL				
	8.3.3	Excavation ancillaries				
		.1 Make up deficiency in backfill material				
2.9.5		(a) From other necessary excavations on site	m³	100		
2.9.7		(c) By importation of G7 material from commercial sources selected by the Contractor	m³	400		
		ADDITIONAL COMPACTION				
2.9.7		.1 Additional compaction (90% compaction included elsewhere) to obtain 93% mod AASHTO density	m³	200		
		BILL NO 2.9 **EARTHWORKS (PIPE TRENCHES)**				
		Carried forward to Summary of Bills			**Total**	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 DK	**BILL NO 2.10** **GABIONS AND PITCHING**				
		SURFACE PREPARATION				
	8.2.1	Surface preparation for bedding of gabions and mattresses				
2.10.1		(b) Cavities filled with approved excavated material or rock and compacted to 93% mod AASHTO density	m²	100		
		GABIONS				
	8.2.2	.1 Gabions using galvanized wire of the following sizes				
2.10.2		(a) 2,0 x 1,0 x 1,0m Box of 80mm mesh size	m³	2		
		MATTRESSES				
	8.2.2	.2 Mattresses using galvanized wire of the following sizes				
2.10.3		(a) 2,0 x 1,0 x 0,3m Mattress of 50mm mesh size	m³	20		
		GEOTEXTILES				
	8.2.4	Supply and lay geotextile fabric below gabions and mattresses				
2.10.4		(b) Bidim A2 laid below gabions and mattresses	m²	100		
		GROUTED STONE PITCHING				
	8.2.5	(b) 300mm Thick ordinary 1:3 cement/riversand grouted stone pitching to				
2.10.5		.1 Flat slope	m²	200		
2.10.6		.2 Steep slope	m²	250		
		BILL NO 2.10 **GABIONS AND PITCHING**				
		Carried forward to Summary of Bills			**Total**	

Witness 1 | Witness 2 | Employer | Witness 1

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 LB	**BILL NO 2.11** **BEDDING (PIPES)**				
		BEDDING FROM COMMERCIAL SOURCES				
	8.2.2	.3 Provision of bedding material by importation from commercial sources selected by the Contractor				
2.11.1		(a) Selected granular material	m³	130		
2.11.2		(b) Selected fill material	m³	350		
		BILL NO 2.11 **BEDDING (PIPES)**				
		Carried forward to Summary of Bills			**Total**	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 LE	**BILL NO 2.12** **STORMWATER DRAINAGE**				
		OGEE PIPES				
		Supply, lay, bed (class C bedding) and test concrete pipe culverts including all cutting to ends				
	8.2.1	(c) Ogee class 100D				
2.12.1		.5 600mm Diameter	m	160		
2.12.2		.9 900mm Diameter	m	100		
		SOILCRETE				
		Soilcrete (5% OPC)				
2.12.3		(a) Backfilling around pipe culverts	m³	20		
		CONCRETE ENCASEMENT OF PIPES				
	8.2.6	Strenght concrete 15Mpa/19mm				
2.12.4		(a) Backfilling around pipe culverts	m³	10		
		KERB INLETS				
	8.2.8	(f) Kerb inlets complete with cover slabs, etc with the following pipe sizes Dwg 086-STW-TD07				
2.12.5		.1 300 - 600mm Diameter pipe culverts	no	4		
2.12.6		.2 675 - 900mm Diameter pipe culverts	no	2		
		OUTLET STRUCTURES TO PIPES				
	8.2.8	(g) Pipe outlet structure complete with the following pipe sizes Dwg 086-STW-TD05				
2.12.7		.1 300 - 600mm Diameter pipe culverts	no	8		
2.12.8		.2 675 - 900mm Diameter pipe culverts	no	4		
		BILL NO 2.12 **STORMWATER DRAINAGE**				
		Carried forward to Summary of Bills			**Total**	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
		BILL NO 2.13 **RETAINING WALLS**				
	SANS 1200 D	**RESTRICTED EXCAVATION**				
	8.3.3	(a) Restricted excavation in all materials and place within freehaul distance for				
2.13.1		.1 Wall footings	m³	320		
	8.3.3	(b) Extra over reference 8.3.3 (a) for				
2.13.2		.2 Hard rock excavation	m³	320		
		RESTRICTED BACKFILLING				
		Extra over reference 8.3.2 (a) and 8.3.3 (a) for backfill or for fill material against structures				
	8.3.9	(a) Selected material compacted to 95% mod AASHTO density				
2.13.3		.1 Alongside walls in foundations	m³	100		
	SANS 1200 DM	**CONSTRUCT LAYERWORKS WITH COMMERCIAL MATERIAL SUPPLIED BY THE CONTRACTOR**				
		G7 Selected				
	8.3.5	(d) .1 Compacted to 95% mod AASHTO density				
2.13.4		.1 150mm Thick layers in backfilling behind	m³	4,470		
	8.3.5	(e) .1 Compacted to 95% mod AASHTO density				
2.13.5		.1 150mm Thick below retaining wall footing	m³	1,000		
	SANS 1200 GA					
		RETAINING WALLS (MACCAFERRI AFRICA)				
		Supply and install Terramesh System - or other approved SANS 1200DK:1995 (Double Twist hexagonal wire mesh SANS 1580:2005) Dwg 086-STW-TMS01, TMS02, TMS03 AND TMS04				
		2.7/3.7mm Terramesh System Galfan PVC coated wire Rate to include selecting suitable size rock from site and packing into Terramesh baskets				
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
2.13.6		(a) 3 x 3 x 1 x 1m	no	300		
2.13.7		(b) 3 x 3 x 0.5 x 1m	no	50		
2.13.8		(b) 3 x 3 x 0.5 x 1m	no	50		
		GEOFABRIC				
		Mac Tex H.1				
2.13.9		(a) H 40.1 - 2.6 x 150m - 200g/sqm	m²	1,170		
		DRAINAGE				
		Macdrain W				
2.13.10		(a) Macdrain W1051 - 2.15 x 100m	m²	1,075		
		REINFORCEMENT				
		Paragrid				
2.13.11		(a) Paragrid 80 - 5 - 3.9 x 80m	m²	3,120		
	SANS 1200 DK	**GEOTEXTILES**				
	8.2.4	Supply and lay geotextile fabric				
2.13.12		(b) Bidim A2 wrapped around free draining sand behind	m²	3,500		
	SANS 1200 LB	**FREE DRAINING SAND**				
	8.2.2	.3 Free draining sand from commercial sources				
2.13.13		(c) Filling behind retaining walls	m³	460		
		BILL NO 2.13 **ANCILLARY ROADWORKS**				
		Carried forward to Summary of Bills			**Total**	

Contractor | Witness 1 | Witness 2 | Employer | Witness 1 | Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 GA	**BILL NO 2.14** **CONCRETE (SMALL WORKS)**				
		SMOOTH FORMWORK				
	8.2.3	Smooth formwork to narrow widths				
2.14.1		(a) Edges, risers, etc not exceeding 300mm wide	m	2,020		
2.14.2		(b) Circular edges, risers, etc not exceeding 300mm wide	m	1,100		
		REINFORCEMENT				
		Steel bars				
	8.3.1	(a) Mild steel				
2.14.3		.1 All sizes	ton	0.5		
	8.3.1	(b) High tensile steel				
2.14.4		.1 All sizes	ton	1.0		
	8.3.2	High tensile welded mesh				
2.14.5		(c) Ref no.888	m²	6,700		
		STRENGTH CONCRETE				
	8.4.2	Strength concrete 15Mpa/19mm				
2.14.6		(a) Blinding layer 50mm thick	m³	10		
	8.4.3	(d) Strength concrete 35Mpa/19mm				
2.14.7		.1 170mm Road slabs	m³	1,140		
		SURFACE FINISHES				
	8.4.4	(d) Texturing and curing concrete pavements				
2.14.8		.1 Burlap-dragged and grooved texture	m²	6,700		
2.14.9		.2 Curing with approved curing compound	m²	6,700		
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
		EXPANSION JOINTS				
	8.5	(a) 10mm Thick jointex placed vertically between concrete surfaces				
2.14.10		.4 Floor slabs not exceeding 300mm wide	m	200		
	8.5	(b) Polyurethane joint sealer				
2.14.11		.1 Remove 10 x 20mm tear off strip, prime with an approved primer and fill joint with polyurethane sealer	m	200		
		SAW CUT JOINTS				
2.14.12	PSG5	.1 6mm wide x 50mm Deep saw cut joint in top of	m	1,000		
2.14.13		.2 Prime with an approved primer and fill joint with	m	1,000		
		DRILLING AND TESTING CONCRETE PAVEMENTS				
2.14.14		(a) 150mm Cores drilled from the pavement and tested	no	40		
	SANS 1200 GA	**PRECAST CONCRETE**				
		New jersey concrete barriers to SANS 51317 specification				
		Precast concrete units supplied and fixed complete				
	8.6.a	Strength concrete 35Mpa/19mm				
2.14.15		(b) New jersey barrier 813mm high fixed complete and	m	150		
		BILL NO 2.14 **CONCRETE (SMALL WORKS)**				
		Carried forward to Summary of Bills			**Total**	

Contractor | Witness 1 | Witness 2 | Employer | Witness 1 | Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 C	**BILL NO 3.1.1** **SITE CLEARANCE**				
		CLEAR AND GRUB SITE				
	8.2.1	(a) Clear and grub area for				
3.1.1.1		.3 Platforms	m²	14,000		
		REMOVE LARGE TREES AND STUMPS				
	8.2.2	Remove and grub large trees and tree stumps, including filling in of holes, levelling of site and compaction, with trees of girth				
3.1.1.2		(a) Exceeding 1m and up to and including 2m	no	2		
3.1.1.3		(b) Exceeding 2m and up to and including 3m	no	2		
		BILL NO 3.1.1 **SITE CLEARANCE**				
		Carried forward to Summary of Bills			**Total**	

Contractor | Witness 1 | Witness 2 | Employer | Witness 1 | Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 D	**BILL NO 3.1.2** **EARTHWORKS**				
		MASS EXCAVATION				
	8.3.2	(a) .1 Excavate in all materials and spoil off site at a site established by the Contractor for				
3.1.2.1		.1 Platforms	m³	6,000		
	8.3.2	(a) .2 Excavate in all materials and stockpile on site for				
3.1.2.2		.1 Platforms	m³	100		
	8.3.2	(a) .4 Excavate in all materials and use as fill, compacted to 93% mod AASHTO density for				
3.1.2.3		.1 Platforms	m³	100		
		COMMERCIAL MATERIAL PROVIDED BY THE CONTRACTOR				
	8.3.4	(b) Supply G5 material from commercial sources and use in				
3.1.2.4	PSD14	.2 Platforms compacted to 97% mod AASHTO density	m³	6,000		
		PROCESSING				
		Process layerwork material by the following process				
3.1.2.5	8.3.5	(d) Stabilization (all layer thicknesses) for platforms	m³	6,000		
		STABILIZATION				
	8.3.8	Stabilizing agent				
3.1.2.6		(b) Portland cement for platforms	ton	430		
		ROCK EXCAVATION				
	8.3.2	(b) Extra over reference 8.3.2 (a) for				
3.1.2.7		.2 Hard rock excavation	m³	5,000		
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
3.1.2.8		.3 Boulder excavation class A	m³	500		
3.1.2.9		.4 Boulder excavation class B	m³	500		
		BILL NO 3.1.2 **EARTHWORKS**				
		Carried forward to Summary of Bills			**Total**	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 C	**BILL NO 3.2.1** **SITE CLEARANCE**				
		CLEAR AND GRUB SITE				
	8.2.1	(a) Clear and grub area for				
3.2.1.1		.3 Structures	m²	10,000		
		BILL NO 3.2.1 **SITE CLEARANCE**				
		Carried forward to Summary of Schedules			**Total**	

Contractor | Witness 1 | Witness 2 | Employer | Witness 1 | Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 D	**BILL NO 3.2.2** **EARTHWORKS**				
		MASS EXCAVATION				
	8.3.2	(a) .2 Excavate in all materials and stockpile within freehaul distance for				
3.2.2.1		.2 V-drains	m³	50		
	8.3.2	(b) Extra over item 8.3.2 (a) for				
3.2.2.2		.2 Hard rock excavation	m³	5		
3.2.2.3		.3 Boulder excavation class A	m³	5		
3.2.2.4		.4 Boulder excavation class B	m³	5		
		RESTRICTED EXCAVATION				
	8.3.3	(a) Restricted excavation in all materials and place within freehaul distance for				
3.2.2.5		.1 Wall footings	m³	110		
3.2.2.6		.2 Column bases	m³	50		
3.2.2.7		.3 Cable ducts	m³	20		
3.2.2.8		.4 Chambers	m³	50		
	8.3.3	(b) Extra over item 8.3.3 (a) for				
3.2.2.9		.2 Hard rock excavation	m³	10		
3.2.2.10		.3 Boulder excavation class A	m³	5		
3.2.2.11		.4 Boulder excavation class B	m³	5		
		BILL NO 3.2.2 **EARTHWORKS**				
		Carried forward to Summary of Schedules			**Total**	

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 G	**BILL NO 3.2.3** **CONCRETE (STRUCTURAL)**				
		ROUGH FORMWORK				
	8.2.1	(a) Plane horizontal				
3.2.3.1		.1 Soffit of chamber slab	m²	10		
	8.2.1	(b) Plane vertical				
3.2.3.2		.1 Sides of foundations and buttresses	m²	78		
3.2.3.3		.2 Sides of test panels	m²	30		
		SMOOTH FORMWORK				
	8.2.2	(a) Plane horizontal				
3.2.3.4		.1 Soffit of roof slab internally (no deduction for column heads)	m²	2,826		
	8.2.2	(b) Plane vertical				
3.2.3.5		.1 Sides of circular walls and buttresses	m²	5,070		
3.2.3.6		.2 Sides of chamber walls	m²	60		
3.2.3.7		.3 Circular columns	m²	870		
3.2.3.8		.4 Column heads	no	54		
3.2.3.9		.5 Upstands	m²	120		
	8.2.5	Smooth formwork to narrow widths				
3.2.3.10		(a) Edges not exceeding 300mm high	m	200		
3.2.3.11		(b) Edges not exceeding 300mm high circular on plan	m	440		
	8.1.1.2	Smooth formwork to chamfers, grooves, rebates, etc exceeding 20x20mm in size				
3.2.3.12		(a) Drip groove 30mm halfround circular on plan	m	200		
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
		ALL FORMWORK				
		BOXING IN FOR HOLES AND VOIDS				
	8.2.6	(a) Small, circular, up to 0,35m diameter with depth				
3.2.3.13		.1 over 0m and up to 0,5m	no	1		
3.2.3.14		.2 over 0,5m and up to 1,0m	no	1		
	8.2.6	(b) Small, other shapes, up to 0,1m² in area with depth				
3.2.3.15		.1 over 0m and up to 0,5m	no	1		
	8.2.6	(c) Large, circular, over 0,35m and up to 0,7m diameter with depth				
3.2.3.16		.1 over 0m and up to 0,5m	no	1		
3.2.3.17		.2 over 0,5m and up to 1,0m	no	1		
	8.2.6	(d) Large, other shapes, over 0,1m² up to 0,5m² in area with depth				
3.2.3.18		.2 over 0,5m and up to 1,0m	no	6		
3.2.3.19		.3 over 1,0m and up to 1,5m	no	1		
		REINFORCEMENT				
		Steel bars				
	8.3.1	(a) Mild steel				
3.2.3.20		.1 All sizes	ton	1		
	8.3.1	(b) High tensile steel				
3.2.3.21		.1 All sizes	ton	320		
		CONCRETE				
	8.4.2	Strength concrete 20 MPa/19mm				
3.2.3.22		(a) Blinding layer 50mm thick	m³	5		
3.2.3.23		(b) Blinding layer 75mm thick	m³	247		
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
3.2.3.24		(b) Inlet pipe encasement	m^3	25		
	8.4.3	(b) Strength concrete 25 MPa/19mm				
3.2.3.25		.1 Open v-drains	m³	40		
	8.4.3	(d) Strength concrete W35 MPa/19mm				
3.2.3.26		.1 Floor slabs and column bases	m³	610		
3.2.3.27		.2 Wall foundations	m³	110		
3.2.3.28		.3 Roof slab and roof upstands	m³	790		
3.2.3.29		.4 Columns and column heads	m³	110		
3.2.3.30		.5 Inlet, outlet and chambers	m³	70		
3.2.3.31		.6 Test panels for durability testing	m³	10		
	8.4.3	(e) Strength concrete W50 MPa/19mm				
3.2.3.32		.1 Walls and buttresses	m³	1,110		
3.2.3.33		.2 Test panels for durability testing	m³	10		
		SURFACE FINISHES				
		Unformed surface finishes				
	8.4.4	(a) Wood floated finish				
3.2.3.34		.3 75 mm Blinding layer	m²	3,000		
3.2.3.35		.4 75 mm No fines concrete drainage layer	m^2	3,000		
	8.4.4	(b) Steel floated finish				
3.2.3.36		.1 Open drains, etc	m²	400		
3.2.3.37		.2 Top of walls, beams, etc	m²	100		
3.2.3.38		.3 Roof upstands	m²	100		
3.2.3.39		.4 10 mm Cement plaster screed to floors	m^2	3,000		
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
	8.4.4	(c) Power floated finish				
3.2.3.40		.1 Floor slab	m²	2,800		
3.2.3.41		.2 Roof slab	m²	2,900		
		JOINTS				
	8.5	(a) 20 mm Thick jointex placed vertically between concrete surfaces				
3.2.3.42		.1 Expansion joint in roof upstands	m²	60		
	8.5	(b) Polyurethane joint sealer				
3.2.3.43		.1 Remove 20 x 30 mm tear off strip, prime with an approved primer and fill joint with polyurethane sealer plus 200 x 2 mm thick hypalon bandage on roof upstands	m	130		
		PRECAST CONCRETE				
		Precast concrete units supplied and fixed complete including all reinforcing, etc				
	8.6	(a) Strength concrete 35 MPa/19mm				
3.2.3.44		.1 Cover slab size 2000 x 1000 x 200mm thick placed on top of chamber	no	3		
		GROUTING				
	8.7	Grout: Sika or similar approved				
3.2.3.45		(a) Under steel bases plates	m³	0.1		
3.2.3.46		(b) Pocket for holding down bolt size 20 mm dia	no	8		
3.2.3.47		(c) Levelling screed on top for wall 10 mm thick	m^3	0.7		
		METAL WORK, HD BOLTS, ETC				
	8.8	Miscellaneous metal work				
		(a) 600 x 600mm Hot dip galvanised cover and frame	no	2		
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
3.2.3.49		(c) 250 mm Dia vent pipes as per detail on drawing, all inclusive and installed	no	4		
3.2.3.50		(d) 600 mm dia emergency overflow, 6 mm thick stainless steel grade 314, including fixing to wall with s/s chemical anchors fully inclusive including bellmouth and outlet all as per drawing	no	1		
		BEARINGS AND JOINTS				
3.2.3.51	8.9	foundation, fully inclusive of waterstop, 400mm wide	m	200		
3.2.3.52	8.10	fully inclusive and installed as per detail on drawings, for	m	200		
3.2.3.53		300 Micron Poly-Ethylene sheeting slip layer on top of 10 mm cement plaster	m^2	3,000		
		WATERPROOFING				
3.2.3.54		Waterproofing consisting of 2 layers of Derbigum SP (or similar and approved), placed at right angles to each other, dressed across upstands, fully torched on and with a 10 year guarantee, installed by a supplier approved subcontractor.	m²	3,000		
3.2.3.55		One layer of "interdeck" protective sheeting fully installed, on top of Derbigum	m²	3,000		
3.2.3.56		75 mm thick layer of stone as per Specification	m²	3,000		
3.2.3.57		Stormwater outlets through perimater roof upstands, all inclusive	no	48		
3.2.3.58		50x50 mm triangular high density foam in corners of roof upstands	m	430		
		UNDERFLOOR DRAINAGE				
3.2.3.59		No-fines concrete as per Specification, generally 75 mm thick below floor slab, but with thickenings for pipework	m³	190		
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
3.2.3.60		125 mm diameter perforated uPVC pipes for underfloor drainage, placed inside no-fines concrete, fully inclusive of end pieces, T-pieces, fully supplied and installed as per drawing to falls as shown	m	680		
		CONSTRUCTION JOINTS				
3.2.3.61		Construction joint to floors complete	m	730		
3.2.3.62		joint to floors	m	730		
3.2.3.63		Construction joint to circular walls complete	m	210		
3.2.3.64		joint to walls	m	210		
	SANS 1200 G	**TESTING**				
3.2.3.65	PSG6.7	Testing reservoir for water tightness	sum			
	SANS 1200 G	**STERILIZATION**				
3.2.3.66	PSG6.6	Sterilize reservoir	sum			
		BILL NO 3.2.3 **CONCRETE (STRUCTURAL)**				
		Carried forward to Summary of Schedules			**Total**	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 GF	**BILL NO 3.2.4** **PRESTRESSED CONCRETE**				
		ESTABLISHMENT ON SITE				
3.2.4.1	8.2.1	Establishment on site, maintenance and dismantling of tensioning beds and equipment	Sum			
		POST-TENSIONING				
	8.2.3.4	Post-tensioning and grouting of items supplied under item 8.2.7.1				
3.2.4.2		.1 21 Cables along full circumference of wall, each cable split up into 4 portions, lapping at buttresses, fully inclusive of all materials and labour, all tendons stressed from both sides by 168 live anchors, on 8 buttresses	Sum			
		SHEATHING AND TENDONS				
	8.2.7.1	Supply and install sheathing and tendons				
3.2.4.3		.1 13C15 tendons as per Freyssinet or similar	MN.m	16,000		
		ANCHORS AND COUPLERS				
	8.2.7.2	Supply and install anchorages and couplers to suit tendons				
3.2.4.4		.1 Freyssinet C-type anchorages at jacking end	MN	630		
		BILL NO 3.2.4 **PRESTRESSED CONCRETE**				
		Carried forward to Summary of Schedules			**Total**	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
		BILL NO 3.3.1 **OUTLET CHAMBER** Dwg 086-W-TD08				
	SANS 1200 D	**RESTRICTED EXCAVATION**				
	8.3.3	(a) Restricted excavation in all materials and place within freehaul distance for				
3.3.1.1		.1 Chambers	m³	33		
	8.3.3	(b) Extra over reference 8.3.3 (a) for				
3.3.1.2		.2 Hard rock excavation	m³	10		
		WORKING SPACE Extra excavation and backfilling in all materials to provide working space around structures				
	8.3.5	(a) Excavate for working space (previously excavated face +- 300mm away from perimeter of structure) for the placing and removal of external formwork to perimeter walls. Average depth of excavation 1,5m deep, including backfilling and compaction to 90% med AASHTO density				
3.3.1.3			m²	29		
		RESTRICTED BACKFILLING Extra over reference 8.3.2 (a) and 8.3.3 (a) for backfill or for fill material against structures				
	8.3.9	(a) Selected material compacted to 93% mod AASHTO density				
3.3.1.4		.1 Behind chamber walls	m³	9		
	SANS 1200 GA	**ROUGH FORMWORK**				
	8.2.1	(b) Plane vertical				
3.3.1.5		.2 Chamber walls	m²	29		
	8.2.3	Rough formwork to narrow widths				
3.3.1.6		(a) Edges, risers, etc not exceeding 300mm wide	m	19		
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
		SMOOTH FORMWORK				
	8.2.2	(b) Plane vertical				
3.3.1.7		.1 Chamber walls	m²	67		
	8.2.3	Smooth formwork to narrow widths				
3.3.1.8		(a) Edges, risers, etc not exceeding 300mm wide	m	10		
	8.2.4	(b) Small, other shapes, up to 0,1m² in area with depth				
3.3.1.9		.1 over 0m and up to 0,5m	no	2		
	8.2.4	(c) Large, circular, over 0,35m and up to 0,7m diameter with depth				
3.3.1.10		.1 over 0m and up to 0,5m	no	2		
	8.2.4	(d) Large, other shapes, over 0,1m² up to 0,5m² in area with depth				
3.3.1.11		.1 over 0m and up to 0,5m	no	2		
		CASTING IN PIPES THROUGH CONCRETE				
		SMOOTH FORMWORK				
		Supply install and remove suitable smooth formwork in small quantities around pipes, etc to insert grout to fix pipes and fittings complete including cleaning and repairing concrete surface to smooth finish after completion				
3.3.1.12		.1 Smooth formwork (all sizes and positions)	m²	5		
		GROUTING				
		Supply and install approved non-shrink waterproof grout for casting in pipes and fittings complete				
3.3.1.13		.1 Grouting around pipes and fittings	m³	0.5		
					Carried Forward	-

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	-
		REINFORCEMENT				
		Steel bars				
	8.3.1	(a) Mild steel				
3.3.1.14		.1 All sizes	ton	1.0		
	8.3.1	(b) High tensile steel				
3.3.1.15		.1 All sizes	ton	2.0		
		STRENGTH CONCRETE				
	8.4.2	Strength concrete 15Mpa/19mm				
3.3.1.16		(a) Blinding layer 50mm thick	m³	2		
	8.4.3	(b) Strength concrete 25Mpa/19mm				
3.3.1.17		.1 Floor slabs	m³	7		
3.3.1.18		.3 Chamber walls	m³	12		
	8.4.3	(c) Strength concrete 25Mpa/13mm				
3.3.1.19		.1 Benching to chamber floors including steel floated surface finish	m³	2		
		Unformed surface finishes				
	8.4.4	(a) Wood floated finish				
3.3.1.20		.1 Floor slabs	m²	5		
3.3.1.21		.2 Top of walls, beams, etc	m²	5		
	8.4.4	(b) Steel floated finish				
3.3.1.22		.1 Floor slabs	m²	5		
3.3.1.23		.2 Top of walls, beams, etc	m²	5		
					Carried Forward	

Contractor | Witness 1 | Witness 2 | Employer | Witness 1 | Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
		SUNDRY ITEMS				
3.3.1.24		.1 Sump in base slab complete with drain pipe	no	2		
3.3.1.25		.2 200mm Dia uPVC sleeve pipe through 200mm thick w	no	1		
		PRECAST CONCRETE				
		Precast concrete units supplied and fixed complete including all reinforcing, etc				
	8.6	(a) Strength concrete 35Mpa/19mm				
3.3.1.26		(a) Cover slab size 1750 x 650 x 250mm thick placed on top of chamber walls with approved bedding material and sealing all round with approved sealant	no	3		
3.3.1.27		(b) Ditto size 2900 x 650 x 250mm	no	3		
3.3.1.28		(c) Ditto size 4650 x 1535 x 250mm with opening for access cover and frame (cover and frame measured elsewhere)	no	1		
	SANS 1200 L	**FITTINGS TO CHAMBERS**				
	8.2.13	(a) Fittings to chambers				
3.3.1.29		(a) 600 x 500mm Access cover and frame installed complete	no	2		
3.3.1.30		(b) Roof ventilator installed complete	no	2		
3.3.1.31		(c) Ladder installed complete	no	2		
		PIPE FITTINGS TO CHAMBERS				
	8.2.14	(a) Pipe fittings to valve chambers Dwg 086-W-FL02 & 086-W-TD04, TD05, TD06, TD07				
		Pipe fitting number				
3.3.1.32		.1 R-OT 1	no	1		
3.3.1.33		.2 R-OT 2	no	1		
3.3.1.34		.3 R-OT 3	no	1		
					Carried Forward	

Contractor | Witness 1 | Witness 2 | Employer | Witness 1 | Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
3.3.1.35		.4 R-OT 4	no	1		
3.3.1.36		.5 R-OT 5	no	1		
3.3.1.37		.6 R-OT 6	no	1		
3.3.1.38		.7 R-OT 7	no	1		
3.3.1.39		.8 R-OT 8	no	1		
3.3.1.40		.9 R-OT 9	no	1		
3.3.1.41		.10 R-OT 10	no	1		
3.3.1.42		.11 R-OT 11	no	1		
3.3.1.43		.12 R-OT 12	no	2		
3.3.1.44		.13 R-OT 13	no	1		
3.3.1.45		.14 R-OT 14	no	1		
3.3.1.46		.15 R-OT 15	no	1		
3.3.1.47		.16 R-OT 16	no	1		
3.3.1.48		.17 R-OT 17	no	1		
3.3.1.49		.18 R-OT 18	no	1		
3.3.1.50		.19 R-OT 19	no	1		
3.3.1.51		.20 R-OT 20	no	1		
3.3.1.52		.21 R-OT 21	no	1		
3.3.1.53		.22 R-OT 22	no	1		
3.3.1.54		.23 R-OT 23	no	1		
3.3.1.55		.24 R-OT 24	no	1		
3.3.1.56		.25 R-OT 25	no	1		
3.3.1.57		.26 R-OT 26	no	1		
3.3.1.58		.27 R-OT 27	no	1		
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
3.3.1.59		.28 R-OT 28	no	1		
3.3.1.60		.29 R-OT 29	no	1		
3.3.1.61		.30 R-OV 1	no	1		
3.3.1.62		.31 R-OV 2	no	1		
3.3.1.63		.32 R-OV 3	no	1		
3.3.1.64		.33 R-OV 4	no	1		
3.3.1.65		.34 R-OV 5	no	1		
3.3.1.66		.35 R-OV 6	no	1		
3.3.1.67		.36 R-OV 7	no	1		
3.3.1.68		.37 R-OV 8	no	1		
		DISINFECT PIPES				
	8.2.1	(b) Disinfect pipes				
3.3.1.69		.1 All pipe sizes	sum			
		HYDROSTATIC PRESSURE TESTING PIPES				
	8.2.1	(c) Pressure testing pipes				
3.3.1.70		.1 All pipe sizes	sum			
		CONCRETE ENCASEMENT AND THRUST BLOCKS				
		Anchor/thrust blocks and pedestals in strength concrete 25Mpa/19mm, including all formwork, reinforcement, etc				
	8.2.11	(b) Measured per m³				
3.3.1.71		.1 Thrust blocks	m³	5		
		SOILCRETE				
		Soilcrete (5% OPC)				
3.3.1.72		(a) Backfilling around pipes	m³	5		
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
	SANS 1200 DB	**EXCAVATION AND BACKFILLING**				
		Excavate in all materials, backfill and compact to 95% mod AASHTO density, and dispose of surplus and unsuitable materials for trenches				
	8.3.2	(a) .2 Over 1m and up to 2m wide				
3.3.1.73		.2 Over 1m and up to 2m deep	m³	100		
3.3.1.74		.3 Over 2m and up to 3m deep	m³	100		
	8.3.2	(b) Extra over reference 8.3.2 (a) for				
3.3.1.75		.2 Hard rock excavation	m³	100		
	8.3.2	(c) Excavate unsuitable material from trench bottom, dispose of material, and re-fill with suitable imported				
3.3.1.76		material compacted to 90% mod AASHTO density	m³	20		
	SANS 1200 LB	**BEDDING (PIPES)**				
		BEDDING FROM TRENCH EXCAVATIONS				
	8.2.1	Provision of bedding material from trench excavations				
3.3.1.77		(a) Selected granular material	m³	20		
3.3.1.78		(b) Selected fill material	m³	20		
		BEDDING FROM OTHER EXCAVATIONS ON SITE other necessary excavations within the freehaul distance				
3.3.1.79		(a) Selected granular material	m³	10		
3.3.1.80		(b) Selected fill material	m³	10		
		BEDDING FROM COMMERCIAL SOURCES				
	8.2.2	.3 Provision of bedding material by importation from commercial sources selected by the Contractor				
3.3.1.81		(a) Selected granular material	m³	50		
3.3.1.82		(b) Selected fill material	m³	50		
		BILL NO 3.3.1 **OUTLET CHAMBER**				
		Carried forward to Summary of Schedules			**Total**	

Contractor | Witness 1 | Witness 2 | Employer | Witness 1 | Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
		BILL NO 3.3.2 **METER CHAMBER** Dwg 086-W-TD09				
	SANS 1200 D	**RESTRICTED EXCAVATION**				
	8.3.3	(a) Restricted excavation in all materials and place within freehaul distance for				
3.3.2.1		.1 Chambers	m³	21		
	8.3.3	(b) Extra over reference 8.3.3 (a) for				
3.3.2.2		.2 Hard rock excavation	m³	8		
		WORKING SPACE Extra excavation and backfilling in all materials to provide working space around structures				
	8.3.5	(a) Excavate for working space (previously excavated face +- 300mm away from perimeter of structure) for the placing and removal of external formwork to perimeter walls. Average depth of excavation 1,5m deep, including backfilling and compaction to 90% med AASHTO density				
3.3.2.3			m²	26		
		RESTRICTED BACKFILLING Extra over reference 8.3.2 (a) and 8.3.3 (a) for backfill or for fill material against structures				
	8.3.9	(a) Selected material compacted to 93% mod AASHTO density				
3.3.2.4		.1 Behind chamber walls	m³	6		
	SANS 1200 GA	**ROUGH FORMWORK**				
	8.2.1	(b) Plane vertical				
3.3.2.5		.2 Chamber walls	m²	14		
	8.2.3	Rough formwork to narrow widths				
3.3.2.6		(a) Edges, risers, etc not exceeding 300mm wide	m	14		
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
		SMOOTH FORMWORK				
	8.2.2	(b) Plane vertical				
3.3.2.7		.1 Chamber walls	m²	32		
	8.2.3	Smooth formwork to narrow widths				
3.3.2.8		(a) Edges, risers, etc not exceeding 300mm wide	m	10		
		BOXING IN FOR HOLES AND VOIDS				
	8.2.4	(b) Small, other shapes, up to 0,1m² in area with depth				
3.3.2.9		.1 over 0m and up to 0,5m	no	2		
	8.2.4	(c) Large, circular, over 0,35m and up to 0,7m diameter with depth				
3.3.2.10		.1 over 0m and up to 0,5m	no	2		
	8.2.4	(d) Large, other shapes, over 0,1m² up to 0,5m² in area with depth				
3.3.2.11		.1 over 0m and up to 0,5m	no	2		
		CASTING IN PIPES THROUGH CONCRETE				
		SMOOTH FORMWORK				
		Supply install and remove suitable smooth formwork in small quantities around pipes, etc to insert grout to fix pipes and fittings complete including cleaning and repairing concrete surface to smooth finish after completion				
3.3.2.12		.1 Smooth formwork (all sizes and positions)	m²	5		
		GROUTING				
		Supply and install approved non-shrink waterproof grout for casting in pipes and fittings complete				
3.3.2.13		.1 Grouting around pipes and fittings	m³	0.5		
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
		REINFORCEMENT				
		Steel bars				
	8.3.1	(a) Mild steel				
3.3.2.14		.1 All sizes	ton	1.0		
	8.3.1	(b) High tensile steel				
3.3.2.15		.1 All sizes	ton	1.0		
		STRENGTH CONCRETE				
	8.4.2	Strength concrete 15Mpa/19mm				
3.3.2.16		(a) Blinding layer 50mm thick	m³	1		
	8.4.3	(b) Strength concrete 25Mpa/19mm				
3.3.2.17		.1 Floor slabs	m³	4		
3.3.2.18		.3 Chamber walls	m³	6		
	8.4.3	(c) Strength concrete 25Mpa/13mm				
3.3.2.19		.1 Benching to chamber floors including steel floated surface finish	m³	1		
		SURFACE FINISHES				
		Unformed surface finishes				
	8.4.4	(a) Wood floated finish				
3.3.2.20		.1 Floor slabs	m²	5		
3.3.2.21		.2 Top of walls, beams, etc	m²	5		
	8.4.4	(b) Steel floated finish				
3.3.2.22		.1 Floor slabs	m²	5		
3.3.2.23		.2 Top of walls, beams, etc	m²	5		
					Carried Forward	

Contractor | Witness 1 | Witness 2 | Employer | Witness 1 | Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
		SUNDRY ITEMS				
3.3.2.24		.1 Sump in base slab complete with drain pipe	no	1		
3.3.2.25		.2 200mm Dia uPVC sleeve pipe through 200mm thick w	no	1		
		PRECAST CONCRETE				
		Precast concrete units supplied and fixed complete including all reinforcing, etc				
	8.6	(a) Strength concrete 35Mpa/19mm				
3.3.2.26		(a) Cover slab size 2500 x 850 x 250mm thick placed on top of chamber walls with approved bedding material and sealing all round with approved sealant	no	2		
3.3.2.27		(c) Ditto size 2500 x 1200 x 250mm with opening for access cover and frame (cover and frame measured elsewhere)	no	1		
	SANS 1200 L	**FITTINGS TO CHAMBERS**				
	8.2.13	(a) Fittings to chambers				
3.3.2.28		(a) 600 x 500mm Access cover and frame installed complete	no	1		
3.3.2.29		(b) Roof ventilator installed complete	no	2		
3.3.2.30		(c) Ladder installed complete	no	1		
		BILL NO 3.3.2 **METER CHAMBER**				
		Carried forward to Summary of Schedules			**Total**	

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
		BILL NO 3.3.3 **AIR VALVE CHAMBER** Dwg 086-W-TD09				
	SANS 1200 D	**RESTRICTED EXCAVATION**				
	8.3.3	(a) Restricted excavation in all materials and place within freehaul distance for				
3.3.3.1		.1 Chambers	m³	11		
	8.3.3	(b) Extra over reference 8.3.3 (a) for				
3.3.3.2		.2 Hard rock excavation	m³	3		
		WORKING SPACE Extra excavation and backfilling in all materials to provide working space around structures				
	8.3.5	(a) Excavate for working space (previously excavated face +- 150mm away from perimeter of structure) for the placing and removal of external formwork to perimeter walls. Average depth of excavation 1,5m deep, including backfilling and compaction to 90% med AASHTO density				
3.3.3.3			m²	8		
		RESTRICTED BACKFILLING Extra over reference 8.3.2 (a) and 8.3.3 (a) for backfill or for fill material against structures				
	8.3.9	(a) Selected material compacted to 93% mod AASHTO density				
3.3.3.4		.1 Behind chamber walls	m³	3		
	SANS 1200 GA	**ROUGH FORMWORK**				
	8.2.3	Rough formwork to narrow widths				
3.3.3.5		(a) Edges, risers, etc not exceeding 300mm wide	m	21		
					Carried Forward	

Contractor | Witness 1 | Witness 2 | Employer | Witness 1 | Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
		REINFORCEMENT				
		Steel bars				
	8.3.1	(a) Mild steel				
3.3.3.6		.1 All sizes	ton	0.1		
	8.3.1	(b) High tensile steel				
3.3.3.7		.1 All sizes	ton	0.5		
		STRENGTH CONCRETE				
	8.4.2	Strength concrete 15Mpa/19mm				
3.3.3.8		(a) Blinding layer 50mm thick	m³	1		
	8.4.3	(b) Strength concrete 25Mpa/19mm				
3.3.3.9		.1 Wall footings	m³	1		
		SURFACE FINISHES				
		Unformed surface finishes				
	8.4.4	(a) Wood floated finish				
3.3.3.10		.1 Wall footings	m²	5		
3.3.3.11		.2 Top of walls, beams, etc	m²	2		
		PRECAST CONCRETE				
		Precast concrete units supplied and fixed complete including all reinforcing, etc				
	8.6	(a) Strength concrete 35Mpa/19mm				
3.3.3.12		(a) Chamber square shaft section size 2000 x 2000 x 500mm high with 150mm thick sides placed on footing and sealing all joints with approved sealant	no	4		
3.3.3.14		(c) Cover slab size 2300 x 1150 x 250mm thick placed on top of chamber walls with approved bedding material and sealing all round with approved sealant	no	1		
					Carried Forward	

Contractor | Witness 1 | Witness 2 | Employer | Witness 1 | Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
3.3.3.14		(d) Ditto with opening for access cover and frame	no	1		
	SANS 1200 L	**FITTINGS TO CHAMBERS**				
	8.2.13	(a) Fittings to chambers				
3.3.3.15		(a) 600 x 500mm Access cover and frame installed complete	no	1		
3.3.3.16		(b) Roof ventilator installed complete	no	2		
3.3.3.17		(c) Ladder installed complete	no	1		
		BILL NO 3.3.3 **AIR VALVE CHAMBER**				
		Carried forward to Summary of Schedules			**Total**	

Contractor | Witness 1 | Witness 2 | Employer | Witness 1 | Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
		BILL NO 3.3.4 **CONTROL CHAMBER** Dwg 086-W-TD03				
	SANS 1200 D	**RESTRICTED EXCAVATION**				
	8.3.3	(a) Restricted excavation in all materials and place within freehaul distance for				
3.3.4.1		.1 Chambers	m³	68		
	8.3.3	(b) Extra over reference 8.3.3 (a) for				
3.3.4.2		.2 Hard rock excavation	m³	20		
		WORKING SPACE Extra excavation and backfilling in all materials to provide working space around structures				
	8.3.5	(a) Excavate for working space (previously excavated face +- 300mm away from perimeter of structure) for the placing and removal of external formwork to perimeter walls. Average depth of excavation 1,5m deep, including backfilling and compaction to 90% med AASHTO density				
3.3.4.3			m²	52		
		RESTRICTED BACKFILLING Extra over reference 8.3.2 (a) and 8.3.3 (a) for backfill or for fill material against structures				
	8.3.9	(a) Selected material compacted to 93% mod AASHTO density				
3.3.4.4		.1 Behind chamber walls	m³	16		
	SANS 1200 GA	**ROUGH FORMWORK**				
	8.2.1	(b) Plane vertical				
3.3.4.5		.2 Chamber walls	m²	37		
	8.2.3	Rough formwork to narrow widths				
3.3.4.6		(a) Edges, risers, etc not exceeding 300mm wide	m	26		
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
		SMOOTH FORMWORK				
	8.2.2	(b) Plane vertical				
3.3.4.7		.1 Chamber walls	m²	87		
3.3.4.8		.2 Pipe supports	m²	4		
	8.2.3	Smooth formwork to narrow widths				
3.3.4.9		(a) Edges, risers, etc not exceeding 300mm wide	m	10		
		BOXING IN FOR HOLES AND VOIDS				
	8.2.4	(b) Small, other shapes, up to 0,1m² in area with depth				
3.3.4.10		.1 over 0m and up to 0,5m	no	3		
	8.2.4	(c) Large, circular, over 0,35m and up to 0,7m diameter with depth				
3.3.4.11		.1 over 0m and up to 0,5m	no	3		
	8.2.4	(d) Large, other shapes, over 0,1m² up to 0,5m² in area with depth				
3.3.4.12		.1 over 0m and up to 0,5m	no	3		
		CASTING IN PIPES THROUGH CONCRETE				
		SMOOTH FORMWORK				
		Supply install and remove suitable smooth formwork in small quantities around pipes, etc to insert grout to fix pipes and fittings complete including cleaning and repairing concrete surface to smooth finish after completion				
3.3.4.13		.1 Smooth formwork (all sizes and positions)	m²	8		
		GROUTING				
		Supply and install approved non-shrink waterproof grout for casting in pipes and fittings complete				
3.3.4.14		.1 Grouting around pipes and fittings	m³	0.5		
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
		REINFORCEMENT				
		Steel bars				
	8.3.1	(a) Mild steel				
3.3.4.15		.1 All sizes	ton	1.5		
	8.3.1	(b) High tensile steel				
3.3.4.16		.1 All sizes	ton	3.0		
		STRENGTH CONCRETE				
	8.4.2	Strength concrete 15Mpa/19mm				
3.3.4.17		(a) Blinding layer 50mm thick	m³	2		
	8.4.3	(b) Strength concrete 25Mpa/19mm				
3.3.4.18		.1 Floor slabs	m³	11		
3.3.4.19		.3 Chamber walls	m³	19		
3.3.4.20		.4 Pipe supports	m³	1		
	8.4.3	(c) Strength concrete 25Mpa/13mm				
3.3.4.21		.1 Benching to chamber floors including steel floated surface finish	m³	2		
		SURFACE FINISHES				
		Unformed surface finishes				
	8.4.4	(a) Wood floated finish				
3.3.4.22		.1 Floor slabs	m²	5		
3.3.4.23		.2 Top of walls, beams, etc	m²	5		
	8.4.4	(b) Steel floated finish				
3.3.4.24		.1 Floor slabs	m²	5		
3.3.4.25		.2 Top of walls, beams, etc	m²	5		
					Carried Forward	

Contractor | Witness 1 | Witness 2 | Employer | Witness 1 | Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
		SUNDRY ITEMS				
3.3.4.26		.1 Sump in base slab complete with drain pipe	no	2		
3.3.4.27		.2 200mm Dia uPVC sleeve pipe through 200mm thick w	no	1		
		PRECAST CONCRETE				
		Precast concrete units supplied and fixed complete including all reinforcing, etc				
	8.6	(a) Strength concrete 35Mpa/19mm				
3.3.4.28		(a) Cover slab size 3200 x 650 x 250mm thick placed on top of chamber walls with approved bedding material and sealing all round with approved sealant	no	9		
3.3.4.29		(c) Ditto size 3200 x 1200 x 250mm with opening for access cover and frame (cover and frame measured elsewhere)	no	2		
	SANS 1200 L	**FITTINGS TO CHAMBERS**				
	8.2.13	(a) Fittings to chambers				
3.3.4.30		(a) 600 x 500mm Access cover and frame installed complete	no	2		
3.3.4.31		(b) Roof ventilator installed complete	no	2		
3.3.4.32		(c) Ladder installed complete	no	2		
		PIPE FITTINGS TO CHAMBERS				
	8.2.14	(a) Pipe fittings to valve chambers Dwg 086-W-FL01 & 086-W-TD01				
		Pipe fitting number				
3.3.4.33		.1 R-FC 1	no	1		
3.3.4.34		.2 R-FC 2	no	3		
3.3.4.35		.3 R-FC 3	no	1		
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
3.3.4.36		.4 R-FC 4	no	1		
3.3.4.37		.5 R-FC 5	no	1		
3.3.4.38		.6 R-FC 6	no	1		
3.3.4.39		.7 R-FC 7	no	1		
3.3.4.40		.8 R-FC 8	no	1		
3.3.4.41		.9 R-FC 9	no	1		
3.3.4.42		.10 R-FC 10	no	1		
3.3.4.43		.11 R-FC 11	no	1		
3.3.4.44		.12 R-FC 12	no	2		
3.3.4.45		.13 R-FC 13	no	1		
3.3.4.46		.14 R-FC 14	no	1		
3.3.4.47		.15 R-FC 15	no	1		
3.3.4.48		.16 R-FC 16	no	1		
3.3.4.49		.17 R-FC 17	no	1		
3.3.4.50		.18 R-FC 18	no	1		
3.3.4.51		.19 R-FC 19	no	1		
3.3.4.52		.20 R-FC 20	no	1		
3.3.4.53		.21 R-FC 21	no	1		
3.3.4.54		.22 R-FC 22	no	1		
		CONNECT TO EXISTING PIPEWORK				
3.3.4.55		Allow for connecting to existing 500 and 800mm dia	sum			
					Carried Forward	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
		DISINFECT PIPES				
	8.2.1	(b) Disinfect pipes				
3.3.4.56		.1 All pipe sizes	sum			
		HYDROSTATIC PRESSURE TESTING PIPES				
	8.2.1	(c) Pressure testing pipes				
3.3.4.57		.1 All pipe sizes	sum			
		CONCRETE ENCASEMENT AND THRUST BLOCKS				
		Anchor/thrust blocks and pedestals in strength concrete 25Mpa/19mm, including all formwork, reinforcement, etc				
	8.2.11	(b) Measured per m³				
3.3.4.58		.1 Thrust blocks	m³	5		
		SOILCRETE				
		Soilcrete (5% OPC)				
3.3.4.59		(a) Backfilling around pipes	m³	5		
		SUNDRIES				
3.3.4.60		300mm Thick brick wall in closing chamber wall openings	m²	1		
	SANS 1200 DB	**EXCAVATION AND BACKFILLING**				
		Excavate in all materials, backfill and compact to 95% mod AASHTO density, and dispose of surplus and unsuitable materials for trenches				
	8.3.2	(a) .2 Over 1m and up to 2m wide				
3.3.4.61		.2 Over 1m and up to 2m deep	m³	100		
3.3.4.62		.3 Over 2m and up to 3m deep	m³	100		
					Carried Forward	

Contractor | Witness 1 | Witness 2 | Employer | Witness 1 | Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
	8.3.2	(b) Extra over reference 8.3.2 (a) for				
3.3.4.63		.2 Hard rock excavation	m³	100		
	8.3.2	(c) Excavate unsuitable material from trench bottom, dispose of material, and re-fill with suitable imported				
3.3.4.64		material compacted to 90% mod AASHTO density	m³	20		
	SANS 1200 LB	**BEDDING (PIPES)**				
		BEDDING FROM TRENCH EXCAVATIONS				
	8.2.1	Provision of bedding material from trench excavations				
3.3.4.65		(a) Selected granular material	m³	20		
3.3.4.66		(b) Selected fill material	m³	20		
		BEDDING FROM OTHER EXCAVATIONS ON SITE				
	8.2.2	.1 Provision of bedding material by importation from other necessary excavations within the freehaul distance				
3.3.4.67		(a) Selected granular material	m³	10		
3.3.4.68		(b) Selected fill material	m³	10		
		BEDDING FROM COMMERCIAL SOURCES				
	8.2.2	.3 Provision of bedding material by importation from commercial sources selected by the Contractor				
3.3.4.69		(a) Selected granular material	m³	50		
3.3.4.70		(b) Selected fill material	m³	50		
		BILL NO 3.3.4 **CONTROL CHAMBER**				
		Carried forward to Summary of Schedules			**Total**	

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
		BILL NO 3.3.5				
		STEEL FITTINGS TO RESERVOIR				
		Dwg 086-STR-TD04				
		HANDRAILS				
	8.3.7	(a) Hot dip galvanised handrail assembly installed complete				
3.3.5.1		.1 1m High Mentis - or other approved - handrail	m	4		
		LADDERS				
	8.3.8	(a) Hot dip galvanised ladders installed complete				
3.3.5.2		.1 Ladder approximately 14m high including	no	1		
	8.3.8	(b) Stainless steel 316 ladders installed complete				
3.3.5.3		.1 Ladder approximately 13m high including	no	1		
		COVERS AND FRAMES				
	8.3.8	(c) Hot dip galvanised covers and frames installed complete				
3.3.5.4		.1 1200 X 1200mm reservoir access cover and	no	1		
		PIPE FITTINGS TO RESERVOIR				
	8.2.14	(a) Pipe fittings to reservoir inlet including all brackets for Dwg 086-W-FL01 & 086-W-TD01				
		Pipe fitting number				
3.3.5.5		.1 R-IN 1	no	1		
3.3.5.6		.2 R-IN 2	no	1		
3.3.5.7		.3 R-IN 3	no	1		
3.3.5.8		.4 R-IN 4	no	1		
3.3.5.9		.5 R-IN 5	no	1		
3.3.5.10		.6 R-IN 6	no	1		
3.3.5.11		.7 R-IN 7	no	1		
		BILL NO 3.3.5				
		STEEL FITTINGS TO RESERVOIR				
		Carried forward to Summary of Schedules			**Total**	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
		BILL NO 3.3.6 **OVERFLOW PIPEWORK** Dwg 086-W-LY01				
	SANS 1200 DB	**EXCAVATION AND BACKFILLING**				
		Excavate in all materials, backfill and compact to 95% mod AASHTO density, and dispose of surplus and unsuitable materials for trenches				
	8.3.2	(a) .2 Over 1m and up to 2m wide				
3.3.6.1		.2 Over 1m and up to 2m deep	m³	100		
	8.3.2	(b) Extra over reference 8.3.2 (a) for				
3.3.6.2		.2 Hard rock excavation	m³	30		
	SANS 1200 DK	**GABIONS AND PITCHING**				
		SURFACE PREPARATION				
	8.2.1	Surface preparation for bedding of gabions and mattresses				
3.3.6.3		(b) Cavities filled with approved excavated material or rock and compacted to 95% mod AASHTO density	m²	15		
		MATTRESSES				
	8.2.2	.2 Mattresses using galvanized wire of the following sizes				
3.3.6.4		(a) 3,0 x 3,0 x 0,3m Mattress of 50mm mesh size	m³	1		
		GEOTEXTILES				
	8.2.4	Supply and lay geotextile fabric below gabions and mattresses				
3.3.6.5		(b) Bidim A2 laid below gabions and mattresses	m²	15		
		GROUTED STONE PITCHING				
	8.2.5	(b) 200mm Thick ordinary 1:3 cement/riversand grouted stone pitching to				
3.3.6.6		.1 Flat slope	m²	5		
					Carried Forward	

					Brought Forward	
3.3.6.7		.2 Steep slope	m²	5		
	SANS 1200 LB	**BEDDING (PIPES)**				
		BEDDING FROM TRENCH EXCAVATIONS				
	8.2.1	Provision of bedding material from trench excavations				
3.3.6.8		(a) Selected granular material	m³	20		
3.3.6.9		(b) Selected fill material	m³	20		
		BEDDING FROM OTHER EXCAVATIONS ON SITE				
	8.2.2	.1 Provision of bedding material by importation from other necessary excavations within the freehaul distance				
3.3.6.10		(a) Selected granular material	m³	20		
3.3.6.11		(b) Selected fill material	m³	20		
	SANS 1200 LE	**STORMWATER DRAINAGE**				
		OGEE PIPES				
		Supply, lay, bed (class C bedding) and test concrete pipe culverts including all cutting to ends				
	8.2.1	(c) Ogee class 100D				
3.3.6.12		.7 750mm Diameter	m	18		
		OUTLET STRUCTURES TO PIPES				
	8.2.8	(g) Pipe outlet structure complete with the following pipe sizes Dwg 086-W-LY01				
3.3.6.13		.2 675 - 900mm Diameter pipe culverts	no	1		
		BILL NO 3.3.6 **OVERFLOW PIPEWORK**				
		Carried forward to Summary of Schedules			**Total**	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
		BILL NO 3.3.7 **SITE WORKS** Dwg 086-W-LY01				
	SANS 1200 C	**FENCING**				
	8.2.49	Concrete palisade fencing supplied and fixed complete, inluding all posts, excavation, backfilling, concrete bases, etc				
3.3.7.1		(b) 2,1m High fencing	m	80		
3.3.7.2		(d) Coiled razor wire overhang above palisade fencing 600mm high erected complete	m	80		
	8.2.49	Gates supplied and fixed complete, including all posts, stays, hinges, locking devices, excavation, backfilling, concrete bases, etc				
3.3.7.3		(g) Double gate size 3000 x 2100mm	no	1		
		BILL NO 3.3.7 **SITE WORKS**				
		Carried forward to Summary of Schedules			**Total**	

Witness 1 | Witness 2 | Employer | Witness 1 | Wi

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
		BILL NO 3.3.8 **CATHODIC PROTECTION**				
		GENERAL				
3.3.8.1		(a) Contractor's design and documentation	sum	1		
3.3.8.2		(b) Preliminary and general	sum	1		
		SUPPLY AND INSTALLATION OF MONITORING & CROSS BOND FACILITIES				
3.3.8.3	10.4	(a) Supply and install vandal resistant bunker (including foundation,1.2m concrete surround with gradient control mat connected to bunker rebar)	no	1		
3.3.8.4	104	(b) Supply and install VLD between gradient control mat and pipe (incl. all cables, and terminations)	no	1		
3.3.8.5	10.4	(c) Supply and install Type B connection panel	no	0		
3.3.8.6	10.4	(d) Supply and install Type C connection panel	no	1		
3.3.8.7	10.2	(e) Supply Pipe Power Cable, black, PVC/PVC, single core, 16mm²	no	10		
3.3.8.8	10.2	(f) Supply Pipe Monitoring Cable, black, PVC/PVC, single core, 16mm²	no	10		
3.3.8.9	10.5	(g) Trenching to 1.5m depth and backfill (suitable bedding material around cables)	no	6		
3.3.8.10	10.3	(h) Install pipe cables (incl terminations ,cable labels, cable ties, thermit welds, coating make good) and connect to link panel inside bunker	no	2		
3.3.8.11	10.4	(i) Supply and install DC monitor coupon with cables (incl. terminations and 10A slow blow fuse link)	no	1		
3.3.8.12	10.4	(j) Supply and install AC monitor coupon with cables (incl. terminations and 10 ohm 50w resistor)	no	1		
					Carried Forward	

		Brought Forward				
3.3.8.13	10.4	(k) Supply & install stationary reference electrode ($Zn/ZnSO_4$) complete with yellow cable (incl. terminations)	no	1		
		SUPPLY OF INSULATING FLANGE (IF) KITS. INSTALLATION BY MAIN CONTRACTOR				
3.3.8.14	10.4	(a) Supply DN500 PN25 IF kit for New reservoir Inlet (complete with spark gap)	no	1		
	10.4	(b) Supply DN800 PN16 IF kit for New reservoir Outlet (complete with spark gap)	no	1		
		SUPPLY & INSTALLATION OF CONTINUITY BONDING				
		Around outside of valve chambers				
3.3.8.16	10.2	(a) Supply 2 off black, PVC/PVC, single core, 35mm² cable around outside of valve chambers	m	35		
3.3.8.17	10.3	(b) Install bonding cables per cable (incl thermit welds, coating make good/wrapping)	no	4		
		SUPPLY & INSTALLATION OF AC INTERFERENCE MITIGATION				
		Gradient control at reinforced concrete chambers				
3.3.8.18	10.4	(a) Welding of continuity ring on chamber reinforcement .One central floor reinforcement, in each direction, welded at each crossing and continuity ring welded to each vertical reinforcement just below the chamber roof level. Suitable lug to be welded to reinforcing to protrude into the chamber for connection to pipe (via jumper cables)	no	2		
3.3.8.19	10.4	(b) Supply and install stud to be welded onto pipe flange for rebar connection onto pipe (via jumper cables)	no	2		
		BILL NO 3.3.8 **CATHODIC PROTECTION**				
		Carried forward to Summary of Schedules			**Total**	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
		BILL NO 3.4.1				
	EPLC	**PROGRAMMABLE & LOGIC CONTROLLERS**				
	EPLC 26.1	**DESIGN, DRAWINGS AND GENERAL**				
3.4.1.1	EPLC 26.1 (a)	Provide Programmable & Logic Controllers design drawings and wiring diagrams (refer to particular specifications EPLC)	Sum	1		
3.4.1.2	EPLC 26.1 (a)	Provide operating all maintenance manuals and "as-built" drawings as specified (refer to particular specification EPLC)	Sum	1		
	EPLC 26.2	**SUPPLY AND DELIVERY TO SITE**				
3.4.1.3	EPLC 26.2 (a)	Supply and delivery to site a complete of PLC and peripheral equipment installed in the Bospoort North Reservoir Link Chamber (refer to project specification PSEPLC-6.A)	Sum	1		
3.4.1.4	EPLC 26.2 (b)	Supply and delivery to site a complete UPS (refer to project specificaion PSEPLC-6.A)	Sum	1		
3.4.1.5	EPLC 26.2 (c)	Supply and delivery to site a complete of HMI (refer to project specification PSEPLC-6.A)	Sum	1		
3.4.1.6	EPLC 26.2 (a)	Supply and delivery to site a complete of Alarm System (refer to project specification PSEPLC-6.A)	Sum	1		
	EPLC 26.3	**INSTALLATION**				
3.4.1.7	EPLC 26.3 (a)	Installation of a complete of PLC and peripheral equipment installed in the Bospoort North Reservoir Link Chamber (refer to project specification PSEPLC-6.A)	Sum	1		
3.4.1.8	EPLC 26.3 (b)	Installation of a complete UPS (refer to project specificaion PSEPLC-6.A)	Sum	1		
3.4.1.9	EPLC 26.3 (c)	Installation of a complete of HMI (refer to project specification PSEPLC-6.A)	Sum	1		
3.4.1.10	EPLC 26.3 (a)	Installation of a complete of Alarm System (refer to project specification PSEPLC-6.A)	Sum	1		
3.4.1.11	EPLC 26.3 (d)	Site cable connections and programming of EPLC and peripheral equipment	Sum	1		
					Carried Forward	

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
	EPLC 26.4	**COMMISSIONING**				
3.4.1.12	EPLC 26.4 (a)	Commissioning of a complete of PLC and peripheral equipment installed in the Bospoort North Reservoir Link Chamber (refer to project specification PSEPLC-6.A)	Sum	1		
3.4.1.13	EPLC 26.4 (b)	Commissioning of a complete UPS (refer to project specificaion PSEPLC-6.A)	Sum	1		
3.4.1.14	EPLC 26.4 (c)	Commissioning of a complete of HMI (refer to project specification PSEPLC-6.A)	Sum	1		
3.4.1.15	EPLC 26.4 (a)	Commissioning of a complete of Alarm System (refer to project specification PSEPLC-6.A)	Sum	1		
3.4.1.16	EPLC 26.4 (d)	Commissioning of a complete connections and programming of EPLC and peripheral equipment	Sum	1		
		BILL NO 3.4.1 **PROGRAMMABLE & LOGIC CONTROLLERS** **CARRIED TO SUMMARY**				
		Carried forward to Summary of Schedules			**Total**	

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
		BILL NO 3.4.2				
	EPTM	**TELEMETRY SYSTEM**				
	EPTM 25.1	**DESIGN, DRAWINGS AND GENERAL**				
3.4.2.1	EPTM 25.1 (a)	Provide design calculations, design drawings and drawings for programmable & logic controllers, antennae, Input and output schedules, loop diagrams, cable schedules, cable layouts, control philiosphy, control network layout and wiring diagrams (refer to particular specifications EPTM)	Sum	1		
3.4.2.2	EPTM 25.1 (b)	Provide operating all maintenance manuals and "as-built" drawings as specified (refer to particular specification EPTM)	Sum	1		
	EPTM 25.2	**SUPPLY AND DELIVERY TO SITE**				
3.4.2.3	EPTM 25.2 (a)	Supply and delivery to site of complete telemetry outstation with antenna and earthing system at the Bospoort North Reservoir Link Chamber (refer to project specifications PSEPTM-6.A & PSEPTM-19.A)	Sum	1		
	EPTM 25.3	**INSTALLATION**				
3.4.2.4	EPTM 25.3 (a)	Installation of a complete telemetry outstation with antenna and earthing system at the Bospoort North Reservoir Chamber (refer to project specifications PSEPTM-6.A & PSEPTM-19.A)	Sum	1		
3.4.2.5	EPTM 25.3 (c)	Complete site cable connections, programming of the entire Telemetry System and all peripheral equipment	Sum	1		
	EPTM 25.4	**COMMISSIONING**				
3.4.2.6	EPTM 25.4 (a)	Commissioning of a complete telemetry outstation with antenna and earthing system at the Bospoort North Reservoir Link Chamber (refer to project specifications PSEPTM-6.A & PSEPTM-19.A)	Sum	1		
					Carried Forward	

Contractor | Witness 1 | Witness 2 | Employer | Witness 1 | Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
3.4.2.7	EPTM 25.3 (c)	Commisioing site cable connections, programming of the entire Telemetry System and all peripheral equipment	Sum	1		
		BILL NO 3.4.2 **TELEMETRY SYSTEM**				
		Carried forward to Summary of Schedules			**Total**	

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
		BILL NO 3.4.3				
	ECIS	**CONTROL INSTRUMENTATION SYSTEM**				
	ECIS	**SCHEDULE E8.1 - DESIGN, DRAWINGS AND GENERAL**				
	13.1					
3.4.3.1	ECIS 13.1 (a)	Provide general layout drawings and wiring diagrams of the enclosure and instrumentation for approval [Refer to particular specification]	Sum			
3.4.3.2	ECIS 13.1 (b)	Provide operating and maintenance manuals, data sheets of all equipment and “as built” drawings	Sum			
	ECIS 13.2	**SUPPLY AND DELIVERY TO SITE**				
3.4.3.3	ECIS 13.2 (c)	Supply and delivery to site of electrical installation equipment at and in flow meter manholes (refer to project specification PS ECIS-3.A)	Each	3		
3.4.3.4	ECIS 13.2 (b)	Supply and delivery to site a complete level transducer and controller complete with mounting bracket (refer to project specification PS ECIS-4.A)	Each	1		
	ECIS 13.3	**INSTALLATION**				
3.4.3.5	ECIS 13.3 (c)	Installation on site of electrical installation equipment at and in flow meter manholes (refer to project specification PS ECIS-3.A)	Each	3		
3.4.3.6	ECIS 13.3 (b)	Installation on site a complete level transducer and controller complete with mounting bracket (refer to project specification PS ECIS-4.A)	Each	1		
	ECIS 13.4	**COMMISSIONING**				
3.4.3.7	ECIS 13.4 (c)	Commissioning of electrical installation equipment at and in flow meter manholes (refer to project specification PS ECIS-3.A)	Each	3		
3.4.3.8	ECIS 13.4 (b)	Commissioning of a complete level transducer and controller complete with mounting bracket (refer to project specification PS ECIS-4.A)	Each	1		
		BILL NO 3.4.3				
		CONTROL INSTRUMENTATION SYSTEM				
		Carried forward to Summary of Schedules			**Total**	

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
		BILL NO 3.4.4				
	EG&M	**GENERAL AND MISCELLANEOUS**				
	EG&M 13.1	**DESIGN, DRAWINGS AND GENERAL**				
3.4.4.1	EG&M 13.1 (a)	Provide general layouts drawings, notice drawings and wiring diagrams for approval.	Sum			
3.4.4.2	EG&M 13.1 (b)	Provide operating and maintenance manuals, data sheets of all equipment and "as built" drawings	Sum			
	EG&M 13.2	**SUPPLY AND DELIVERY TO SITE**				
3.4.4.3	EG&M 13.2 (c)	Supply and delivery to site of fire extinguishers with outdoor bracket, eclosure and fire signage (refer to project specifications PS EG&M-9)	No.	1		
3.4.4.4	EG&M 13.2 (d)	Supply and delivery to site of all notices and all danger plates as may be required (refer to project specifications PS EG&M-8)	Sum			
	EG&M 13.3	**INSTALLATION**				
3.4.4.5	EG&M 13.3 (c)	Installation on site of of fire extinguishers with outdoor bracket, eclosure and fire signage (refer to project specifications PS EG&M-9)	No.			
3.4.4.6	EG&M 13.3 (d)	Installation on site of of all notices and all danger plates as may be required (refer to project specifications PS EG&M-8)	Sum			
	EG&M 13.4	**COMMISSIONING**				
3.4.4.7	EG&M 13.4 (c)	Commissioning of fire extinguishers with outdoor bracket, eclosure and fire signage (refer to particular specification and project specification)	No.	1		
3.4.4.8	EG&M 13.4 (d)	Commissioning of of all notices and all danger plates as may be required (refer to project specifications PS EG&M-8)	Sum			
		BILL NO 3.4.4				
		GENERAL AND MISCELLANEOUS				
		Carried forward to Summary of Schedules			**Total**	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
		BILL NO 3.4.5				
	ESPL	**BUILDINGS ELECTRICAL INSTALLATION**				
	ESPL 12.1	**DESIGN, DRAWINGS AND GENERAL**				
3.4.5.1	ECIS 12.1 (a)	Provide wiring diagrams for approval [Refer to Motor Control centre and Distribution particular specification]	Sum			
3.4.5.2	ECIS 12.1 (b)	Provide operating and maintenance manuals, data sheets of all equipment and “as built” drawings	Sum			
	ESPL 12.2	**SUPPLY AND DELIVERY TO SITE**				
3.4.5.3	ESPL 12.2 (a)	Supply and delivery to site of a complete electrical installation in the Bospoort North Reservoir Network Chamber (refer to project specification PSESPL-A)	Sum			
3.4.5.4	ESPL 12.2 (a)	Supply and delivery to site of a complete concrete control room as specified in drawing 1890.11.00.SUA.23.D001	Sum			
	ESPL 12.3	**INSTALLATION**				
3.4.5.5	ESPL 12.3 (a)	Installation of a complete electrical installation in the Bospoort North Reservoir Network Chamber (refer to project specification PSESPL-A)	Sum			
3.4.5.6	ESPL 12.3 (a)	Installation of a complete concrete control room as specified in drawing 1890.11.00.SUA.23.D001	Sum			
	ESPL 12.4	**COMMISSIONING**				
3.4.5.7	ESPL 12.4 (a)	Commissioning of a complete electrical installation in the Bospoort North Reservoir Network Chamber (refer to project specification PSESPL-A)	Sum			
3.4.5.8	ESPL 12.4 (a)	Commissioning of a complete concrete control room as specified in drawing 1890.11.00.SUA.23.D001	Sum			
		BILL NO 3.4.5 **BUILDINGS ELECTRICAL INSTALLATION**				
		Carried forward to Summary of Schedules			**Total**	

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
		BILL NO 3.4.6				
	EELP	**EARTHING & LIGHTNING PROTECTION**				
	EELP 22.1	**DESIGN, DRAWINGS AND GENERAL**				
3.4.6.1	EELP 22.1 (a)	Provide design drawings and design information for Earthing and Lightning Protection System	Sum	1		
3.4.6.2	EELP 22.1 (b)	Provide operating ad maintenance manuals and "as-built" drawings as specified	Sum	1		
3.4.6.3	EELP 22.1 (c)	Provide risk management calculations and IEC Program calculation results as specified	Sum	1		
	EELS 22.2	**SUPPLY AND DELIVERY TO SITE**				
3.4.6.4	EELP 22.2 (a)	Supply and delivery to site of a complete lightning protection system for complete Bospoort North Reservoir Network Chamber (refer to particular specification PSEELP)	Sum	1		
3.4.6.5	EELP 22.2 (b)	Supply and delivery to site of a complete earth-termination system, earthing , bonding and earth mat for the Bospoort North Reservoir Network Chamber (refer to the particular specification PSEELP)	Sum	1		
3.4.6.6	EELP 22.2 (c)	Supply and delivery to site of a complete earth bar, all accessories, Kwena cable and all as may be required for the Bospoort North Reservoir Network Chamber (refer to the particular specification PSEELP)	Sum	1		
3.4.6.7	EELS 22.2 (d)	Supply and delivery all connection points, terminals, interconnections, bonding points and test joints for the entire system including for “natural” components	Sum	1		
	EELS 22.3	**INSTALLATION**				
3.4.6.8	EELP 22.3 (a)	Installation of a complete lightning protection system for complete Bospoort North Reservoir Network Chamber (refer to particular specification PSEELP)	Sum	1		
					Carried Forward	

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
3.4.6.9	EELP 22.3 (b)	Installation of a complete earth-termination system, earthing , bonding and earth mat for the Bospoort North Reservoir Network Chamber (refer to the particular specification PSEELP)	Sum	1		
3.4.6.10	EELP 22.3 (c)	Installation of a complete earth bar, all accessories, Kwena cable and all as may be required for the Bospoort North Reservoir Network Chamber (refer to the particular specification PSEELP)	Sum	1		
3.4.6.11	EELS 22.3 (d)	Installation of all connection points, terminals, interconnections, bonding points and test joints for the entire system including for "natural" components	Sum	1		
3.4.6.12	EMCA 18.2 (g)	Excavating, back filling, consolidation, importation of soil and dumping of all rock and stone removed during excavations including cleaning of cable routes all according to particular specifications (including hand excavations where necessary along existing cable routes) for the complete Lightning & Earthing protection system	Sum	1		
	EELS 22.4	**<u>COMMISSIONING</u>**				
3.4.6.13	EELS 22.4 (c)	Certificate of compliance of lightning protection system as specified under SANS 10313	Sum	1		
3.4.6.14	EELP 22.4 (a)	Commissioning of a complete lightning protection system for complete Bospoort North Reservoir Network Chamber (refer to particular specification PSEELP)	Sum	1		
3.4.6.15	EELP 22.4 (b)	Commissioning of a complete earth-termination system, earthing , bonding and earth mat for the Bospoort North Reservoir Network Chamber (refer to the particular specification PSEELP)	Sum	1		
					Carried Forward	

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
3.4.6.16	EELP 22.4 (c)	Commissioning of a complete earth bar, all accessories, Kwena cable and all as may be required for the Bospoort North Reservoir Network Chamber (refer to the particular specification PSEELP)	Sum	1		
3.4.6.17	EELS 22.4 (d)	Commissioning of all connection points, terminals, interconnections, bonding points and test joints for the entire system including for "natural" components	Sum	1		
		BILL NO 3.4.6 **EARTHING & LIGHTNING PROTECTION**				
		Carried forward to Summary of Schedules			**Total**	

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
		BILL NO 3.4.7				
	EMCA	**MULTICORE CABLES & EARTH WIRES**				
	EMCA 18.1	**DESIGN, DRAWINGS AND GENERAL**				
3.4.7.1	EMCA 18.1 (a)	The Contractor will provide the following design calculations, drawings, method statements, cable routes, cable schedules in excel format which will include but limited to From, To, Distance and Tag numbers all to the approval of the Engineer [Refer to particular specification EMCA 3.3.2, 8.7 & 17]	Sum			
3.4.7.2	EMCA 18.1 (b)	Provide operating and maintenance manuals, all data sheets [a) cables, b) joint kits, c) ladders, d) glands, conduit, fasteners and all that are used and etc] and furthermore the Contractor to supply as built" drawings	Sum			
	EMCA 18.2	**SUPPLY AND DELIVERY TO SITE**				
	EMCA 18.2 (a)	Supply and delivery to site of cables, jointing, terminating materials, all earth wires and cable names tags as per the particular specification				
3.4.7.3		16mm² 4 core Cu PVC SWA PVC	m	200		
3.4.7.4		2.5mm² 4 core Cu PVC SWA PVC	m	100		
3.4.7.5		2.5mm² 3 core Cu PVC SWA PVC	m	100		
3.4.7.6		2.5mm² Bare Copper Earth Wire	m	100		
3.4.7.7		10mm² Bare Copper Earth Wire	m	200		
3.4.7.8		70mm² Bare Copper Earth Wire	m	20		
3.4.7.9		1.5mm² x 2pr twisted PVC SWA PVC (individually and overall screened)	m	120		
3.4.7.10		1.5mm² x 12pr twisted PVC SWA PVC (individually and overall screened)	m	100		
3.4.7.11		2.5mm² Kwena Copper Earth Wire	m	100		
3.4.7.12		10mm² Kwena Copper Earth Wire	m	200		
				Carried Forward		

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
3.4.7.13		Industrial CAT 6E cable	m	50		
		Termination material including glands, neoprene shrouds, lugs, insulating materials, cable ties and corrosion proof bolts, washers, spring washers, nuts, etc. to terminate the following 600/1000V PVC SWA PVC electrical cables complete.				
3.4.7.14		16mm² 4 core Cu PVC SWA PVC	Each	2		
3.4.7.15		2.5mm² 4 core Cu PVC SWA PVC	Each	16		
3.4.7.16		2.5mm² 3 core Cu PVC SWA PVC	Each	8		
3.4.7.17		2.5mm² Bare Copper Earth Wire	Each	16		
3.4.7.18		10mm² Bare Copper Earth Wire	Each	2		
3.4.7.19		1.5mm² x 2pr twisted PVC SWA PVC (individually and overall screened)	Each	20		
3.4.7.20		1.5mm² x 12pr twisted PVC SWA PVC (individually and overall screened)	Each	10		
3.4.7.21		2.5mm² Kwena Copper Earth Wire	Each	16		
3.4.7.22		10mm² Kwena Copper Earth Wire	Each	2		
3.4.7.23		Industrial CAT 6E cable	Each	10		
3.4.7.24	EMCA 18.2 (b)	Supply and delivery to site of cable route markers	Each	10		
3.4.7.25	EMCA 18.2 (c)	Supply and delivery to site of concrete cable slabs	Each	200		
	EMCA 18.2 (d)	Supply and delivery to site of cable trays, ladders and wire trunking				
		Galvanised heavy duty cable ladder, trunking, welded wire mesh and accessories including all necessary supports, clamps strapping, brackets, reducer splice, hangers, threaded rods, trunking, bolts, nuts and anchor bolts etc. as specified				
3.4.7.26		150mm Wide cable ladder	m	10		
3.4.7.27		150mm wide 90º Horizontal Bend	Each	10		
					Carried Forward	

Contractor | Witness 1 | Witness 2 | Employer | Witness 1 | Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
3.4.7.28		150mm wide 90º Internal elbow (Riser)	Each	1		
3.4.7.29		150mm wide 90º External elbow (Dropper)	Each	1		
3.4.7.30		150mm wide Tee	Each	1		
3.4.7.31		150mm wide 4 Way Cross-over	Each	1		
3.4.7.32	EMCA 18.2 (e)	Supply and delivery to site of cable supports to motors and other electrical equipment	Sum	1		
3.4.7.33	EMCA 18.2 (e)	Supply and delivery to site of pump set sensor termination cubicles	Each	0		
	PSG 18.3	**INSTALLATION**				
	EMCA 18.3 (a)	Installation of cables, jointing, terminating materials, all earth wires and cable name tags as per the cables schedule supplied electronically				
3.4.7.34		16mm² 4 core Cu PVC SWA PVC	m	200		
3.4.7.35		2.5mm² 4 core Cu PVC SWA PVC	m	100		
3.4.7.36		2.5mm² 3 core Cu PVC SWA PVC	m	100		
3.4.7.37		2.5mm² Bare Copper Earth Wire	m	100		
3.4.7.38		10mm² Bare Copper Earth Wire	m	200		
3.4.7.39		70mm² Bare Copper Earth Wire	m	20		
3.4.7.40		1.5mm² x 2pr twisted PVC SWA PVC (individually and overall screened)	m	120		
3.4.7.41		1.5mm² x 12pr twisted PVC SWA PVC (individually and overall screened)	m	100		
3.4.7.42		2.5mm² Kwena Copper Earth Wire	m	100		
3.4.7.43		10mm² Kwena Copper Earth Wire	m	200		
3.4.7.44		Industrial CAT 6E cable	m	50		
					Carried Forward	

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
		Termination material including glands, neoprene shrouds, lugs, insulating materials, cable ties and corrosion proof bolts, washers, spring washers, nuts, etc. to terminate the following 600/1000V PVC SWA PVC electrical cables complete.				
3.4.7.45		16mm² 4 core Cu PVC SWA PVC	Each	2		
3.4.7.46		2.5mm² 4 core Cu PVC SWA PVC	Each	16		
3.4.7.47		2.5mm² 3 core Cu PVC SWA PVC	Each	8		
3.4.7.48		2.5mm² Bare Copper Earth Wire	Each	16		
3.4.7.49		10mm² Bare Copper Earth Wire	Each	2		
3.4.7.50		1.5mm² x 2pr twisted PVC SWA PVC (individually and overall screened)	Each	20		
3.4.7.51		1.5mm² x 12pr twisted PVC SWA PVC (individually and overall screened)	Each	10		
3.4.7.52		2.5mm² Kwena Copper Earth Wire	Each	16		
3.4.7.53		10mm² Kwena Copper Earth Wire	Each	2		
3.4.7.54		Industrial CAT 6E cable	Each	10		
3.4.7.55	EMCA 18.3 (b)	Installation of cable route markers	Each	10		
3.4.7.56	EMCA 18.3 (c)	Installation of concrete cable slabs	Each	50		
	EMCA 18.3 (d)	Installation of cable trays, ladders and wire trunking				
		Galvansied heavy duty cable ladder, trunking, welded wire mesh and accessories including all necessary supports, clamps strapping, brackets, reducer splice, hangers, threaded rods, trunking, bolts, nuts and anchor bolts etc. as specified				
3.4.7.57		150mm Wide cable ladder	m	10		
3.4.7.58		150mm wide 90º Horizontal Bend	Each	10		
3.4.7.59		150mm wide 90º Internal elbow (Riser)	Each	1		
					Carried Forward	

Contractor | Witness 1 | Witness 2 | Employer | Witness 1 | Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
3.4.7.60		150mm wide 90º External elbow (Dropper)	Each	1		
3.4.7.61		150mm wide Tee	Each	1		
3.4.7.62		150mm wide 4 Way Cross-over	Each	1		
3.4.7.63	EMCA 18.3 (e)	Installation of cable supports to motors and other electrical equipment	Sum	1		
3.4.7.64	EMCA 18.3 (f)	Installation of pump set sensor termination cubicles	Sum	0		
	EMCA 18.3 (g)	Excavating, back filling, consolidation, importation of soil and dumping of all rock and stone removed during excavations including cleaning of cable routes all according to particular specifications (including hand excavations where necessary along existing cable routes)				
3.4.7.65		a) Pickable soil	m³	120		
3.4.7.66		b) Soft rock	m³	50		
3.4.7.67		c) Hard rock	m³	50		
3.4.7.68		Importation of additional soil for the bedding of cables and the backfilling of trenches complete as per particular specification.	m³	100		
3.4.7.69		Dumping and removing of all rock and stone removed during excavations including cleaning of cable routes complete as per particular specification.	m³	100		
3.4.7.70		The restoration of road to the original condition complete	m³	20		
3.4.7.71		Nett amount for core drilling 100mm diameter holes through 250mm concrete	Each	15		
	EMCA 18.4	**COMMISSIONING**				
3.4.7.72	EMCA 18.4 (a)	Testing and commissioning of cables	Sum	1		
3.4.7.73	EMCA 18.4 (b)	Updating, verifying and submission of Electronic Cable schedules with Tag numbers and final agreed lengths	Sum	1		
					Carried Forward	
					Brought Forward	

Contractor | Witness 1 | Witness 2 | Employer | Witness 1 | Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
3.4.7.74	EMCA 18.4 (c)	Drawing up of as-built cable route plans	Sum	1		
		BILL NO 3.4.7 **MULTICORE CABLES & EARTH WIRES**				
		Carried forward to Summary of Schedules				

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Item	Payment Ref.	Description	Unit	Qty	Rate (R)	Amount (R)
		BILL NO 3.4.8				
	ESLS	**SITE LIGHTING**				
	GEN	**DESIGN, DRAWINGS AND GENERAL**				
3.4.8.1	PSGEN B	Provide all design drawings and wiring diagrams	Sum			
3.4.8.2	PSGEN B	Provide operating all maintenance manuals and "as-built" drawings	Sum			
	ESLS 5.1	**SUPPLY AND DELIVERY TO SITE**				
3.4.8.3	ESLS 5.1 (a)	Supply and delivery to site of complete mast (refer to project specification PSESLS-2)	No.	4		
	ESLS 5.2	**INSTALLATION**				
3.4.8.4	ESLS 5.2 (a)	Installation of complete mast (refer to project specification PSESLS-2)	No.	4		
	ESLS 5.3	**COMMISSIONING**				
3.4.8.5	ESLS 5.3 (a)	Commissioning of complete mast (refer to project specification PSESLS-2)	No.	4		
		BILL NO 3.4.8				
		SITE LIGHTING				
		Carried forward to Summary of Schedules			**Total**	

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Rustenburg Water Services Trust
Bospoort Water Supply Scheme - Access Road & Reservoir
CONTRACT RLM/RWST/OMM/0101/2024/25
PORTIONS 1, 2, & 3

Final Summary of Schedules for All Portions

	PORTION 1 - P&Gs, PROV SUMS, DAYWORKS	
Bill No.	**Description**	**Amount (R)**
1.1	PRELIMINARY AND GENERAL	
1.2	PROVISIONAL SUMS AND PRIME COST ITEMS	
1.3	DAYWORKS AND TEMPORARY WORKS	
	TOTAL PORTION 1	

	PORTION 2 - ACCESS ROAD	
Bill No.	**Description**	**Amount (R)**
2.1	SITE CLEARANCE	
2.2	EARTHWORKS	
2.3	EARTHWORKS (ROADS , SUBGRADE)	
2.4	CABLE DUCTS	
2.5	SUBSOIL DRAINAGE	
2.6	SUBBASE	
2.7	KERBING, CHANNELLING, EDGE BEAMS, ETC	
2.8	ANCILLARY ROADWORKS	
2.9	EARTHWORKS (PIPE TRENCHES)	
2.10	GABIONS AND PITCHING	
2.11	BEDDING (PIPES)	
2.12	STORMWATER DRAINAGE	
2.13	RETAINING WALLS	
2.14	CONCRETE (SMALL WORKS)	
	TOTAL PORTION 2	

	PORTION 3 - RESERVOIR PLATFORM, RESERVOIR, PIPEWORK FITTINGS AND CHAMBERS	
Bill No.	**Description**	**Amount (R)**
	3.1 - PLATFORMS	
3.1.1	SITE CLEARANCE	
3.1.2	EARTHWORKS	
	SUB-TOTAL PORTION 3.1	
	3.2 - RESERVOIR	
3.2.1	SITE CLEARANCE	
3.2.2	EARTHWORKS	
3.2.3	CONCRETE (STRUCTURAL)	
3.2.4	PRESTRESSED CONCRETE	
	SUB-TOTAL PORTION 3.2	
	3.3 - PIPEWORK FITTINGS AND CHAMBERS	
3.3.1	OUTLET CHAMBER	
3.3.2	METER CHAMBER	
3.3.3	AIR VALVE CHAMBER	
3.3.4	CONTROL CHAMBER	
3.3.5	RESERVOIR	
3.3.6	OVERFLOW PIPEWORK	
3.3.7	SITE WORKS	
3.3.8	CATHODIC PROTECTION	
	SUB-TOTAL PORTION 3.3	
	PORTION 3.4 - ELECTRICAL AND TELEMETRY	
3.4.1	PROGRAMMABLE & LOGIC CONTROLLERS	
3.4.2	DESIGN, DRAWINGS AND GENERAL	
3.4.3	CONTROL INSTRUMENTATION SYSTEM	
3.4.4	GENERAL AND MISCELLANEOUS	
3.4.5	BUILDINGS ELECTRICAL INSTALLATION	
3.4.6	EARTHING & LIGHTNING PROTECTION	
3.4.7	MULTICORE CABLES & EARTH WIRES	
3.4.8	SITE LIGHTING	
	SUB-TOTAL PORTION 3.4	
	TOTAL PORTION 3	

Section C2.3: Summary of Schedules

TOTAL ALL PORTIONS (Sub Total A)	
Minimum Contract Skills Development Goal Sum = CE (0.25%) x Sub Total A [in accordance with the Standard for Developing Skills through Infrastructure Contract]	
Sub Total B	
Provisional sum: Allowance for Contract Price Adjustment (5% of Sub-Total)	
Sub Total C	
Provisional sum: Allowance for Contingencies (10% of Sub-Total)	
Total Construction Cost (Excl. VAT)	
Value Added Tax at 15%	
Total Amount of Tender Carried Forward to Form of Offer and Acceptance	

Bankers Details :

Contractor's Name: _____

Name reflected on bank statement: _____

Bank: _____

Branch: _____

Account Number: _____

Cheque ☐ or Savings Account ☐

Signature :

By Tenderer : _____

Company Name : _____

Date : _____

C3 SCOPE OF WORKS

RLM/RWST/OMM/0101/2024/25 - RE-ADVERT: APPOINTMENT OF A CONTRACTOR FOR THE CONSTRUCTION OF BOSPOORT NORTH RESERVOIR AND ACCESS ROAD

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

INDEX

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

C3.1 DESCRIPTION OF WORKS

C3.1.1 Employer's objectives

The Rustenburg Water Services Trust (RWST), as implementing agent for the Rustenburg Local Municipality, is soliciting tenders from suitably qualified and experienced contractors for the construction of the new Bospoort North reservoir and access road associated with the Bospoort Water Supply System.

The contractor will be required to achieve a reasonable percentage Contract Participation Goal (CPG) made up by sub-contracting work to local SMME's, using local labour and using local plant and material suppliers as specified in the Contract Data. Details of the sub-contractor must be included in the tendered submission, failure to do so will render the tender non-responsive.

A preliminary project implementation program for planning purposes is included in Cause C3.1.5 and the Contractor shall be deemed to have based his tender price on this program and the time for achieving Practical Completion as specified in the Contract Data. Any material deviations from this program shall be clearly noted in the Contractor's tender submission as an alternative.

C3.1.2 Scope of the works

Refer to drawings 1890.11.00.AAA.01.S001, 1890.11.00.GZA.05.S001 and 1890.11.00.AAA.01.A012 in Volume 3 for a layout of the Bospoort Water Supply Scheme.

The Bospoort Water Treatment Works (WTW) is situated at 25°33'42.37"S & 27°20'57.16"E and downstream and close to the Bospoort Dam and was constructed in the mid 1950's. It has a current capacity of 12 Mℓ/d and was upgraded in 2003.

In view of the water shortages in Rustenburg an upgrade of the Bospoort WTW from 12 Mℓ/d to 24 Mℓ/d is currently in progress. The Bospoort Dam is a highly eutrophic reservoir, the predominant source of inflow into the dam comes from the upstream Boitekong and Rustenburg Wastewater Treatment Works.

Water is currently abstracted from the Dam, treated at the WTW and pumped to the Booster and Industrial reservoirs in Rustenburg.

In future, the upgraded Bospoort High Lift Pump Station will pump water from the WTW to the existing Bospoort and new Bospoort North reservoir(s). From the Bospoort North reservoir(s), water will gravitate to the Boitekong area.

The scope of this project will be:

a) The construction of a new access road to the Bospoort North Reservoir. The access road will be 800 m long gravel surfaced and 1.5 km long concrete surfaced road.

The scope will further include:

- Earthworks.
- Layer works.
- Concrete works.
- Retaining walls.
- Guard rails and other road and safety features.

b) The construction of a new 35 Mℓ reinforced concrete, post-tension Bospoort North Reservoir and associated access road and pipework.

The scope will further include:

- Earthworks.
- Concrete works.
- Inlet, outlet and overflow including pipework, valves and meters.
- Post-tensioning.
- Ancillary works e.g. fencing, storm water.

c) Cathodic protection and AC mitigation (where required)

d) Electrical and telemetry installations

e) General

- Environmental management.
- Social management.
- Community liaison.
- Safety and security management.
- Quality assurance.
- Contractor's obligations during the Defects Liability Period.
- All other duties and responsibilities in terms of the Contract.

The upgrading of the Bospoort WTW, as well as the new clean water pump sets at the WTW (including mechanical, electrical and C&I design and installation) and the construction of the Bospoort pipeline, are excluded from this tender.

C3.1.3 Location of the Works and description of the Site

The Site is located between the Bospoort WTW on the downstream riverbank at the Bospoort Dam, approximately 14 km to the North-East of Rustenburg, and the end of the 800 mm diameter gravity pipeline at the Boitekong Health Centre next to the R510 road between Rustenburg and Northam.

Access to the site is via the R510 road and the tar road from the R510 directly to the Pretoria Sun City Road (R556) past the Bospoort Dam. The last 1,5 km to the WTW is a dirt road.

The coordinates of the new Bospoort North Reservoir are:

Latitude: 25º 33’ 14,76” S
Longitude: 27º 19’ 54,36” E

The following climatic and general conditions are prevalent at the Site:

Maximum ambient temperature:	35°C
Minimum ambient temperature:	-5°C
24-hour maximum temperature:	30°C
Altitude (meters above mean sea level):	1070 – 1200 mamsl
Humidity:	Medium
Atmosphere:	Dusty

Lengthy periods of sunshine cause high temperatures in indoor enclosures. High breakdown of outdoor synthetic materials due to extended exposure to ultraviolet rays.

Lightning:	High lightning rate

C3.1.4 Geotechnical conditions

All information regarding sub-surface conditions and materials on Site is provided in good faith, for the contractor’s convenience, and as an indication of the conditions likely to be encountered. The Employer and Engineer accept no responsibility for the accuracy or comprehensiveness of the information or that the information is representative of the conditions or materials likely to be encountered. The provision of such information shall not be regarded as in any way limiting or detracting from the Contractor’s responsibilities under the Contract. The Contractor will be deemed to have satisfied himself as to all surface and sub-surface conditions to be encountered on the Site of Works and to have allowed accordingly in his tendered amounts.

C3.1.5 Construction Programme & Cash Flow

The proposed project implementation time frame is as follows:

- New 35 Mℓ Bospoort North Reservoir and pipework: **20 months**
- Access road: **7 months**
- Overall construction period: **24 months**

Different construction periods may be submitted as an **alternative** tender offer for consideration during the tender evaluation stage.

Each Tenderer shall submit with his Tender a suitable and realistic preliminary construction programme (referred to as the Tender Programme) for consideration by the Engineer and based on the indicative time frames provided by the Engineer. This programme shall commence on the Commencement Date, shall be prepared in accordance with the maximum Time for Completion offered for the completion of the Works and shall provide interim completion dates for each milestone or element of the works, including the commissioning period as well as the execution of all mechanical and electrical work.

After award of a Contract, the Contractor shall submit a detailed construction programme to the Engineer in accordance with the requirements of Sub-Clause 8.3 [*Programme*] of the Conditions of Contract. Except as provided above, the approval by the Engineer of the Contractor's construction programme, or of any amendment or adjustment thereto, shall not in any way alter the Contract, act as an estoppel or limit the right of the Employer to demand due performance under the Contract. The approval of a construction programme by the Engineer indicates only that the Engineer will be satisfied if the work is carried out according to such programme and that the Contractor undertakes to carry out the work in accordance with the programme. However, the approval of a construction programme by the Engineer shall not limit his right to give notice to the Contractor to submit a revised programme if the existing programme fails to comply with the Contract.

In addition to the requirements of Clause 8.3 of the General Conditions of Contract, the programme shall be compiled by means of MS Project in Gantt chart form.

END OF SECTION

C3.2 ENGINEERING

C3.2.1 Employer's design

The Engineer has designed the following Works on behalf of the Employer for the intended use and has selected materials that he deems are suitable and fit for purpose:

- New access road to the reservoir.
- 35Mℓ Bospoort North Reservoir

The Contractor shall be expected to construct the Works in terms of the construction drawings compiled and issued by the Engineer or special directives issued by the Engineer in writing.

In cases where there is a discrepancy between the civil drawings and structural (rebar) drawings, the Contractor shall request clarification from the Engineer prior to proceeding with the affected work.

With regards to pipe items cast into concrete structures as well as interconnecting pipework, the Engineer has provided the proposed layout of the pipework on the Drawings for tendering purposes. However, the Contractor shall be responsible for all final measurements on site, final design, correct manufacturing and installation of all pipe items and pipework covered under the scope of works. The Contractor shall also maintain suitable records of all such items in order for the Engineer to complete the as-built drawings at the completion of the works.

C3.2.2 Alternative offers at tender stage

The tenderer shall complete the tender in terms of the tender conditions, requirements, specifications, information provided and requested in the tender document. Failure to complete the tender document, including all items included in the schedule of quantities, may lead to the rejection of the bid.

In evaluating tenders received, and in accordance with its adopted procurement policy, the Employer is required to satisfy itself as to the competitiveness and cost effectiveness of each tender received. In addition, as a public entity, the Employer is required to ensure that its procurement process is fair, equitable and transparent at all times. Accordingly, except for alternatives requested in the tender documents, any tenderer wishing to submit alternative offer(s) for the consideration of the Employer shall ensure that the competitiveness and cost effectiveness of the alternative can easily be determined by the Employer. Bids that are difficult to compare to the prescribed conditions of tender and contract and/or to the specified technical requirements are likely to be rejected. Even if comparable, a tender that deviates from the specified tender conditions, requirements and specifications may not be acceptable to the Employer for reasons of risk apportionment or otherwise. Tenderers are therefore instructed to submit tender offers strictly in accordance with the conditions, requirements, specifications and schedule of quantities in the tender document before submitting any alternative offers for the Works.

C3.2.3 Drawings

Refer to Volume 3 for the drawings issued for tender purposes.

END OF SECTION

C3.3 PROCUREMENT

C3.3.1 General Clauses and Requirements

C3.3.1.1 Bids received shall be evaluated in terms of the tender evaluation criteria described in the Tender Data, taking cognisance of the Employer's preferential procurement requirements as provided.

C3.3.1.2 The works shall be carried out by a suitably qualified, experienced and capable civil contractor that shall either be the main contractor or the lead partner of a Joint Venture. In the case that the civil contractor is the main contractor, he shall have a CIBD grading corresponding to the total value of the tender and based on the Engineer's pre-tender estimates, the required rating shall be at least an 9CE for a contract exceeding R 200 million.

In the event that a joint venture is formed, the combined grading as per the CIDB grading calculator shall be 8CE.

Failure to meet the minimum CIBD requirements will result in the bids being disqualified and tenders shall submit all information necessary in order for the Engineer to assess the proposed (sub) contractors in terms of the capability and experience (refer to functionality criteria).

C3.3.1 Local Economic Participation

The Contractor shall procure local goods, services and labour in order to stimulate local economic development.

C3.3.2 Subcontractors

The Contractor shall appoint such authorities and/or specialist subcontractors and suppliers as may be designated or nominated by the Employer or the Engineer for those portions of the Works specified in the Scope of Works.

As required by the Conditions of Contract, the Contractor shall be responsible for all work carried out by subcontractors (whether nominated by the Employer or selected by the Contractor) on his behalf. The Engineer will not liaise directly with any such subcontractor, nor will he become involved in any problems and/or disputes related to payments, programming, workmanship, etc., unless provided for in the Conditions of Contract. Such problems and/or disputes shall remain the sole concern of the Contractor and his subcontractors.

No additional management fee will be payable to the Contractor for works executed by the subcontractor(s).

Notwithstanding other requirements of the Contract, the Contractor shall not subcontract any part of the Contract without prior consent of the Engineer, which consent shall not be unreasonable withheld.

Any consent granted by the Engineer for the appointment of any subcontractor shall not imply a contract between the Employer and the subcontractor, or a responsibility or liability on the part of the Employer to the subcontractor and shall not imply a contract between the Engineer and the subcontractor, or a responsibility or liability on the part of the Engineer to the subcontractor and shall not relieve the Contractor from any liability under the Contract and the Contractor shall be liable for the acts, defaults and neglects of any subcontractor, his agents or employees as fully as if they were the acts, defaults or neglects of the Contractor, his agents or employees.

Before the Engineer, in terms of Clause 14.6 [*Issue of Interim Payment Certificates*] of the FIDIC General Conditions of Contract, issues any certificate that includes any payment in respect of work done or goods supplied by any subcontractor in terms of Clause 4.4 [*Subcontractors*] of the General Conditions of Contract, he shall be entitled to call upon the Contractor to furnish reasonable proof that all payments (less retention moneys) included in previous certificates in respect of the work or goods of such subcontractors have been made or discharged by the Contractor, in default of which, unless the Contractor:-

- Informs the Engineer in writing that he has reasonable cause for withholding or refusing such payment, and
- Submits to the Engineer reasonable proof that he has informed such subcontractor accordingly in writing.

The Employer shall be entitled to pay directly such subcontractor on the Engineer's certificate all payments (less retention moneys) the Contractor has failed to make to such subcontractor and to deduct, by way of settlement, the amount so paid by the Employer from any moneys owing to or that may become owing to the Contractor.

Provided always that where the Engineer has certified and the Employer has paid directly as aforesaid, the Engineer shall, in issuing any further certificate in favour of the Contractor, deduct from the amount thereof the amount paid direct as aforesaid, but shall not withhold or delay the issue of the certificate when due to be issued in terms of the Contract.

C3.3.3 Contractor's Personnel

The Contractor shall limit the utilisation of his permanently employed personnel to that of key personnel only on the Works, as defined below, and shall execute and complete the Works utilising a temporary workforce employed directly by the Contractor and/or by his sub-contractors, using the assistance of the Labour Desk(s), from the various communities that are established in proximity to the Works or which will be consumers from the Scheme.

Employer	Witness 1	Witness 2	Contractor	Witness 1	Witness 2

Without derogating from the Contractor's obligations to complete the Works within the specified time for completion in terms of the General Conditions of Contract, the numbers in each category of the Contractor's key personnel, as stated by the Contractor in the Returnable Schedules, will be strictly controlled during the contract period and any increase in numbers will be subject to the prior approval of the Employer.

Key personnel mean all contracts managers, site agents, site clerks, materials and survey technicians, quantity surveyors, trainers, supervisors, foremen, skilled plant operators, brick layers, welders, shutter hands and the like, and all other personnel in the permanent employ of the Contractor or his sub-contractors who possess special skills, and/or who play key roles within the Contractor's or his subcontractor's operations.

The Engineer may at his discretion, upon receipt of a written and fully motivated application from the Contractor, and where he deems the circumstances so warrant, authorise in writing that the Contractor may utilise in the execution of the Works, workers not being his key personnel but who are in his permanent employ. Without limiting the generality of application of this sub-clause, circumstances which may be considered by the Engineer to warrant authorization of the use of the Contractor's permanent employees other than key personnel, include:

a) The unavailability from local sources of sufficient numbers of temporary workers and/or sub-contractors to execute the Works, provided always that the Contractor has satisfied the Engineer that he has exercised his best endeavours and taken all reasonable actions to recruit sufficient temporary workers and sub-contractors from local sources.
b) The unavailability within the temporary worker pool and/or from subcontractor sources available to the Contractor in terms of the Contract, of sufficient skills necessary to execute the Works or specific portions thereof, in situations where the completion period allowed in the Contract is insufficient to facilitate the creation of the necessary skills through the provision of suitable training as contemplated in the Contract.
c) Any other circumstances which the Engineer may deem as constituting a warrant.

C3.3.4 Temporary Workforce

The Contractor shall employ labour from the local communities through the Labour Desk(s). Accordingly, the workforce that is employed on Site shall consist of local residents, except for approved key staff in the permanent employ of the Contractor, to the maximum extent that is compatible with the requirements of Clause C3.3.2.

The Labour Desk(s) shall assist in identifying available local labour and, where available, semi-skilled labour as well as local sub-contractors. The Labour Desks shall also assist and advise regarding conditions of employment, minimum wages, disputes and disciplinary procedures. The function of the Labour Desk(s) shall however in no way diminish the responsibilities of the Contractor in terms of the Conditions of Contract.

Although the Contractor shall adhere to the statutory minimum wage rates, he is however at liberty to negotiate additional incentive payments based on performance.

A contract of employment or subcontract shall be signed between the Contractor and each of his employees and sub-contractors. Likewise, contracts of employment must be entered into between each such sub-contractor and each of the specific sub-contractor's employees. Although the Contractor shall adhere to the minimum wage rates described below, he is at liberty to negotiate additional incentive payments based on performance.

Contracts of employment or sub-contracts should provide for the following basic conditions:

a) The minimum wage payable will be determined in terms of latest applicable (at the time of tendering) legislation and shall, as a minimum, adhere to section 56(1) of the Basic Conditions of Employment Act (Act 75 of 1997), Sectorial Determination 2: Civil Engineering Sector as published by the Department of Labour.
b) The Contractor shall adhere to the provisions for payment method and intervals, overtime and pay for work on Sundays and public holidays (if required) in the Basic Conditions of Employment Act (Act 75 of 1997).
c) The Contractor shall register all labourers employed on the Contract with the Workmen's Compensation Commissioner and the Unemployment Insurance Fund, as applicable. The Contractor shall obtain the Unemployment Insurance Fund and Workmen's Compensation registration cards.
d) Workers shall be entitled to one (1) day sick leave with full pay per month worked. This will accumulate if the leave is not used.
e) Annual leave shall be calculated as published in terms of (the latest edition of) section 56(1) of the Basic Conditions of Employment Act (Act 75 of 1997), Sectorial Determination 2: Civil Engineering Sector as published by the Department of Labour.
f) Upon termination of the Contract, each locally employed labourer shall be entitled to receive his/her Unemployment Insurance Fund and the Workmen's Compensation registration cards as well as a Certificate of Employment from the Contractor clearly stating the following:

    i) The type of work done.
    ii) The duration of employment.
    iii) The number of days absent from work.
    iv) The Contractor's general impression of the quality of work done.

g) The Occupational Health and Safety Act must be adhered to with reference to the safety of all employees employed by the Contractor. Suitable safety equipment and clothing shall be issued and maintain by the Contractor for the duration of construction.
h) Contractor's company policy regarding:

    i) Inclement weather

ii) Sickness and absence
iii) Disciplinary matters
iv) Grievances

Should any of the above conditions be less favourable than any bargaining council agreement or Act applicable to the Contractor, the more favourable condition shall apply.

C3.3.5 Labour Intensive Construction

Labour Intensive Construction shall mean the economically efficient employment of as great a portion of labour as is technically feasible to produce a standard of construction as demanded by the Specifications with completion by the Due Completion Date, thus the effective substitution of labour for equipment.

Appropriate portions of the Works included in the Contract shall be executed using labour intensive construction methods. These portions of the Works shall be constructed utilising only locally employed labour and/or the labour of local sub-contractors, supplemented to the extent necessary and unavoidable by the Contractors key personnel as provided for in clause C3.3.2, unless otherwise instructed by the Engineer. The portions of the Works to be executed using labour intensive construction methods are:

- bedding, selected fill and compaction of all pipe trenches irrespective of depth, but assisted by mechanical compaction equipment in order to achieve the specified densities.
- reinstatement of all fill, shoulder and pavement layers at road crossings, but using mechanical compaction equipment in order to achieve the specified densities.
- jointing, testing and disinfection of all pipelines, including all fittings, valves and house/erf connections; but excluding all stormwater pipe- and rectangular culverts.
- construction of all manholes, cleaning eyes, kerb inlets, junction boxes, culvert floors, end structures and balustrades, valve chambers, thrust blocks, pipeline markers and the like (earth-, concrete-, brick- and metalworks), but excluding the mixing of concrete and transporting of same to the point of pouring.
- Kerbing.
- dismantling and re-erection of fences.
- cleaning and tidying of the Site.

In respect of those portions of works which are not listed above, the construction methods adopted and plant utilised shall be at the discretion of the Contractor, provided always that the construction methods adopted and plant utilised by the Contractor are appropriate in respect of the nature of the Works to be executed and the standards to be achieved in terms of the Contract.

END OF SECTION

C3.4 CONSTRUCTION

C3.4.1 General Clauses and Requirements

These general clauses cover the general, administrative, legal and organizational requirements relating to quality of materials, installation, testing, commissioning and maintenance of the installation applicable to this Contract.

These clauses should be read together with all other sections and Standard and Particular Specifications included in the Contract documents or Standard Specifications mentioned in the Contract documents but separately available. The documents should be read and interpreted jointly in order to determine the full requirements of the Contract.

Any/all deviations from these general clauses or technical specifications shall be listed in writing as Deviations at tender stage. Where the Engineer does not approve of these deviations, the Contractor shall be responsible to conform to the requirements of these general clauses and technical specifications.

C3.4.1.1 Information Required at Tender Stage

It is a specific requirement of the tender that full information of all the equipment offered must be supplied at the time of tendering in order for the Engineer to evaluate the Tenderer's submission. In this regard, the Tenderer shall complete all technical schedules issued as part of the tender document under Section T2. Manufacturer's pamphlets and catalogues shall be included to describe the particular item offered.

C3.4.1.2 Relevant Acts, Regulations and Standards

The whole of the installation shall comply and the work shall be executed in accordance with the latest edition of the following:

a) The Occupational Health and Safety Act, 1993 (Act no 85 of 1993) and the latest applicable Regulations promulgated in terms of the Act or the Factories Machinery and Building Works Act of 1941, whichever is applicable and their respective Regulations.
b) The regulations and by-laws of the local supply authorities.
c) The applicable regulations of the relevant telecommunications authority.
d) The local Fire Department Regulations.
e) The latest revisions of the relevant supporting specifications referred to in the Particular Specifications.

C3.4.1.3 Responsible persons and representation

The Contractor shall, before establishing on site, appoint and submit to the Engineer in writing a project organisational chart, listing the name(s) of the responsible person(s) in terms of the Occupational Health and Safety Act, 1993 (Act no 85 of 1993) and the Regulations promulgated in terms of the Act within 14days from being appointed.

The Contractor shall submit to the Employer and Engineer within 14 days of the Commencement Date a list of addresses and telephone numbers of his Representative and key personnel who may be contacted both during and outside normal working hours in connection with the Works. The Contractor shall also refer to Sub-Clauses 4.3 and 6.8 of the Conditions of Contract.

The Contractor shall be responsible for supplying and installing the required safety signs as determined by the Occupational Health and Safety Act, 1993 (Act no 85 of 1993) and the regulations promulgated in terms of the Act, both during the construction phase and the completed works. All safety signs shall comply with the requirements of the latest edition of SANS 1186-1 as applicable.

C3.4.1.4 Health and Safety

The Contractor shall allow in his Tender for compliance with the requirements of the Occupational Health and Safety Act, 1993 (Act no 85 of 1993) and the latest applicable Regulations promulgated in terms of the Act, especially the latest Construction Regulation promulgated in 2014.

From the date of site handover until the Taking-Over Certificates are issued, the Contractor shall be responsible for maintaining safe working conditions on Site as prescribed by the Occupational Health and Safety Act and the regulations promulgated in terms thereof. In the event that the Site of the Works is managed by another contractor, the Contractor shall be expected to also adhere to the health and safety regulations prescribed by such contractor.

The Contractor shall be responsible for supplying and installing the required safety signs as determined by the Occupational Health and Safety Act, 1993 (Act no 85 of 1993) and the regulations promulgated in terms of the Act, both during the construction phase and the completed works. All safety signs shall comply with the requirements of the latest edition of SANS 1186-1 as applicable.

The Contractor shall comply with the Occupational Health and Safety Specification prepared by the Employer in terms of the Construction Regulations, 2014 promulgated in terms of Section 43 of the Occupational Health and Safety Act (Act No. 85 of 1993).

The Contractor shall submit an approved Health and Safety Plan to the Engineer within 14 days from the date that the Agreement made in terms of the Form of Offer and Acceptance comes into effect.

The Contractor shall, before establishing on site, appoint and submit to the Engineer in writing a project organisational chart, listing the name(s) of the responsible person(s) in terms of the Occupational Health and Safety Act, 1993 (Act no 85 of 1993) and the regulations promulgated in terms of the Act within 14 days from being appointed.

Notwithstanding any actions which the Employer may take, the Contractor accepts sole liability for due compliance with the relevant duties, obligations, prohibitions, arrangements and procedures imposed by the Occupational Health and Safety Act, 1993 (Act 85 of 1993), and all its regulations, including the Construction Regulations, 2014, for which he is liable as mandatory. By entering into this Contract, it shall be deemed that the parties have agreed in writing to the above provisions in terms of Section 37 (2) of the Act.

The Contractor and his designer shall accept full responsibility and liability to comply with the Occupational Health and Safety Act, 1993 (Act 85 of 1993) and the Construction Regulations, 2014 for the design of the Temporary Works and those part of the Permanent Works which the Contractor is responsible to design in terms of the Contract.

C3.4.1.5 Quality assurance and control

All materials and workmanship shall be of a suitable type and quality to ensure that the Works will operate satisfactorily in accordance with the Specifications.

The Contractor shall submit a Quality Assurance Plan outlining quality assurance policies and procedures to be used for the project relating to the areas such as materials, manufacturing, and installation and testing. A documented quality control and quality assurance system shall be maintained, which shall be in accordance with ISO 9000 or equivalent approved by the Engineer. The Contractor shall ensure that the same requirements is applied to products, systems, and services supplied by his sub-contractors and suppliers. The Contractor shall file all quality certification documents relating to the products and systems supplied for the Works. The Engineer shall have full access to such files.

Registration to ISO 9001:2000 is preferable and evidence of current registration to this or another acceptable quality management system shall be provided upon request.

C3.4.1.6 Care and supply of documents

C3.4.1.6.1 General

In addition to the documents prepared and issued by the Employer and Contractor for purposes of the Contract, the Contractor shall procure and keep on site, at the most suitable location, one or more copies of the applicable legislation, regulations, wayleaves, standard specifications and codes of practice upon which the Contract rely and which are incorporated into the Contract by reference.
Drawings and Documentation

C3.4.1.6.2 Tender Drawings and Engineer's Drawings

The Tender Drawings prepared by the Engineer and issued with the tender show the general layout, position and detail of the Works to be constructed under this Contract. These details may in some instances constitute schematic arrangements. These drawings, together with the Specification, are deemed to provide sufficient detail to enable the Contractor to determine the requirements of the Works and to price and schedule the Works to be completed on time.

Only figured dimensions on the Drawings may be used in the interpretation thereof, and the Drawings shall not be scaled unless the Contractor is so instructed by the Engineer in writing. The Engineer will upon written request provide any dimensions that may have been omitted from the Drawings.

C3.4.1.7 Contractor's Equipment

The Contractor's Equipment for construction and erection of the Works shall be adequate for the purpose required, of modern design and in good condition to carry out the Works expeditiously. Should the Engineer be of the opinion that the Contractor's Equipment is in anyway unsuitable for carrying out the Works in a manner or at a rate commensurate with the requirements of the Contract, he shall have the right to instruct the Contractor at any time during the Contract to provide additional or improved plant, tools and equipment in order to meet the specified requirements.

C3.4.1.8 Concurrent Construction Activities

The construction of the Works will coincide with other construction activities on Site and the Contractor shall co-operate with any/all other contractors on site regarding final designs in order to determine areas of interface. These designs shall, when finalised, be submitted to the Engineer for approval. The Contractors shall also be required to co-operate with other contractors and shall carry out his work in such a manner to cause minimum interference and delays to other contractors.

The Contractor shall ensure that neither his operations nor those of his Sub-Contractors nor the activities of his employees shall interfere with or hinder the operations of the Employer or of other contractors and he shall indemnify the Employer against all claims arising through default of this requirement.

The Contractor shall hand over portions of the Site of the Works (whether completed or not), or completed portions of the Works, to these contractors when required by the Employer or detailed elsewhere in this document. The Contractor shall cause no interference with or delays in the execution of these other contracts.

Any service rendered or assistance given by the Contractor to these contractors, save as are provided for in the Project Specifications, shall be for their accounts only since the Employer shall in no way be responsible to the Contractor for any payments in this respect.

The Contractor shall protect all known existing services as well as all work being carried out and structures being erected by other contractors. Any damage caused to these services or structures, or any obstructions or hindrance caused to other contractors by the Contractor, and all claims arising there from, will be the sole responsibility of the Contractor.

All repair work shall be carried out at the Contractor's expense to the entire satisfaction of the Engineer.

C3.4.1.9 Guarantees

All plant and materials supplied under the Contract, shall be fully guaranteed against all defects arising from faults in the design, manufacture and workmanship for a period of at least **10 years** from the date of handing over.

All plant shall be guaranteed for a period of **5 years** from the date of handing over to cover all defects attributable to inadequate corrosion protection.

All defects recorded within the above periods shall be rectified entirely at the expense of the Contractor. The attendance of the Contractor, specialists appointed by the Contractor or any subcontractor required to resolve the defect shall be required within **10 days** of notification of such defect(s).

Should any design fault become apparent to the Engineer or the Employer for a period of 5 years after handing over of the Works, the Contractor shall deliver all components necessary to correct the fault, together with all the specialist assistance, free of charge to the Employer.

C3.4.1.10 Standards

All electrical material, plant and equipment shall be of approved manufacture and its construction, design and testing shall be in accordance with the requirements of the most recent South African National Standards, British Standards or IEC publications including all amendments issued thereto up to the date of tender. The design and installation of the material, plant and equipment shall also comply with the relevant clauses of the Occupational Health and Safety Act, 1993 (Act No 85 of 1993) and the regulations promulgated in terms of this Act, as well as the Code of Practice for the Wiring of Premises, SANS 0142.

For all material, plant and equipment that are required to conform to any national or international specification or standard, the Contractor shall submit a certificate to the Engineer, issued by an accredited testing laboratory clearly stating that the material, plant and equipment complies with the specific specification or standard.

Notwithstanding reference in this specification to the South African or British Standards and the IEC or ISO recommendations, the Contractor may submit for approval by the Engineer, material and designs conforming to other technically equivalent national standards and shall submit documentary proof in English of actual compliance therewith.

All material, plant and equipment offered under this Contract shall be selected to be equal to and similar of make as the existing material, plant and equipment installed on site as far as possible and the Contractor shall do a site inspection prior to submission of the tender to ensure that they comply with this requirement (if applicable to existing structure and buildings).

Contractor shall provide electrical plant for all motor starter panels with at least Type 2 coordinated capabilities. If moulded case circuit breakers and miniature circuit breakers are cascaded and / or discrimination all proven documentation must be supplied by the Contractor

C3.4.1.11 Quality of Materials

All material and plant shall be new and suitable for the prevailing conditions at the Site, which shall include climatic conditions as well as the conditions under which materials and plant are installed, stored and operated without distortion, deterioration or inducing undue stresses in any part such as to affect the efficiency and reliability of the plant and also without affecting the strength and suitability of the various parts for the duty which they have to perform.

All material and plant shall conform in respect of quality, manufacture, tests and performance, with the relevant requirements of the SANS or where no such standards exist, with relevant current specification of the British Standards Institution and/or relevant IEC and/or ISO publications. Where applicable, the material shall bear the stamp of the relevant standards body.

Where proprietary materials and plant are specified or required, approval of such materials or plant shall be at the sole discretion of the Engineer once the appropriate samples or technical literature have been submitted.

C3.4.1.12 Interchangeability

Corresponding parts throughout the works shall be made to accurate tolerances that similar components or spares shall be fully interchangeable without any further alterations or adjustments being necessary.

C3.4.1.13 Priority of Specifications

The priority of the Specifications shall be as follows:

(a) Scope of Work (Section C3.4): All clauses except C3.4.2 (Standard Specifications and Particular Specifications).

(b) Scope of Work (Section C3.4): Clause C3.4.2.2 (Particular Specifications).

(c) Scope of Work (Section C3.4): Clause C3.4.1 (Standard Specifications).

END OF SECTION

C3.4.2 Standard Specifications

The Standard Specifications on which this contract is based are the latest revisions of the South African Bureau of Standard's Standardized Specifications for Civil Engineering Construction (SABS 1200). Note: "SABS has been changed to "SANS".

Although not bound in nor issued with this Document, the relevant sections of the standard specifications shall form part of this Contract. These documents are available at the Contractor's expense from the SA Bureau of Standards, Private Bag X191, PRETORIA, 0001.

All relevant SABS 1200 Standardised Specification for this Contract shall be applicable.

C3.4.3 Particular Specifications

The following additional specifications for work not covered by the Standardised Specifications are required for the contract and are bound in hereafter.

PLK	:	Manufacture and supply of valves
PLN	:	Manufacture, supply and testing of steel pipes
PLS	:	Cement mortar lining of steel pipes
PLQ	:	Corrosion protection of steel pipes and fittings
PLT	:	Flow meters (general)
PLTP	:	Manufacture, supply and testing of plastic pipes

C3.4.4 Variations and Additions to the Standard and Particular Specifications

The Clauses under this section are numbered "PS" and refers to the clauses in the Standard or Particular Specifications. New clauses not covered by clauses in the Standard or Particular Specifications, if included here, are also designated "PS" followed by a number.

All material used in the Works shall, where such mark has been awarded for a specific type of material, bear the SABS/SANS mark. Alternatively, the Contractor shall furnish the Engineer with certificates of compliance of materials, which bear the official mark of the appropriate standard.

PSA GENERAL

PSA1 QUALITY (Clause 3.1)

All material used in the Works shall, where such mark has been awarded for a specific type of material, bear the SABS mark. Alternatively, the Contractor shall furnish the Engineer with certificates of compliance of materials, which bear the official mark of the appropriate standard.

Also refer to Section C3.5 for additional requirements regarding quality assurance and control.

PSA2 PLANT (Clause 4.3)

Except where the use of plant is essential in order to meet the specified requirements by the Due Completion Date, the Contractor shall use only hand tools and equipment in the construction of those portion(s) of the Works that are required in terms of the Scope of Works to be constructed using labour intensive construction methods.

PSA3 SETTING OUT OF THE WORKS (Clause 5.1.1)

Add the following:

Benchmarks are available on Site and shall be used for construction purposes. The position of the permanent survey beacons are shown on the Drawings with the relevant position (X/Y coordinates) as well as the elevation (Z coordinate).

The Contractor shall be responsible for the setting out of the works.

If at any time during the progress of the Works, any error shall appear or arise in the position, levels, dimensions or alignment of any part of the Works, the Contractor, on being required to do so by the Engineer, shall at this own expense rectify such error to the satisfaction of the Engineer.

The Contractor shall take special precautions to protect all 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.

PSA4 CONSTRUCTION (Clause 5)

Add the following sub-clauses:

PSA4.1 Wayleaves and permits

The Employer has obtained wayleaves and access rights for the construction of the works.

The Contractor shall give notice and obtain all permits, licences and approvals as required by the Laws, and shall keep copies of such applications, permits, licences and approvals on site at all times. The Employer shall have access to such documents for its purpose under the Contract.

PSA4.2 Care of the Site and public

At all times during construction of the Works and upon completion thereof, the Site of the Works shall be kept and left in a clean and orderly condition. The Contractor shall store all materials and equipment for which he is responsible in an orderly manner, and shall keep the Site free from debris and obstructions.

The attention of the Contractor is drawn to the fact that parts of the Works will be constructed within or adjacent to built-up areas. Certain work shall be constructed within urban areas and in the presence of passing traffic. The Contractor shall exercise all necessary precautions and take all necessary steps to ensure the safety and convenience of the public, including the prevention of unnecessary noise, dust or other nuisance or environmental impact. Where applicable, the Contractor shall provide access for traffic over and through the Works, and for residents to their places of abode. Safety measures shall also provide for wildlife and livestock.

Any rock or debris falling from trucks on the roads in use by the public shall be removed immediately. Precautions shall be taken to prevent fouling of public roads and other works by vehicles and the roads shall be kept clean by the Contractor.
Allowance should be made by the Contractor in his construction programme for delays that may result from foreseen and unforeseen actions that are required to ensure the safety and convenience of the public.

The Contractor shall give residents a minimum of 48 hours written notice of his intent to close access to residential stands and shall provide temporary access during the period of close. No permanent access to residential stands shall be closed for longer than 48 hours. The access shall be fenced off to ensure the safety of the public.

PSA4.3 Contractor's Representative and Superintendence

The Contractor shall submit to the Employer and Engineer within 14 days of the Commencement Date a list of addresses and telephone numbers of its Representative and key personnel who may be contacted both during and outside normal working hours in connection with the Works.

PSA4.4 Safety and security

The Contractor shall operate a security system at all the areas of the Site on a 24 hour per day basis to the satisfaction of the Engineer. He shall co-operate with the local Police and comply with the Engineer's requirements on all matters relating to security of the Works and persons entering the site. Such a system shall include full and effective security control of all accesses to each area including appropriate identification procedures for all persons and vehicles entering and leaving.

The Contractor shall also provide Personnel Protective Equipment (PPE) for the staff of the Engineer.

Security of the site shall include all construction camps and depots and the offices of the Engineer. The Contractor shall allow at all times for the necessary security and watching to prevent theft or damage to materials, plant and contractor's equipment, and to ensure the safety of both the Contractor's personnel, Employer's personnel and the Engineer's personnel.

It is in the interest of the Contractor to establish and maintain healthy community liaison and employment structures throughout the duration of the Contract as healthy structures will serve to elicit the support of affected communities in detecting and prosecuting criminal activity.

The Contractor shall take adequate preventative measures to mitigate the effect of the influx of construction personnel into the local community.

Such measurements shall include the implementation of a code of conduct, disciplinary procedure, access control, Contractor identification measures and safety and security forums.
The Contractor shall include within the safety and security forum community leaders, the South African Police Services (SAPS), local emergency services, Councillors and interested and affected parties. The forum shall set about guidelines and mechanisms to deal with and communicate project related issues between the local community and the Contractor.

In addition, the Contractor shall take adequate measures to restrict personnel movement outside the boundaries and shall provide safe transport to and from the work place.

The Contractor shall strictly adhere to the following requirements in the Employer's security areas:

- Only persons with valid entry-permits will be allowed in the security area;
- Movement of employees will be restricted to particular areas. Trespassers will forthwith be suspended from the premises;
- Employees shall not be allowed on the premises between the hours of 17h00 – 07h00 without previously obtaining permission;
- When the Contractor finds it necessary to exceed this restriction, arrangements must be made at least 12 hours in advance, with the Chief Security Services or his duly authorised representative;
- Should the Contractor wish to leave a night-watchman on the work premises, he must submit a written application to the Chief Security Officer.

PSA4.5 Notices, signs, barricades and advertisements

Notices, signs and barricades as well as advertisements may only be erected where approved by the Engineer. The Contractor shall be responsible for their supply, erection, maintenance and ultimate removal and shall make provision for this in his tendered rates.

The Engineer shall have the right to have any sign, notice or advertisement moved to another location, or to have it removed from the Site of the Works, should it in any way prove to be unsatisfactory, inconvenient or a safety hazard.

PSA4.6 Accommodation of traffic

Accommodation of traffic during construction of the Works forms an integral part of the obligations of the Contractor. The Contractor's plan for the accommodation of traffic and directional signs shall be prepared in terms of the latest version of the South African Road Traffic Signs Manual and CSRA Road Note 13, 3rd Edition 1988 (ECSRA Road Sign Note) and must be submitted to the Engineer together with the approval of the applicable authorities prior to the commencement of construction activities.

The travelling public shall have the right of way on public roads (whether closed to through traffic or not), and the Contractor shall apply suitable approved methods for controlling the movement of the contractor's equipment, materials, plant and Temporary Works in such a way that the latter will not constitute a hazard to residents and the travelling public.

The Contractor shall exercise all necessary precautions and take all necessary steps to ensure the safety and convenience of the public. In addition, the Contractor shall provide access for

traffic over and through the Works, and for residents to their places of abode. Allowance must be made by the Contractor in his programming for delays resulting from the aforesaid.

Failure to maintain road signs, warning signs or flicker lights, etc., in a good condition shall be deemed sufficient cause under the applicable clause of the Conditions of Contract for the Engineer to instruct the Contractor to suspend part or all of the Works at the cost of the Contractor until the default has been rectified.

The Contractor's tendered amounts for the work shall include full compensation for all costs and profit which may arise from the accommodation of traffic and no claims for extra payment in this respect shall be considered.

PSA4.7 General environmental requirements

All chemicals, lubricants and fuels shall be stored in secondary containment units that are capable of storing 110% of the contents stored. These secondary containment units must be impermeable, fire proof and constructed to the approval of the Engineer.

Washing of tools and/or equipment shall take place at dedicated washing facilities within the construction camps. Suitable wash facilities must be provided at all construction camps and all wastewater must be treated before discharge into any natural watercourse.

The Contractor shall prevent discharge of any pollutants, such as cement, concrete, lime, chemicals and fuels into any water sources. Runoff from fuel storage areas/ workshops/vehicle washing areas and concrete swills shall be directed via an oil separator into a settlement pond and this will be disposed of at a site approved by the Engineer. Appropriate measures to prevent water pollution at/from batching plants must be implemented.

The Contractor shall be responsible to safeguard the plant and areas adjacent to the Contractor's camp against fire caused in any way by the construction activities on Site. The Contractor shall be responsible for any damage or loss suffered in this regard.

PSA4.8 Pre-construction survey

Landowners

The pre-construction survey must be conducted per affected property. It must be attended by the Landowner (or designated representative), the Engineer and the Contractor. The following must be established, agreed and recorded.

- communication protocol for future communication between the parties (introduce all parties, roles and functions)

- contact details
- activities usually undertaken in the construction servitude area, particularly in agricultural areas
- impacted services e.g. telephone, electricity, water supply lines and others, and the protection of these services
- fire protection and fighting measures
- fencing and gate requirements (any special requirements for special livestock, type of stock proof fencing, no of wire strands, location of gates, opening and closing of gates etc.)
- interim access requirements to rivers and streams
- security issues

Information and agreements to be captured in a document for each affected land portion (copy of which to be submitted to the Engineer).

Existing services, buildings and structures

Position, type, condition and other details of existing services (fencing, gates, roads, telephone lines, power lines etc.), buildings and structures within the construction site including the pipeline servitudes.

This survey must include photographical records, documented per cadastral portion.

PSA4.9 Fencing

The Contractor shall replace all existing fencing that encroaches within the proposed permanent and temporary servitude with new stock proof or game proof (where applicable) fencing.

New gates shall be installed where required for access to properties or servitudes. The Contractor shall liaise with property owners with regard to the position and width of the gate.

The Contractor shall give all land owners and residents a minimum of 48 hours' notice of its intent to dismantle fences to properties. The Contractor shall note and take photos of all aspects relevant to the condition of existing fencing prior to dismantling, and shall acquire the signature of the owner/occupant agreeing to such conditions.

After reinstatement, the Contractor has to acquire the owner / occupant's written confirmation that the condition of the fence is at least equivalent to its condition before dismantling.

PSA5 SITE FACILITIES

PSA5.1 SITE FACILITIES AVAILABLE

PSA5.1.1 Contractor's Camp

The Contractor's camp shall be kept clean at all times during construction and conform to the requirements and regulations of the Employer, authorities and the applicable Environmental Management Plan.

The Contractor must fence off his construction camp area with 1.8m high diamond mesh fence. The inside of the camp area shall be screened off from the public by 1.8m high green shade cloth neatly tied to the inside of the fence. All temporary fencing must be removed on completion of the Contract.

The camp may be used for the working hours activities of the Contractor's and the Employer's personnel and for all related facilities required by the Contractor and the Employer such as workshops, stores, testing laboratories, etc.

The Contractor shall at all times conform to all requirements contained in law or bylaws, as well as any other requirements set by the controlling local authority.

The Contractor shall water all access roads to the construction camp, as well as working areas used by vehicles inside the camps to prevent dust caused up by vehicles or wind.

At the completion of the construction work, the Contractor must break down and remove all concrete slabs, etc. in the construction camps and at the batching plant (if applicable), remove all rubble from the camp site and hand back the sites in a clean and tidy condition.

No Taking-Over Certificate shall be issued for the Works unless the site clearing is done to the satisfaction of the Engineer.

PSA5.1.2 Source of water supply

The Contractor shall be responsible under the Contract for the supply and distribution at his cost of all water that he may require for purposes of constructing the Works. Accordingly, the Contractor shall pay all connection fees and consumption charges, and at his cost provide all connections, consumption meters, pipework, storage tanks, transport and other items associated with the supply of water for the Works.

The Contractor shall, subject to the approval of the Engineer, make any necessary arrangements with the relevant authority for the connection(s), and shall provide in his tender

for the payment of all charges and costs that are associated with making water available for purposes of constructing the Works.

Water for filling, testing and disinfecting the pipelines and structures will be made available by the Employer at no cost to the Contractor. However, should the pipelines and/or structures have to be drained and refilled due to defective materials or workmanship by the Contractor or by his subcontractors, then the water required for refilling shall be made available at the cost of the Contractor.

PSA5.1.3 Source of power supply

The Contractor shall be responsible under the Contract for the supply and distribution at his cost of all electricity that he may require for purposes of constructing the Works. Accordingly, the Contractor shall pay all connection and consumption charges, and at his cost provide all connections, transformers, consumption meters, cables, distribution boards and other items that are associated with the supply of electricity for construction of the Works.

The Contractor shall, subject to the approval of the Engineer, make any necessary arrangements with the relevant authority for the connection(s), and shall provide in his tender for the payment of all charges and costs that are associated with making electricity available for purposes of constructing the Works. The distribution of electricity shall be in accordance with the applicable bylaws and regulations of the supply authority.

PSA5.1.4 Housing

The Contractor shall not be permitted to house Personnel within his camp site(s) or on Site for this contract.

For contracts where accommodation in camp site(s) or on Site is permitted, the Contractor shall inform the Engineer at the commencement of the contract of his intentions regarding the housing of Personnel in camp site(s) or on Site, and he shall thereafter ensure that all such accommodation is kept neat and tidy, hygienic and properly controlled at all times. The Contractor's personnel, including bona fide night watchmen, may only sleep within the camp should the Contractor:

- take all the necessary steps required to comply fully with public legislation and regulations and all specifications governing the environment, health, transport, safety and public disturbance impacts of such on-site accommodation;
- acquire the written permission of the Employer and relevant owner and authority and comply with their requirements.

Should at any stage of the Contract the Employer and/or the Engineer be of the opinion that the housing of Personnel within the camp site(s) or on Site is causing disturbance or inconvenience to the landowner or to nearby residents, then the authority granted by this clause for the Contractor to house Personnel within camp site(s) or on Site may be withdrawn, either partially or entirely.

The Contractor shall at all times conform to all requirements contained in law or bylaws, as well any other requirements set by the controlling local authority.

PSA5.1.5 Access to Site

The Contractor may make use of the existing access roads to and within the Site, but shall be responsible to restore these roads to a similar or better condition that prevailed at the Commencement Date and at his expense. If the Contractor requires additional access to and within the Site, these shall be constructed at his own expense. Proper access control shall be instituted by the Contractor to prevent any unauthorised entry

PSA5.2 SITE FACILITIES REQUIRED

PSA5.2.1 For the Contractor

Whatever may be required for the satisfactory execution of the Contract.

PSA5.2.2 For the Engineer

As specified under Section PSAB.

PSA5.2.3 Sanitary facilities

Water borne sewerage is not available at the Engineer's camp site. Flush toilets or chemical toilets shall be provided and maintained for the use of the Contractor's personnel at all camp sites that the Contractor may establish for construction of the Works. In addition, the Contractor shall at all times during construction of the Works provide adequate sanitary facilities on site so that all employees are at all times within easy reach of sanitary facilities.

Washing, whether of the person or of personal effects and acts of excretion and urination, are strictly prohibited other than at the facilities provided.

The Contractor must use chemical toilets where flush toilets are not available. Chemical toilets shall be inspected on a daily basis to ensure these are in a good working condition and are not overflowing. A competent Subcontractor must be appointed to service the toilets on a regular

basis. This Sub-Contractor shall ensure that no spillage occurs when the portable toilets are cleaned or emptied and that the contents are removed to a waste treatment facility.

Latrine and ablution facilities shall comply with the regulations of the local authority concerned and shall be maintained in a clean and sanitary condition to the satisfaction of the Engineer. Toilet facilities supplied by the Contractor for the workers shall occur at a maximum ratio of 1 toilet per 15 persons. These will be furnished at all times with toilet paper.

The toilets shall be placed on a stable surface, no further than 50 m from any works area and must be secured to the ground to the satisfaction of the Engineer to prevent them toppling over due to wind or any other cause and the entrances to toilets shall be adequately screened from public view.

PSA6 TESTING (Clause 7)

PSA6.1 All test results obtained by the Contractor in the course of his process control of the Works shall be submitted to the Engineer or his Representative prior to requesting inspection of the relevant portions of the Works. Any request for inspection shall be submitted on the prescribed forms that will be issued once the Contract has been awarded.

PSA6.2 The Contractor shall make suitable arrangements for process control prior to commencement with the Works. Should he intend using site personnel for this purpose he shall ensure that suitably trained and competent personnel take charge of the necessary test work, and that the necessary equipment is at their disposal prior to commencement of the Works. Failure to comply with these requirements shall be just cause for the Engineer to order suspension of the Works without additional remuneration, or for him to recommend termination to the Employer in terms of the Conditions of Contract.

PSA6.3 The Contractor shall deliver to the Engineer, for his consideration, quality assurance programmes (as obtained from all the Contractor's proposed suppliers of pipes, valves and specials) prior to the Contractor's appointment of any suppliers.

PSA7 ADJUSTMENT OF PRELIMINARY AND GENERAL TIME-RELATED ITEMS (Clause 8.2.2)

PSA7.1 Replace the note on the end of the clause with the following:

Note: An approved extension of time will qualify the Contractor to receive additional payment for each relevant time related item at the original tendered unit rate for such item. The additional payment will be calculated pro rata to the extension of time in relation to the time for achieving Practical Completion for the Works at the date when the agreement came into effect.

PSA7.2 Should the Time for Completion be automatically extended due to abnormal weather conditions

occurring during execution of the Contract as provided for in the Conditions of Contract, adjustment to the total for time-related preliminary and general items will be applicable as specified in Clause PSA7.1.

PSA7 HEALTH AND SAFETY

The Works to comply with the Occupational Health and Safety Act (Act 85 of 1993), the Construction Regulations GNR.84 of 7 February 2014 and the Employer's Safety Specifications.

The maintenance of safe work practice at all times and in all sections of the execution of the works shall form part in the day to day site activities of all the Contractor's management, staff and workforce on the contract.

The Construction Regulations requires from the Employer to ensure that the Contractor has made adequate provision for the execution of the works within the Act, Regulations and Specifications. The items listed below have been identified as critical towards ensuring the minimum standards of safe work practice. It must however be noted that the list below is not exhaustive and that it is the Contractor's responsibility to allow for all costs involved to comply with the requirements in terms of the Contract.

Also refer to health and safety requirements in Section 3.5.B (Management).

PSA7.1 Fixed-charge items

Add the following new Clause (Clause 8.3.5):

Compliance with the Occupational Health and Safety Act (Act 85 of 1993) and its Regulations and with the Employer's Health and Safety Specification ..... Unit: Sum

The fixed charge item shall include but shall not be limited to the following:

- Preparation of Health and Safety Plan,
- Establishment of Health and Safety File,
- Health and Safety Training
- Personal Protective Clothing and Equipment
- Fences, Signs and Barricades
- Establishment of Safety Administration
- Compliance to all Health and Safety regulations in terms of COVID-19
- Other Health and Safety Fixed-charge Obligations

PSA7.2 Time-related Items

Add the following new Clause (Clause 8.4.6):

Compliance with the Occupational Health and Safety Act (Act 85 of 1993) and its Regulations and with the Employer's Health and Safety Specification. .....Unit: Sum

The time related item shall include but shall not be limited to the following:

- The employment cost of all health and safety personnel including consultants, health and safety officers, inspectors, supervisors and issuers required in terms of the Contractor's Health and Safety Plan,
- Updating the Health and Safety Plan as needed,
- Carrying out of periodic own audits and follow-up audits,
- Compiling ongoing risk assessments and risk assessment reports as required by the Works,
- Convening of regular safety meetings with the Safety Representatives,
- Accompanying and supporting the Employer or his Safety Agent during ad hoc audits,
- Compilation of monthly safety reports and statistics for the Employer or his Safety Agent,
- Implementation and maintenance of Training
- Maintenance of personal protective clothing and equipment
- Maintenance of fences, signs and barricades
- Implementation and maintenance of safety administration
- Maintain compliance to all Health and Safety regulations in terms of COVID-19
- Other Health and Safety Time-related Obligations

PSA8 ENVIRONMENTAL MANAGEMENT PLAN

The Contractor shall comply with all the conditions of the Environmental Authorisation (Record of Decision) and the Environmental Management Plan bound into Section C3.5C.

PSA8.1 Fixed-charge Items

Add the following Clause (Clause 8.3.6):

Compliance with Environmental Management Plan and Environmental Authorisation (Record of Decision).....Unit: Sum

The sum tendered shall cover all costs, overheads, profits and charges incurred in complying with all the conditions of the Environmental Management Plan and Environmental Authorisation bound into Section C3.5C.

PSA8.2 Time-related Items

Add the following Clause (Clause 8.4.7):

Compliance with Environmental Management Plan
and Environmental Authorisation ..... Unit: Sum

The sum tendered shall cover all costs, overheads, profits and charges incurred in complying with all the conditions of the Environmental Management Plan and Environmental Authorisation bound into Section C3.5.C.

~~**PSA9 PROVISION OF LEP PLAN**~~

~~Add the following Fixed-Charge Item (Clause 8.3.7):~~

~~Provision of a suitable Local Economic Participation Plan ..... Unit: Sum~~

~~The sum tendered shall include full compensation for the provision of a suitable Local Economic Participation plan. The tendered sum shall also include for the auditing by a recognised external auditing firm of the expenditure on local goods, services and labour as defined in the mentioned specifications. Two audits shall be included – the first interim audit shall be undertaken once 70% of the construction period has lapsed while the second and final audit will be done once the Taking-Over Certificate has been issued. The issue and approval of the final audit results will be a pre-requisite for the issue of the Performance Certificate. The tendered sum shall furthermore include for the submission of monthly progress information related to LEP.~~

PSA10 SUMS STATED PROVISIONALLY (Clause 8.5)

PSA10.1 Contingencies

If applicable, a Provisional Sum has been included in the Summary of Schedules for contingencies. No percentage mark-up will be applicable to any payments made using contingency money other than the mark-up included in prices for variations determined in terms of the Conditions of Contract.

PSA10.2 Contract Price Adjustment

If applicable, a Provisional Sum has been included for Contract Price Adjustment in the

Summary of Schedules to make provision for contract price adjustment in terms of the Conditions of Contract. The value of the Provisional Sum shall be based on the percentage of the subtotal value as specified in the Summary of Schedules. No percentage mark-up will be applicable to any payments made in this regard.

PSA10.3 Salary for Labour Desk Officer and Community Liaison Officer

If applicable, a Provisional Sum has been included in Schedule 2 for a salary to be paid to the Labour Desk Officer and Community Liaison Officer.

In addition to the abovementioned amount, provision is made in Schedule 2 for a mark-up on the amount to be paid. The mark-up shall be regarded as full compensation for overheads, charges and profits as provided for in the Conditions of Contract.

PSA10.4 Artisans and skills training

If applicable, a Provisional Sum has been included in Schedule 2 for payments to be made to specialists for the training of unskilled or semi-skilled persons in industry accredited management and generic skills.

Payment to the Contractor will be based on invoices certified by the Engineer and issued by training specialists to the Contractor for work undertaken in terms of this item.

In addition to the above amount, provision is made in Schedule 2 for a mark-up on any payments made by the Contractor in this regard. The mark-up shall be regarded as full compensation for overheads, charges and profits as provided for in the Conditions of Contract.

PSA10.5 Telephone calls and rental

If applicable, a Provisional Sum has been included in Schedule 2 for cell phone and telephone calls and facsimile transmissions for the Engineer's Representative. The Engineer's representative will provide his own cellular telephone for the contract. Payment will be based on call and rental costs, but excluding any deposits and installation costs which shall be priced under the preliminary and general items.

In addition to the above amount, provision is made in Schedule 2 for a mark-up on any payments made by the Contractor. The mark-up shall be regarded as full compensation for overheads, charges and profits as provided for in the Conditions of Contract.

PSA10.6 Acceptance control testing

If applicable, a Provisional Sum has been included in Schedule 2 for acceptance control testing

ordered by the Engineer to be undertaken by other service providers. Payment will be based on the actual invoicing by the service providers to the Contractor.

In addition to the abovementioned amount, provision is made in Schedule 2 for a mark-up on any payments made by the Contractor in this regard. The mark-up shall be regarded as full compensation for overheads, charges and profits as provided for in the Conditions of Contract.

PSA10.7 Office consumables for Engineer's site facility

If applicable, a Provisional Sum has been included in Schedule 2 for the appointment and payment of office consumables for Engineer's site facility.

In addition to the abovementioned amount, provision is made in Schedule 2 for a mark-up on the amount to be paid. The mark-up shall be regarded as full compensation for overheads, charges and profits as provided for in the Conditions of Contract.

PSA10.8 Electronic equipment for Engineer's office

If applicable, a Provisional Sum has been included in Schedule 2 for the appointment and payment of a specialist sub-contractor for electronic equipment for Engineer's site office, including computers, printers, cameras etc.

All equipment procured for the Engineer and his representatives shall be new and remain the property of the Contractor i.e. ownership shall revert back to the Contractor upon completion of the Works.

In addition to the abovementioned amount, provision is made in Schedule 2 for a mark-up on the amount to be paid. The mark-up shall be regarded as full compensation for overheads, charges and profits as provided for in the Conditions of Contract.

PSA 10.9 Engineer's accommodation

A Provisional Sum has been included in Schedule 2 for Engineers accommodation to be paid.

In addition to the abovementioned amount, provision is made in Schedule 2 for a mark-up on the amount to be paid. The mark-up shall be regarded as full compensation for overheads, charges and profits as provided for in the Conditions of Contract

PSA10.10 Specialized services

If applicable, a Provisional Sum has been included in Schedule 2 for the appointment and payment for specialized services if and when required. These may include all work required by

the following specialists:

- Landscaping and hydro seeding;
- Geotechnical surveys and inspections;
- Land Surveyor; and
- Acceptance control testing of pipework, coatings and linings.

In addition to the abovementioned amounts, provision is made in Schedule 2 for a mark-up on the amount to be paid. The mark-up shall be regarded as full compensation for overheads, charges and profits as provided for in the Conditions of Contract.

PSA10.11 Cathodic Protection and AC mitigation

If applicable, a Provisional Sum has been included in Schedule 2 for work to be undertaken by a sub-contractor in protecting the pipeline against cathodic corrosion and providing mitigation measures against AC high voltage currents. The Engineer undertakes to issue details and instructions describing the exact nature of the work that is required, as well as the specialists that should be employed by the Contractor to undertake the work.

In addition to the above amount, provision is made in Schedule 2 for a mark-up on any payments made by the Contractor in this regard. The mark-up shall be regarded as full compensation for overheads, charges and profits as provided for in the Conditions of Contract.

PSA10.12 Wages and salaries of local labour employed during training

A Provisional Sum has been included in Schedule 2 for wages and salaries of local labour to be paid during training.

In addition to the abovementioned amount, provision is made in Schedule 2 for a mark-up on the amount to be paid. The mark-up shall be regarded as full compensation for overheads, charges and profits as provided for in the Conditions of Contract.

PSA11 PRIME COST ITEMS (Clause 8.6)

PSA11.1 Materials for Dayworks

A Provisional Sum has been included in Schedule 2 for materials to be used during the execution of dayworks. In addition to the abovementioned amount, provision is made in Schedule 2 for a mark-up on the materials used during the execution of the dayworks by the Contractor. Payment made shall be regarded as full compensation for overheads, charges and profit on the materials that are used when executing dayworks.

PSAB ENGINEER'S OFFICE

PSAB1 NAME BOARDS (Clause 3.1)

Name board(s) conforming to the standard requirements of the South African Association of Consulting Engineers and as shown on the relevant drawing must be provided and erected at points to be designated by the Engineer.

PSAB2 OFFICE BUILDING (Clause 3.2)

Office facilities shall be provided and furnished for the Engineer's Representative's personnel and maintained for the duration of the contract. The office facility shall be furnished as per Drawing No. 1890.11.00.AAA.01.U001. All finishing shall be in accordance with the above drawing and all furniture shall comply with specifications in Drawing No. 1890.11.00.AAA.01.

The Contractor shall provide all electrical equipment as required by the office staff as well as all consumables required for facilities and equipment i.e. paper, toner, stationery etc.

The Contractor shall also be responsible to provide and maintain an adequate internet connection for the Engineer's offices.

All offices, facilities and equipment shall be new and be furnished, serviced, cleaned and maintained by the Contractor. The Contractor shall provide a full-time assistant for cleaning the offices and car wash. The Contractor shall provide a full-time guard service and ablution facilities for the office complex.

The Contractor shall be responsible for all running costs and costs for other services, including telecommunication, electricity, water, etc. to operate and maintain the offices efficiently.

The Contractor will remain the owner (or renter) of the offices, furniture and equipment and shall be responsible for the maintenance and insurance thereof.

Upon completion of the Works the Contractor shall remove the offices, furniture and equipment from Site.

PSAB3 TELEPHONE (Clause 5.4)

A prime cost item has been allowed in Schedule 2 to cover all call and rental costs that are associated with the provision of this facility (telephones and cell phones) for the Engineer's Representative's staff. The Contractor shall include the invoices as provided by the Engineer in the monthly payment claims.

PSAB4 TESTING

PSAB4.1 General

A laboratory is not required by the Engineer on Site. At the request of the Engineer, the Contractor shall arrange separately with an independent commercial laboratory and/or designated specialists to carry out additional acceptance control tests, over and above the normal quality control testing required for the construction of the Works. A provisional sum is included in the contract for the additional control tests ordered by the Engineer.

The Contractor shall remain responsible to carry out the process control testing required by the Standardized, Particular and Project Specifications.

PSAB4.2 Laboratory Equipment

No laboratory buildings or fittings are required by the Engineer. The Engineer will arrange separately with a commercial laboratory or designate specialists to carry out all acceptance control testing including cube testing, but excepting for density control tests. See clause PSA9 for detail of the Prime Cost item provided for this purpose. The Contractor shall remain responsible for carrying out the process control testing that is required by the Standardised, Particular and Project Specifications.

The Contractor shall supply, insure and maintain the following equipment for use by the Engineer's Representative's personnel for the duration of the Contract:

(a) A Troxler nuclear system Model 3440, complete with accessories and stored in a suitable transit case as supplied by the manufacturer. A detailed description of the unit and principals of operation should be given in the manual for the nuclear instrument. Calibration test certificates shall be provided for such instrument.

(b) Six concrete cube moulds, 150mm nominal size, as well as a suitable concrete cube curing basin to keep all concrete cubes submerged in water for at least 28 days.

PSAB5 SURVEY ASSISTANTS (Clause 5.5)

One suitably educated Survey Assistant shall be made available for the sole use of the Engineer's Representative for the duration of the Contract. The assistant may also be required to fulfil the function of Community Liaison Officer during the Contract should the Engineer consider this arrangement to be in the interests of the Employer. The Survey Assistants may therefore have to be appointed from the local communities. Transport shall be supplied for the Survey Assistant/Community Liaison Officer by the Contractor for the duration of the Contract

should he be requested to do so. In such event payment will be made at scheduled dayworks rates.

PSAB6 SURVEY EQUIPMENT

The survey equipment listed below shall be made available and be maintained in good condition for the exclusive use of the Engineer or his Representative for the duration of the Contract.

(a)	Automatic surveyor's level complete with tripod and leather carry case such as Zeiss N1-2 or equivalent	1 No
(b)	20-second tachometer with optical plumbob complete with tripod and leather carry case such as Sokkisha TM20C or equivalent.	1 No.
(c)	Nylon-coated steel surveyor's tape 100m long and 10mm wide	1 No.
(d)	5m long steel tape	1 No.
(e)	5m long three-piece telescopic survey staves (metric double-face) complete with angle bracket level	2 No
(f)	Survey books: Level	3 No.
(g)	2kg hammer with rubber handle	1 No.
(h)	Steel pegs, 300mm long and 12mm dia	120 No.
(i)	Aluminium tags, 100mm long, 15mm wide and 2mm thick	120 No.
(j)	Reverse polar notation pocket calculator (Hp32SII or similar)	1 No
(k)	Change point	2 No
(l)	Measuring wheel	1 No
(m)	Tripod holders for ranging rods (heavy duty)	2 No.
(n)	Optical square (Sokkisha or Wild), complete with telescopic aluminium rod and bubble	1 No.
(o)	“Rabone” steel tape 10 meters long and 13mm wide	1 No.

(p)	Triangular change plate with chain	2 No.
(q)	100m long 50 kg strength fish line	1 No.
(r)	One metre long spirit level	1 No.
(s)	Three metre aluminium straight edge	1 No.

PSAB7 CARPORTS

The Contractor shall provide and maintain carports as indicated on the detailed on the drawing mentioned in PSAB2 for the duration of the Contract. The floor shall consist of crushed aggregate to alleviate dusty and muddy conditions.

PSAB8 INSURANCE, MAINTENANCE ETC.

The Contractor shall be responsible for the insurance of all facilities and equipment, running costs and costs for other services, including telecommunication, electricity, water, sanitation, etc. to operate and maintain the office efficiently.

The Contractor shall provide assistants for cleaning the offices.

The Contractor shall provide all consumables required for the facilities and equipment.

PSC SITE CLEARANCE

PSC1 DISPOSAL OF MATERIAL (Sub-clauses 3.1 and 8.2.1)

Materials arising from clearing and grubbing shall be disposed of at a suitable spoil site. The Contractor shall be responsible to make his own arrangements for a suitable spoil site. Trees and stumps necessarily removed shall not be burnt unless authorised by the Engineer but shall be cut and stacked at areas designated by the Engineer.

PSC2 AREAS TO BE CLEARED AND GRUBBED (Clause 5.1)

The areas to be cleared and grubbed will be indicated by the Engineer. Should a portion or the whole of the site have been cleared and grubbed by others prior to the start of construction then no clearing and grubbing will be ordered or payment made with respect to the applicable portion of the site.

PSC3 PRESERVATION OF TREES (Sub-clause 5.2.3)

The penalty in respect of every individual tree, designated as a tree to be preserved, that is damaged or removed unnecessarily by the Contractor, shall be up to R10 000.00 (amount to be determined by the Engineer). Trees that fall within areas upon which the Works are to be constructed or within areas that the Contractor must occupy for the proper construction of the Works will not be designated for preservation. The identification of trees to be designated for preservation will be subject to the discretion of the Engineer.

PSC4 FREEHAUL AND OVERHAUL

Refer to clause PSD12 in this regard.

PSD EARTHWORKS

PSD1 CLASSIFICATION FOR EXCAVATION PURPOSES (Clause 3.1.2)

Delete clause 3.1.2 (a) and clause 3.1.2 (b) and replace with the following:

3.1.2 (a) Soft excavation:

"All material that is not classified as hard rock excavation in terms of clause 3.1.2 (c), boulder excavation class A in terms of clause 3.1.2 (d) or boulder excavation class B in terms of clause 3.1.2 (e) shall be classified as soft excavation"

In clause 3.1.2 (c) (1), replace the words "equivalent to that specified in (b) (1) above" with the words "of mass approximately 35 t, fitted with a single-tine ripper suitable for heavy ripping and of fly wheel power approximately 220 kW."

In the last sentence of clause 3.1.2 (d), replace the words "intermediate excavation" with the words "soft excavation."

In the last sentence of clause 3.1.2 (e), replace the words "or intermediate excavation, according to the nature of the material" with the word "excavation."

PSD2 SAFEGUARDING OF EXCAVATIONS (Sub-Clause 5.1.1.2)

Any cost the Contractor may undergo in ensuring the safety of excavations or any additional excavation and backfilling he may have to undertake due to the unstable sides of excavations and trenches shall be held to his account and the various rates for excavation and trenching included in the Schedule of Quantities shall include full compensation therefore.

PSD3 EXPLOSIVES (Sub-Clause 5.1.1.3)

Add the following to the sub-clauses:

Blasting must adhere to the relevant statutes and regulations that control the use of explosives.

Prior to blasting, the Contractor shall submit a method statement to the Engineer including:

- The date, time, location, type of blast, zone of influence of ground and air shockwaves, procedures to limit fly rock and noise and any other information deemed necessary for the safe execution of the activity.

- Details of the dwellings / structures / services within the zones of influence including existing positions, lengths and widths of cracks, as well as the condition of doors, windows, roofing, wells, boreholes etc.

- Procedures for informing affected owners, communities, authorities, road users, sensitive receptors etc.

- Measures to mitigate the effects of blasting. The Contractor shall take special measures to protect existing services and structures during blasting operations which will include controlled blasting. The Contractor shall be responsible to repair damages to existing services and structures immediately, to the approval of the Engineer.

- Proposed blasting procedures, including the spacing and loading of each blast. The blasting procedures shall be prepared in writing by an explosive expert retained by the Contractor. The expert shall ensure that the approved procedures are met and that vibration readings are taken during blasting. The Contractor is responsible for the appointment and remuneration of its explosives expert and the name of the explosive expert shall be submitted to the Engineer for his prior approval. The Engineer reserves the right to independently review and monitor all blasting plans and procedures.

The Contractor shall give all residents, authorities or other parties owning buildings, structures and services within an appropriate radius (not less than 500 m) from any point of blasting, a minimum of 48 hours written notice of its intent to execute any blasting work and shall erect sign boards with the time and date of the next blast.

The Contractor shall record all aspects relevant to the conditions of the affected buildings, structures and services prior to blasting, and shall acquire the signature of the owners, occupants and authorities agreeing with the recorded conditions.

Within 48 hours after blasting, the Contractor, owners, occupants and authorities shall sign approved forms confirming the condition of the buildings, structures and services. In the event of damage to existing buildings, structures and services as a result of blasting, remedial work shall be done to the satisfaction of the owners, occupants and authorities at the Contractor's expense. Remedial work must be undertaken within 7 days of blasting.

The Contractor alone shall be responsible for all cost resulting from his activities, including the collection of fly-rock from adjacent lands and fields.

The Contractor will generally be permitted to use explosives for breaking up hard material during excavations, for demolishing existing structures, and for other purposes where explosives are normally required, subject to the following conditions:

(a) The Engineer may prohibit the use of explosives in cases where, in his opinion, the risk of injury to persons or damage to property or to adjoining structures is too high. Such action by the Engineer does not entitle the Contractor to additional payment for having to resort to less economical methods of construction.

(b) The Engineer's prior written approval shall be obtained for each and every blasting operation. This approval may be withheld if the Contractor does not use explosives responsibly and carefully.

(c) The Contractor shall comply fully with the applicable legislation and regulations.

(d) Before blasting is undertaken, the Contractor shall satisfy the Engineer that he has established whether or not the insurers concerned require pre- and post-blasting inspections of buildings and structures within a certain radius of the proposed blasting.

Should such inspections be required, the Contractor shall, together with the Engineer's representative and the insurer, examine and measure the buildings, houses or structures in the vicinity of the proposed blasting site and establish and record, together with the owner, lessee or occupier, the extent of any existing cracking or damage before blasting operations commence.

(e) When there is a possibility of damage to power and telephone lines or any other services or property, the Contractor shall adapt his method of blasting and the size of the charges and shall use adequate protective measures (e.g. cover-blasting) to reduce the risk of damage.

(f) All accidents, injury to persons and animals and damage to property shall be reported to the Engineer in detail and in writing as soon as is practicable.

(g) The Engineer shall be given 24 hours' notice by the Contractor before each blasting operation is carried out.

(h) When blasting to specified profiles, the Contractor shall so arrange the holes and charges that the resulting exposed surfaces are as sound as the nature of the material permits. The Contractor shall make good, at his own expense, any additional excavation necessitated by the shattering of rock in excess of any over break allowances specified in the Project Specifications or on the Drawings.

Notwithstanding the Contractor's compliance with the above provisions, the Contractor shall remain liable for any injury to persons and animals and loss of or damage to property occurring as a result of blasting operations.

PSD4 EXISTING SERVICES (Sub-Clause 5.1.2)

PSD4.1 Add the following under sub-clause 5.1.2.1:

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

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

The position and details of existing services and structures known to the Engineer are shown on the drawings as site data. The Employer and Engineer take no responsibility as to the accuracy or completeness of this information and have provided this information merely as an aid to the tenderers in preparing their bids for construction of the Works.

The Contractor shall protect all known existing services as well as all work being carried out and structures being erected on the Site by other contractors or public authorities. The Contractor must familiarize himself with the various standard regulations of the relevant public authorities and act accordingly. Any damage caused to these services or structures, or any obstructions or hindrance caused to other contractors or public authorities by the Contractor and all claims arising from such damage, obstruction or hindrance shall be the sole responsibility of the Contractor.

All repair work shall be carried out at the Contractor's expense to the entire satisfaction of the Engineer or the owner of the service.

The Contractor shall conduct the necessary search for unknown services as specified in clause PSD4.2. After searching, all services shall be deemed as known. The Contractors' cost of searching for existing services and accommodating all existing services and relocating all services shown on the tender drawings shall be priced into the appropriate work forming part of the Contract.

The Contractor shall record the details of existing services on the as-built drawings.

The Contractor shall maintain and rehabilitate local public roads and private access roads that it uses for construction purposes. Dust suppression, grading, traffic and safety management will be required.

Existing services need to be exposed by the Contractor early during the Contract. The x, y, z coordinates of the exposed services and PI's need to be determined by the Contractor and

provided to the Engineer. This information is required to assess the position and longitudinal sections and to make adjustments where necessary. The coordinates need to be provided to the Engineer at least four weeks before excavation along a specific section of pipeline takes place to allow adequate time for potential adjustments to the drawings.

PSD5 STORM WATER AND GROUND WATER (Sub-Clause 5.1.3)

Add the following clauses:

Adequate drainage lines must be put in place to prevent flooding and potential contamination of storm water through the Contractors activities. Storm water outside the site must be channelled away from the site and not allowed to flow through the camp or construction areas. Storm water originating on the site must be channelled off site without damaging other properties. Storm water berms must be put in place to divert water away from the works where channels are not appropriate.

All storm water must be channelled via storm water channels fitted with storm water arrestors to areas where the erosive forces of the water can be contained. In order to prevent storm water contamination, fuel, hazardous substances and hazardous wastes must be stored in a bunded, covered area and fitted with a sump. Water collected in the sump will need to be treated before re-use or release.

The Contractor shall not alter or damage existing drainage lines, levees or dams or modify the course or channel of water courses without the prior approval of the Engineer. The Contractor must ensure that all storm water lines are reinstalled or rehabilitated on completion of construction activities.

The Contractor shall be responsible for the prevention of erosion in areas impacted upon by the Contractor's activities. All erosion rehabilitation must be implemented at the first signs thereof and no erosion shall be allowed to develop in a large scale. The Contractor must present the site in an erosion free state before the issuing of the Completion and the Performance Certificates.

Steep slopes and other sections subject to severe erosion/ground slippages, shall be made geotechnical stable. Additional measures may involve:

- Geotechnical works such as gabions, Rheno mattresses, drainage lines and diversion berms;
- Installation of trench breakers prior to backfilling;
- Stone pitching, logging, extra-seeding, etc.

PSD6 DISPOSAL OF SURPLUS MATERIAL (Sub-Clause 5.1.4.3 and 5.2.2.3)

All surplus or unsuitable materials arising from the works shall be spoiled at sites approved by the land owner and relevant authorities or at registered landfill sites. Spoiling shall be in accordance with the specifications, environmental management plan, requirements of the owner of the spoil site and applicable acts, legislations and regulations. Spoiling shall not interfere with future works or disrupt natural flow of storm water run- off.

At spoil areas, rock and soil/clay must temporarily be stockpiled separately. Rock must be placed in the final spoiling position first, followed by soil/clay.

At completion, spoil areas shall be levelled and shaped to gradients not exceeding 1:5 and the areas shall be covered with top soil that were removed prior to commencing with activities.

The Contractor shall be responsible for the rehabilitation of access roads to spoil sites. Spoiling shall comply with the applicable statutory and municipal regulations and requirements of the local or rural authorities and land owners.

The Contractor will be responsible for all costs associated with the opening and development of spoil sites.

For the purpose of tendering it can be assumed that a spoil area will be available within a 15km radius from the middle of the pipeline route.

Where the pipeline is laid within a road reserve the route of the pipeline shall be finished neatly to be flush with the natural ground level or finished sidewalk level as may be applicable. Clause 5.6.7 of SANS 1200 DB shall apply to the cleaning of roadways.

PSD7 ACCOMMODATION OF TRAFFIC (Sub-Clause 5.1.6)

Vehicle and pedestrian traffic must be accommodated across the pipeline corridor at all existing public and private roads and pedestrian pathways.

Full closure of existing roads will not be allowed and alternative access to properties must be provided where closure of such accesses are required.

Open trenches and associated construction activities/infrastructure must be fenced and sign boarded. Written notice (in terms of SANS 1200 DB) shall be served to landowners to notify them of any disruption in access to their properties. The position and period of disruption must be determined in consultation with the land owner. Where necessary, detours should be provided.

Traffic control shall comply with the latest issue of the Road Signs Note 13 as issued by CSRA and CUTA as a minimum.

The Contractor shall include costs for resources and equipment required for the proper accommodation of vehicle and pedestrian traffic in terms of the specifications in its tender prices, including but not limited to temporary barricades, the erection and re-erection of existing and/or temporary traffic signs, lights and flagmen for the guarding and protection of the Works, and for making all necessary arrangements with the relevant traffic authorities.

No work may proceed in any section where accommodation of traffic is required until such time as the relevant requirements with regard to signposting are met.

Payment shall be made monthly pro-rata to the overall progress of the works.

PSD8 CONSERVATION OF TOPSOIL (Sub-Clause 5.2.1.2)

Remove the last sentence of this sub-clause.

PSD9 BORROW PITS, SPOIL SITES AND HAUL ROADS (Sub-Clauses 5.2.2.2 and 5.2.2.3)

The Contractor shall be responsible for making his own arrangement regarding the provision of imported material, if required, from commercial borrow pits. The Contractor shall provide in his tender prices for all royalties payable and for the transport of the material to site.

Where applicable, the Contractor shall be responsible for the opening and closing of designated borrow pits and spoil sites and for the associated haul roads. The Employer or the Engineer will obtain the necessary permissions and authority to utilise such borrow pits, where applicable. The Contractor in turn shall in all respect comply with the various requirements of SABS 1200D, the Minerals Act (No 50 of 1991) and the environmental requirements in relation to the opening, closing and utilisation of borrow pits and spoil sites. Except for the crushing or screening of materials in accordance with the written instructions of the Engineer, and for royalties should such become payable, no additional payment will be made for excavating or processing material from designated borrow pits, regardless of the hardness or other properties of the material.

PSD10 TOPSOIL (Sub-Clause 5.2.1.2)

Topsoil shall be removed from all areas where pipelines and structures are to be constructed and shall be stockpiled on the construction servitude and in accordance with the environmental requirements for re-use in rehabilitation.

PSD11 SOILCRETE

Soilcrete backfilling shall be a G5 material (maximum size of 10 mm) as specified in SANS 1200M, stabilised with 5% cement and compacted to 93% modified AASHTO maximum dry density.

PSD12 FREEHAUL AND OVERHAUL (Sub-Clause 5.2.5)

Add the following to the sub-clause:

"The freehaul distance shall be 0,5 km".

PSD 13 CONSTRUCTION (Clause 5)

Add the following sub-clauses:

PSD 13.1 Water courses and wetlands

The banks and contours of the water course shall be reshaped in accordance with the photographic and topographical survey to tie in with the surrounding landscape. The bed of the watercourse shall be restored to contain the same bedding material as prior to construction activities taking place.

Wetlands must be identified before construction and the Contractor must submit a method statement to manage and rehabilitate the work in accordance with the specification.

The wetlands shall be rehabilitated immediately after the works have been completed as these are sensitive habitats and disturbance must be kept to a minimum. The beds of the wetlands shall be restored to a similar state, in terms of the soil profile, as well as physical and chemical properties as established in a pre-construction survey.

The Contractor must ensure substratum restoration during the rehabilitation phase of the contract. Impermeable clay layers must be recreated / restored to reinstate the sub-surface hydrology and to ensure the perched water tables sustaining wetland habitats are kept intact. Any impermeable layers encountered within the wetland, shall be recorded, and their depths and types noted. These layers will need to be recreated during rehabilitation. The Contractor shall submit to the Engineer for approval, a method statement that deals specifically with the restoration of impermeable substratum layers prior to the commencement of works.

The Contractor shall take all necessary measures when working within rivers/wetlands to ensure that the water quality of these systems is not adversely impacted by the construction activities.

PSD 14 FILL MATERIAL FOR PLATFORM (Sub-Clause 8.3.4)

Add the following to the sub-clause:

Fill material for the platform shall be placed and compacted in 150mm thick layers to 97% MOD AASHTO density.

The G5 material supplied from commercial sources shall be stabilised with Portland cement to form an equivalent C3 layer with UCS of 1MPa minimum and 2MPa maximum.

PSD11 SPOILING HARD ROCK BOULDERS

Add the following to the sub-clause:

During past granite mining activity conducted on site, the un-used granite boulders were spoiled on site, within or in close proximity to the proposed work area. Where these granite boulders creates a safety risk during construction, the Contractor may, upon written instruction from the Engineer, spoil these boulders at a spoil site designated by the Engineer.

The quantity of hard rock boulders spoiled will be measured per truck load with a haul distance not exceeding one kilometre.

The rate shall include for loading of hard rock boulders (all sizes) onto trucks, transporting to spoil site, off-loading hard rock boulders and spreading. The rate shall also include full compensation for overheads, charges and profits.

PSDB EARTHWORKS (PIPE TRENCHES)

PSDB1 SPECIAL WATER HAZARDS (Sub-Clause 5.1.2.2)

Where ground water is present during construction to such an extent that, in the opinion of the Engineer, it would hamper the placing and consolidation of granular or concrete bedding, or would cause buoyancy of the pipes, the Engineer may order the provision of a drain in the bottom of the trench to assist with dewatering during the construction and until the trench has been backfilled to such an extent that buoyancy of the pipeline will be prevented.

The drain shall be constructed over the full width of the trench as follows:

Method 1:
300mm thick 19mm stone enclosed in non-woven, needle punched, continuous filament, polyester geotextile (Bidim A5 or similar product approved by Engineer)
or
Method 2:
500mm thick well graded dump rock enclosed within high strength composite (woven and non-woven) geotextile with high modulus characteristics for reinforcement and drainage applications (Rockgrip PC 100/100 or similar product approved by the Engineer)
or
a combination of Method 1 and 2 above with method 1 on top of method 2.
The method of stabilization will be based on the geotechnical conditions and will be subject to the approval of the Engineer.

Sumps shall be formed from which ground water can be pumped to maintain the water table below the pipe bedding level. The Contractor shall establish on site, operate and remove on completion dewatering pumps of 10l/s minimum capacity as per the requirements of Item 8.3.4(b) of 1200 DB. Lengths of trench opened at any one stage shall be limited by the dewatering capacity of the pump.

PSDB2 EXISTING SERVICES (Sub-Clauses 5.1.4)

Where any existing service occurs within the specified trench excavation, and the presence of such service is known before being exposed, the protection of the service will be scheduled and measured as provided for in Clause 8.3.5 of 1200DB. Only known services (as defined in Clause 5.4 of 1200A) shall be measured for payment.

Where an unknown existing service is damaged during construction, and the Engineer orders that the Contractor should undertake the repair of such service, then such repair will either be

measured and paid as dayworks or alternatively as a contractual variation in terms of the General Conditions of Contract.
No construction activity which may affect the integrity of telephone or electrical poles or stays may be carried out without the prior written approval of the Engineer, which approval shall only be given subject to the acceptance of a method statement that will ensure the integrity of such services during construction.

PSDB3 TRENCH WIDTHS (Sub-Clauses 4.1 and 5.2)

Trenches in general shall not exceed the widths laid down in Sub-Clause 8.2.3. If trenches exceed the specified width the Contractor shall be liable for the associated additional cost (e.g. stronger pipes, higher quality bedding) which may be required as a result of the additional trench width.

PSDB4 EXCAVATION (Sub-Clause 5.4)

The Contractor will be required to follow a procedure, whereby laying, jointing, testing and backfilling for each section of the pipeline will follow soon after trenching, and he will not be permitted to open up lengths of trench far in advance of pipe laying and backfilling operations. If in the opinion of the Engineer, trenching has proceeded too far ahead of pipe laying and backfilling, the Engineer shall have the right to stop trenching until the pipe laying and backfilling has caught up and the Contractor shall not be entitled to any extra payment due to this instruction.

Refer to the limitation in pipeline construction activities specified in section C3.5.

PSDB5 TRENCH BOTTOMS (Sub-Clause 5.5)

Replace the first paragraph of this sub-clause "Material that ..... compacted as directed" with the following:

“Where a firm foundation cannot be obtained at the grade indicated due to soft or unsuitable material, the Contractor shall remove such unsuitable material and backfill the excess depth with approved selected material or concrete, as directed by the Engineer in each particular case. Backfill other than concrete, shall be placed in layers of 150mm uncompacted thickness, each layer thoroughly compacted to 90% of modified AASHTO maximum density, to provide adequate support for the pipe bedding to be placed on top of it.

Should the Contractor remove more soil than is required to secure the proper grade of the pipeline, the Contractor shall, at his own cost, backfill the excess excavation with approved selected material or concrete, as directed by the Engineer in each particular case.”

PSDB6 FREEHAUL AND OVERHAUL (Sub-Clause 5.6.8)

All haul shall be considered as freehaul and no payment will be made for haul.

PSDB7 AREAS SUBJECTED TO TRAFFIC LOADS (Clause 5.7.2)

The requirements of Clause 5.7.2 shall apply only to pipes and sleeves crossing streets or paved areas and pipes running parallel to the road as described below.

All service trenches running parallel to the road of which the roadside edge of the trench is located less than 1,4m away from the edge of the road, will be subject to the requirements for the above mentioned clause.

The measurement and payment will apply to the full trench width. Pipes and sleeves crossing streets or paved areas will be measured and paid for to a length equal to the width of road or length of pavement crossed plus 1,4 m either side of the road edges.

Compaction of other pipe trenches running parallel to the roads shall be considered areas subject to traffic loads only where instructed by the Engineer in writing. The volume will be computed from the minimum base width determined in accordance with Sub-Clause 5.2 and the depth from the top of the back fill to the top of the bedding as specified in Sub-Clause 8.3.3.1.

PSDB8 REINSTATEMENT ROADS AND PAVED AREAS (Clause 3.6 and 5.9.4)

Apart from the re-instating of tarred road surfaces, the Contractor shall also be responsible for the re-instatement of any kerbing, channelling, paving and side drains damaged by the Contractor and any subsidence and re-surfacing and re-instatement work required or deemed necessary by the Engineer.

The Contractor shall remove all paving blocks from driveways before excavating across the driveway and store and protect these blocks. After backfilling has been completed the paving shall be reinstated to match the existing paving. The Contractor shall obtain written confirmation from the relevant owner that the driveway has been re-instated satisfactorily.

The Contractor shall remove grassing in sods before excavation takes place, stack, water and protect the sods. After backfilling has been completed the grassed areas shall be reinstated, using the sods, to the satisfaction of the Engineer. These re-instated areas must be watered for a period of 14 days after re-instatement.

Crushed stone sidewalks shall be reinstated to match the surrounding crushed stone areas, all to the satisfaction of the Engineer.

Unless otherwise specified on the drawings, trenches through roads and paved areas shall be reinstated with a 150mm upper selected subgrade layer compacted to 93 % mod AASHTO density, followed by a 150mm subbase layer compacted to 95 % mod AASHTO density and a 150mm graded crushed stone base compacted to 98 % mod AASHTO density. Bitumen surfaced roads shall be provided with a 25mm thick asphalt seal.

The upper selected subgrade layer shall have a CBR of at least 15, a grading modulus of at least 0,75 and a maximum PI of 12. The subbase shall conform to SABS 1200 ME and the base to SABS 1200 MF.

PSDB9 MEASUREMENT AND PAYMENT (Clause 8.3.2)

PSDB9.1 Basic Principles (Clause 8.1)

Add the following to the sub-clause 8.1.2(a):

Payment for the excavation and backfilling of trenches shall be made at the tendered rates and at the following stages of the construction:

i. upon completion and approval of the trench bottom, prior to bedding: 40 %
ii. upon completion and approval of top of selected backfill: 70% (cumulative)
iii. upon completion and approval of the main fill: remaining 30 %.

PSDK GABIONS AND PITCHING

PSDK1 MATERIALS

PSDK 1.1 Stone (Sub-Clause 3.2.1)

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

PSDK2 CONSTRUCTION

PSDK2.1 Grouted pitching

Replace the words "(table 4)" in the second line of the first paragraph with "(table 2)".

PSDK3 PITCHING (Sub-Clause 3.2.1.2)

Type of pitching shall be Grouted Ordinary Stone Pitching, unless otherwise instructed by the Engineer.

PSDK4 GEOTEXTILE (Sub-Clause 3.1.4)

Shall be Bidim U24, or similar approved unless shown otherwise on Drawings.

PSDM EARTHWORKS (ROADS, SUBGRADE)

PSDM1 TREATMENT OF ROADBED (Clause 5.2.3.3)

Replace item b)1)ii) of this sub-clause "the depth below formation level of drilling and blasting…….. and 850mm in the case of blasting" with the following :-

The maximum allowable depth below formation level of drilling and blasting in both camber and crossfall road super elevations shall be 300mm. The Contractor shall be liable for the cost of drilling and blasting beyond this maximum allowable depth of 300mm below formation level.

PSG CONCRETE (STRUCTURAL)

PSG-2 INTERPRETATIONS

PSG-2.3 DEFINITIONS

(a) General

Add the following definition:

Water-retaining structures: All structural concrete for the reservoir and all chambers.

Durability concrete: Concrete that is able to resist weathering action, chemical attack, abrasion and any other processes of deterioration. This implies concrete with a very low permeability and a high resistance to especially, but not limited to, carbonation and chloride attack. The prefix “W” shall precede the specified 28 day characteristic compressive strength of the concrete where the concrete strength is specified.

- All structural concrete on this project will be regarded as “Water Retaining Durability Concrete”, and will be prefixed “W” on the drawings.
- The Environmental Exposure Class for Carbonation is class XC4.
- The Environmental Exposure Class for Chloride attack is class XS1.
- The required concrete classes will be shown on all the drawings.

Important factors that will contribute to achieving durability concrete, other than the cementitious content and water:cement ratio, is as follows and shall receive special attention by the Contractor and the specialist concrete mix designer:

- The mix shall be designed so as to ensure cohesion and prevent segregation and bleeding, resulting in a final product of very low permeability.
- Compaction shall receive special attention to ensure a well-compacted and dense concrete, free of voids and entrapped air. Care shall at the same time be taken to prevent over-compaction.
- Curing of concrete is considered to be of extreme importance and shall be implemented meticulously.
- Concrete cover shall be meticulously checked prior to casting and controlled during concrete casting.
- Shrinkage cracks of any kind are deemed to be a gross compromise of concrete with a low permeability and any part of a structure with such cracks outside the specified limits shall not be deemed acceptable. The location, extent and severity of such cracks shall be

objectively considered by the Engineer prior to instructing relevant repairs or demolition of said structure, or portion thereof."

PSG-2.4.1 Explanation of Terms

For the purpose of this Specification, exposure conditions for all exposed concrete shall be deemed as severe as set out in clause 2.4.1.3 of SABS 1200 G. This corresponds with exposure conditions as defined in the current version of SANS 10100-2.

PSG-3 MATERIALS

PSG-3.1 APPROVAL OF MATERIAL AND PROCEDURES

Change the title of this clause to the above-mentioned, and add the following to this clause:

"The Contractor shall submit a method statement to the Engineer for his approval containing procedures, construction methods and quality assurance procedures for the practical implementation of the project specifications."

PSG-3.2 CEMENT

PSG-3.2.1 Applicable Specifications

Replace this clause with the following:

"Subject to the provisions of Clause 3.2.2, cement and blends of Portland cement with extenders, shall comply with the following specifications:

SANS 50197-1	:	Cement Part 1: Composition, specifications and conformity criteria for common cements
SANS 50197-2	:	Cement Part 2: Conformity evaluation
SANS 1491-1	:	Portland Cement Extenders Part 1: Ground granulated blast-furnace slag
SANS 1491-2	:	Portland Cement Extenders Part 2: Fly ash
SANS 1491-3	:	Portland Cement Extenders Part 3: Silica fume
SANS 50413	:	Masonry cement"

PSG-3.2.2 Alternative Types of Cement

Add the following sub clauses:

"PSG-3.2.2.1 Cementitious material for water-retaining structures

Cement for non-structural concrete (screeds, benching, blinding, etc) shall consist of a blend of CEM I 42.5N (Ordinary Portland Cement) and Fly Ash (FA), lime (optional) and Silica Fume (SF) (optional), or an approved blend of CEM II 42.5 and other SCM's.

Cement for all structural concrete on this Contract shall consist of CEM I 42.5N (Ordinary Portland Cement) and may be blended with other supplementary cementitious materials (SCMs) to achieve a concrete that will satisfy the durability requirements. In no instance shall the clinker content of the concrete mix be less than 50% of the total cementitious content.

This specification shall not be rigidly prescriptive in the exact composition of the mix and the percentages of SCMs to be used, but the following SCMs shall be allowed and may be considered by the mix designer (maximum allowed quantities given in brackets):

- Pulverised Fly Ash (siliceous only) (maximum 35%)
- Silica Fume (maximum 5%)
- Lime (maximum 10%)

Should pre-blended cements be proposed, CEM II 42.5N shall be allowed with the provision that the exact % content of the clinker and SCMs making up the cementitious content shall be submitted by the supplier in writing. No mix design containing CEM II shall be considered without said written submission.

The contractor shall employ the services of an accredited concrete specialist and/or laboratory to determine mix designs compatible with the specification. Should the approved specialist consider other SCMs to be appropriate, he may, in addition to designs conforming to the above, submit to the Engineer alternative design mixes with a detailed motivation for the use of alternative SCMs or increased quantities of approved SCMs. Alternatives that are well presented and motivated shall be considered. Consideration shall not be deemed as a sign of acceptance until acceptance of said alternative mix design is given in writing by the Engineer.

Over and above the proportions of the mix, the following information shall also be provided in the mix design report:

- the type, description and source of fine aggregate (e.g. washed quarzitic river sand from ABC) and course aggregate (e.g. pink quartzite from XYZ crusher);
- grading analysis and grading graphs of fine and coarse aggregates;
- water demand of fine aggregate;
- water absorption values of fine and coarse aggregates;
- average crushing values and flakiness index of coarse aggregate;

- petrographic analysis of fine aggregate (see PSG-3.4.1);
- exact composition of the cementitious material in case of a pre-blended cement;
- exact brand name, manufacturer and dosage in mℓ/100kg cementitious material of admixtures, accompanied by a data sheet from the manufacturer.
- workability retention tests (see PSG-3.4.1) if applicable;
- at least the 7 day cube test results for all structural concrete mixes.

If aggregates to be used in this Contract are alkali-silica reactive, the cement used on this Contract shall not have an alkali content (Na_2O + 0,658 K_2O) which exceeds 0,6 % by mass of the cement. The total alkali content of the concrete shall not exceed 2,1 kg/m^3 for aggregates falling in the rapidly expanding group (e.g. Malmesbury Group Meta sediments) or 2,8 kg/m^3 for Cape Granite. The Contractor shall submit the necessary test results to prove the above.

PSG-3.2.2.2 Pulverised Fly Ash (PFA)

If PFA is blended with OPC on site, the following additional requirements shall apply:

(a) PFA shall be obtained from only one power station, of which the PFA has to be approved for use in concrete. Should the Contractor wish to change the source of PFA during the Contract, he shall inform the Engineer accordingly in advance, carry out tests on the PFA, produce trial mixes in accordance with the Specifications and obtain the Engineer's approval in writing. After receiving the approval, the Contractor shall inform the Engineer in writing as to the date when the PFA from the new source is to be used.

(b) All PFA shall comply with the requirements of BS 3892 Part 1 1982.

(c) The Contractor shall obtain the producer's test certificates for each consignment of PFA, which shall be retained as record documents.

(d) Each consignment shall be tested for loss of ignition (which shall not exceed 7%), and the percentage mass retained on a 45 micron sieve by wet screening (which shall not exceed 12,5 %). Testing shall be carried out in accordance with the procedures specified in BS 3892 Part 1 1982.

(e) The chloride content and sulphate (SO_3) content of the PFA shall be tested every three months for each power station source.

PFA shall be stored separately from cement and shall have separate delivery facilities. It shall be stored in the same manner as specified for cement.

When handled in bulk and stored in silos, PFA will require a greater silo capacity and more efficient filters than Portland cement, and furthermore, provision must be made for aeration in the storage silo."

PSG-3.2.3 Storage of Cement

Add the following after the words "...may promote deterioration." In the second paragraph:

"It is of prime importance that cements to be used in concrete for water-retaining structures shall always be stored in a cool environment, and it is strongly advised that cement silos be painted white to reduce any temperature rise in the stored cement."

PSG-3.3 WATER

Add the following to this clause:

"To limit heat gain in concrete for water-retaining structures, the temperature of mixing water must be below 20°C when added to the concrete mix.

If the concrete temperature remains above the maximum allowable as specified in PSG-5.5.9.2 despite measures pertaining to cement silo's and shading of aggregate as specified, the Contractor shall employ measures to chill mixing water."

PSG-3.4 AGGREGATES

PSG-3.4.1 Applicable Specification

Add the following:

"The aggregates shall be uncontaminated aggregates and free from organic material and hard burnt lime, and comply with the requirements of SANS 1083. The voids ratio of coarse aggregate shall not exceed 47 %. The maximum water absorption of the coarse aggregate shall not exceed 1 % and the flakiness index shall not exceed 25 %.

The maximum water demand of the fine aggregate shall be 190 liter/m^3.

In addition to SANS 1083-2006, the grading of fine aggregate shall preferably comply with the requirements in Table 1 below. If the Contractor proposes to use sand which complies with the prescribed grading of Table 1 of SANS 1083, he shall prove to the satisfaction of the Engineer that the concrete produced will comply with the specifications. In addition, workability retention tests on the proposed mix design(s) shall be conducted by an accredited laboratory by

measuring the slump of the mix at 15 minute intervals starting immediately after mixing over a period of 1½ h after mixing.

Table 1: Grading requirements for fine aggregate

Sieve size (mm)	Cumulative % passing	
4.75	90 – 100	
2.36	60 – 100	
1.18	40 – 90	
0.60	30 – 75	
0.30	15 – 45	
0.15	5 – 20	
0.075	Natural sand	Crusher sand
	0 – 10	0 – 20

Petrographic analysis shall be conducted on natural sands to determine the presence of minerals (such as smectite) which may have a negative impact on workability of the fresh concrete or may be detrimental to the hardened concrete.

Aggregates to be used in this contract shall be tested in accordance with Clause 6 of SANS 1083. Further tests not covered by this standard shall be the test for alkali-silica reactivity as mentioned in SANS 1083 Annex C.2.2. If aggregates are alkali-silica reactive, it shall either be replaced with aggregates that are non-reactive or the requirements of Clause PSG-3.2.2.1 in respect of alkali-silica reactiveness shall apply.

Results of all tests shall be submitted to the Engineer for consideration as part of the concrete mix design report.

Course aggregate shall be 19 mm stone. Fine aggregate may be obtained from local sources subject to testing as mentioned above.

The fineness modulus (FM) of the fine aggregate (sand) as determined with SANS 3001-AG1 shall be between 1.7 and 3.0 and if necessary shall be achieved by the blending of at most two types of sand. After acceptance of the mix design with stated FM for the sand, the actual value of the FM shall not differ from the accepted value by more than 0.2.

At tender stage the Contractor shall assure himself by means of tests and test mixes by an accredited laboratory that the fine and coarse aggregates that he intends to use comply with the specification. The tendered rates shall therefore be deemed to allow for the importation of aggregates, if necessary, that do comply with the Specification.

The Contractor shall be responsible for locating the sources of all aggregates."

PSG-3.4.3 Storage of Aggregates

Add the following additional sub clauses:

"c) The aggregate to be used for water-retaining structures shall at all times be stored in a cool environment, on a concrete surface and in separate stockpiles of fine aggregate and single sized aggregates.

If at time of mixing, the ambient temperature exceeds 30°C, only the coarse aggregate shall be sprayed with water to assist cooling. It is advisable that all aggregate stockpiles be shaded from the sun by means of 80 % shade netting.

d) The Contractor shall ensure adequate drainage of the coarse aggregate stockpile. Washed sand shall be allowed to drain for at least 24 hours before use. (The Engineer may require the Contractor to test the sand daily for moisture content, impurities and grading before use.) "

PSG-3.5 ADMIXTURES

PSG-3.5.1 Approval of Admixtures Required

Add the following:

"In order to achieve a durability concrete specifically to water retaining structures, a crystalline admixture with tracing agent may be added to the concrete at a dosage rate by weight of the total cementitious content (this includes all cementitious extenders) as specified by the supplier.

The Contractor shall, by way of the information required in sub clause 3.5.1, prove to the satisfaction of the Engineer that the proposed admixtures are non-toxic and beneficial and not detrimental to the durability of the concrete.

The use of plasticisers with air-entraining properties will not be allowed."

PSG-3.5.2 Air-Entraining Agents

Replace the contents of the clause with the following:

"Air-entraining agents shall not be used."

PSG-4 PLANT

PSG-4.2 BATCHING PLANT

Add the following:

"All concrete shall be weigh-batched."

PSG-4.4 VIBRATORS

Add the following:

"All concrete shall be compacted by vibrators."

PSG-4.5 FORMWORK

PSG-4.5.1 Design

Add the following:

"Only steel formwork shall be used for concrete structures. Small approved laminated wooden board inserts to steel framed panels may only be used in confined places and the use thereof will be subject to approval by the Engineer. The panels shall be free from rust, ridges, fins, bulges, imperfections, irregularities, chips, scratches and holes. The finished concrete surface shall be smooth and free from irregularities, bulges, ridges, imperfections, air bubbles, honeycombing or surface discolourations.

Suitable temporary openings shall be allowed for in the formwork design to allow for the removal of sawdust, shavings, nails, wires, debris, etc.

A sample of all shutter types and joints shall be submitted to the Engineer for approval. This rule shall be waived for foundation pad footings.

PSG-4.5.3 Delete sub-clause 4.5.3 and replace with the following:

"Form accessories

All form accessories such as ties, spacers and hangers shall be of a commercially manufactured type. Non-fabricated wire shall not be used. Form ties and spacers left in-situ shall not impair the desired appearance or durability of the structure, for example by causing spalling or rust staining or by allowing moisture to pass.

After the ends or end fasteners of form ties have been removed, any embedded portion of the tie shall terminate at a distance of not less than the specified minimum cover from the formed surface of the concrete.

Runways for moving equipment during concreting shall be provided with struts and legs and shall be supported directly on the formwork or structural member, and shall not rest on the reinforcing steel."

PSG-5 CONSTRUCTION

PSG-5.1 REINFORCEMENT

PSG-5.1.3 Cover

In Sub clause 5.1.3(a) amend the words " ... or stirrup" to read: "bar, secondary reinforcement, tie stirrup, tying-wire knots or wire ends."

Add to Sub clause 5.1.3: "Tying wire shall not encroach on the specified minimum cover by more than a single strand thickness."

Add the following:

"The nominal concrete cover to reinforcement shall be as follows:

members exposed to the atmosphere	:	50 mm
members (semi-) permanently submerged under water	:	50 mm
members above retained water (e.g. reservoir roof)	:	50 mm

Cover blocks shall preferably be of a commercially manufactured type.

Concrete cover blocks are to be used. It shall be manufactured from concrete of grade, durability, density and permeability at least equal to that specified for the respective elements except that 12 mm stone (similar to that used in the concrete mix design) uncontaminated stone free from organic material and hard burnt lime, instead of 19 mm stone shall be used. The size of the cover blocks shall be 50 mm x 50 mm, with a thickness equal to the specified cover.

Wires shall be cast into the blocks to enable them to be fixed to the reinforcement. The wires shall be fully galvanised Class A as per SANS 675. The wires shall be carefully held in position while the concrete is setting to ensure that all the wires are inserted to a uniform and consistent depth of 50 % of the thickness of the cover block for all the cover blocks.

The concrete shall be thoroughly compacted by means of a vibrator or vibratory table and the blocks shall be protected against early drying and shrinkage due to sun and wind, by being kept continually wet while still in the mould. After the blocks have been removed from the mould they shall be kept in water continuously until being used, and this period shall not be less than 14 days.

A proper mix design for concrete cover blocks shall be submitted to the Engineer for approval if this type of cover block is to be used."

PSG-5.1.4 Splicing

Add the following:

"Splice lengths for reinforcement shall be as detailed on the bending schedules but shall not be less than 50 diameters. Where possible, splices shall be staggered so that they are evenly spread throughout the structure."

PSG-5.2 FORMWORK

PSG-5.2.1 Classification of Finishes

Delete sub-clause 5.2.1 and replace with the following:

"Formwork will be classified in accordance with the surface condition required on the finished concrete. These requirements shall be indicated on the drawings that forms part of this contract. Where no indication is given, the requirement shall be requested from the Engineer. Failing his response, Smooth finish shall be assumed.

The surface conditions mentioned above are classified as follows and will be so scheduled:

(a) "*Rough*: after repair work has been done to surface defects as specified in PSG-5.5.14.2, no further treatment of the as-stripped finish will be required. Regular pattern alignment of shutters is not a priority.

(b) *Smooth*: This finish shall be equivalent to that obtained from the use of good condition resin-lined or steel shutters arranged in a regular pattern. Special attention shall be paid to shutter joints to ensure conformance with the tolerances specified in PSG-6.2.3(d)7)ii). The finish is intended to be left as struck but surface defects shall be remedied as specified in PSG-5.5.14.2. Although minor surface blemishes and slight discolourations will be permitted, large blemishes and larger or severe stains and discolouration shall be repaired where so directed by the Engineer.

(c) *Special*: This finish shall be obtained by first producing a surface better than or at least equivalent to a *Smooth* finish. Only steel shutters with no joints or form ties (within

reason) shall be allowed where *Special* surface finishes are specified. Major surface defects shall not be allowed or accepted. All remaining projections shall then be removed, irregularities repaired and the surface rubbed or treated to form a smooth finish of uniform texture, appearance and colour.

All concrete surfaces, formed or unformed, shall be finished to a Degree of Accuracy II according to SANS 1200 G Clause 6.2 and PSG-6.2.3, except special finishes as defined above, which shall be finished to a Degree of Accuracy I.

PSG-5.2.2 Preparation of Formwork

Delete this clause and replace with the following:

"Forms shall be installed with joints between shutter panels being sealed tightly to prevent local honeycombing or leaching of concrete. Joints between panels shall form straight horizontal and vertical lines which shall be spaced evenly on the formed concrete surface, and shall be even and smooth and require minimal or no finishing. The layout of all formwork panels and construction joints shall be discussed with the Engineer before implementation, who reserves the right to instruct the Contractor to adjust his panel layout to suit the appearance of the structure.

Chamfers shall be provided at all exposed/visible corners, typically 20x20 mm unless noted otherwise.

All matter that could contaminate the concrete, including but not limited to rubble and dust, shall be removed from the interior of the forms before the concrete is placed. Surfaces that are to be in contact with fresh/wet concrete shall be clean and covered with an acceptable coating of material that will effectively prevent absorption of moisture, will prevent bond with the concrete and will not stain the concrete surfaces. A mineral oil or other similar approved material may be used.

On days that the ambient temperature is above 30 degrees Celsius, the steel shutters shall be cooled down by spraying with cold water."

PSG-5.2.3 Re-use of Formwork

Add the following:

"Reconditioned formwork shall be suitable to ensure the specified surface finish. All reconditioned formwork shall be presented to the Engineer for approval to confirm that the specified surface finish can be attained. The Engineer reserves the right to instruct demolition of elements cast with unapproved reconditioned shutters, at the Contractor's expense. "

PSG-5.2.5 Removal of Formwork

Delete sub clause 5.2.5.2 and Table 2 and replace with the following:

"For this purpose, shoring and/or formwork shall remain in place until the concrete is strong enough to prevent plucking of the surface during the removal of formwork. Unless qualitative data can be presented to the Engineer who will approve it in writing, the periods before striking formwork shall not be less than those given in Table 2 below.

Table 2: Removal of Formwork

Formwork to structural member	**Strength Class of cement**								
	CEM I 42.5R or higher			**CEM I and CEM II A-S, D, P, Q, V, A, W, T, L, LL, M and blends of CEM I with 20% or less GGBS or fly ash**			**CEM II B-S, P, Q, V, W, T, L, LL, M; CEM III, CEM IV and CEM V and blends of CEM I with more than 20% GGBS or fly ash**		
	Minimum time before removal of formwork (days)								
	Weather								
	Hot or Normal	**Cool**	**Cold**	**Hot or Normal**	**Cool**	**Cold**	**Hot or Normal**	**Cool**	**Cold**
Beam sides, walls and unloaded columns	0.5	0.75	1	0.75	1.25	1.5	2	3	4
Slabs with props left underneath	2	3	4	4	5.5	7	6	8	10
Beam soffits with props left underneath and ribs in a ribbed floor construction	3	4	5	7	9.5	12	10	13.5	17
Slab props including cantilevers	5	7	9	10	13.5	17	10	13.5	17
Beam props including cantilevers (span<6m)	7	9.5	12	14	17.5	21	14	17.5	21
Beam/Deck props (6m<span<12m)	10	14	18	21	25	28	21	25	28
Beam/Deck props (span>12m)	14	18	21	28	32	36	28	32	36
NOTE: In varying cool weather, stripping times may be determined by interpolation between periods specified for normal and cool weather									
A day is taken as 24 hours									

Formwork remaining in place shall be considered as part of the curing process. Even so, removal of formwork shall preferably not deviate from the times stated in Table 2.

PSG-5.2.5 Removal of Formwork

Add the following to sub clause 5.2.5.2:

"Formwork for PFA-SF concrete shall remain in place after placing of the concrete as indicated in Table 2 for Portland Blast furnace cement."

PSG-5.5 CONCRETE

PSG-5.5.1 Quality

PSG-5.5.1.2 Consistency

Add the following:

"The target slump for reinforced concrete shall be less than or equal to 110 mm, and for pump mixes for reinforced concrete less than or equal to 130 mm. Increased slump shall be accomplished by the use of plasticizers or super-plasticizers, and not by changing the water-cement ratio nor by adding air-entraining agents.

The Engineer or his designated representative shall reserve the right to summarily reject any concrete on site where the measured slump is more than 15% over the target slump as specified in the approved concrete mix design.

PSG-5.5.1.5 Durability

Add the following:

"All exposed concrete prefixed "W" shall be designed and tested to meet the following durability requirements:

Concrete class W35/19:	Design value	Acceptance Value
Oxygen Permeability Index (OPI)	>9.45	minimum 9,1
Sorptivity Index (SI)	<10,0	maximum 12,0
Chloride Conductivity	As per SANRAL table 6000/1	

The maximum ratio of water to cementitious material shall be 0,45. Should there be practical problems in achieving this value, the Engineer can be contacted for further advice.

In case of concrete class W35/19 or class W50/19 not meeting the requirements, the Engineer shall, at his sole discretion, decide on the following:

a) Lining of concrete surfaces in question with an approved epoxy
b) Demolish and re-construct the concrete element in question

Testing for durability requirements will be done on specially cast test panels. Test panels shall be cast at the instruction of the Engineer, and to sizes as determined by the Engineer.

Concrete and formwork for test panels will be paid for under the respective concrete and formwork items, e.g. item 12.33 etc.

Durability tests shall be undertaken on the test panels, at least 28 days after casting. Testing shall be done by means of coring from the test panels and determining the required properties (indices) in the laboratory. Durability index testing will be paid for under item 12.77

Please note that coring will only be done from the test panels and NOT from the actual structure.

PSG-5.5.1.7 Strength concrete

Delete this clause and replace with the following:

"Strength concrete shall be applicable to this contract and it shall be in accordance with the durability requirements and the guidelines set out in this specification. The Contractor shall be responsible for the design of the concrete mixes required under this contract, and the submission of test cubes to an approved laboratory, and for the measurement of the constituent materials to produce concrete that complies with the requirements specified by the Engineer.

Post-tensioned concrete for wall and buttresses shall be of class W50/19, complying with both the strength and durability requirements.

Reinforced concrete for foundations, floor slab, columns, roof and chambers shall be of class W35/19, complying with both the strength and durability requirements.

For concrete class W50/19 the characteristic strength is 50 MPa. The initial target strength for this concrete class is 50+1.64SD, where SD is the standard deviation of the tested samples.

After approval of the durability test mixes for class W50/19, the mean strength of the test samples will become the target strength for class W50/19 concrete.

For concrete class W35/19 the characteristic strength is 35 MPa. The initial target strength for this concrete class is 35+1.64SD, where SD is the standard deviation of the tested samples.

After approval of the durability test mixes for class W35/19, the mean strength of the test samples will become the target strength for class W35/19 concrete.

The following elements in the works shall be class **W20/13mm** concrete **with** Sikacem (o.s.a) 810 admixture to improve durability, workability, impermeability and abrasion and chemical resistance:

a) Screeds
b) Benching

The following elements in the works shall be class **15/19mm** concrete:

a) Mass concrete
b) Blinding layers

In addition to the requirement that the Contractor design the mixes to the specified strengths, the cementitious material content shall be sufficient to contribute to durability but at the same time be limited to prevent any potential alkali-aggregate reaction or to prevent overly expensive mixes prone to excessive shrinkage cracking. To this end, cementitious material content shall be within the following limits:

a)	For 50 MPa post-tensioned concrete	:	400 – 425 kg/m^3
b)	For 35 MPa or lower reinforced concrete	:	320 – 400 kg/m^3
c)	For 20 MPa screeds and benching	:	300 – 320 kg/m^3
d)	For 15 MPa mass concrete and blinding	:	280 – 300 kg/m^3

It is of the utmost importance that good strength concrete with consistent quality and composition is used throughout. All possible measures to limit shrinkage shall be applied.

All concrete shall be based on designed mixes. Trial mixes shall be made by an approved laboratory with suitable experience in the design of concrete mixes and mix designs and cube results submitted timeously to the Engineer for approval."

Add a new clause:

"PSG-5.5.1.8 No-fines concrete

The Contractor shall be responsible for the design of the no-fines concrete mix on the basis and within the limitations and parameters specified hereafter:

a) Classes of no-fines concrete

No-fines concrete shall be classified by the prefix NF and the size of aggregate to be used e.g. class NF-19 means a no-fines concrete with a 19 mm nominal size aggregate. For this contract class NF-19 shall be used.

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

Class Aggregate per 50 kg cement

NF-26,5 0,32 m^3
NF-19 0,30 m^3

b) Aggregates

Aggregate shall be a single-graded aggregate in accordance with SANS 1083, provided that the particle size shall be less than 38 mm and greater than 13 mm. Aggregate shall not contain any dust. Aggregate not complying with these requirements will be summarily rejected.

c) Cementitious materials

Ordinary Portland cement as specified in Clause PSG-3.2 shall be used in no-fines concrete. The addition of pozzolans other than PFA and SF, in whatever form, will not be permitted.

d) Cement Paste

The consistency of cement paste shall be such that all aggregate particle surfaces receive a uniform coating. Paste consistency shall be sufficiently viscous as to prevent the flow of paste through the placed concrete.

e) Strength

Concrete cube strengths at 4 and 28 days shall be 3,0 and 4,0 MPa respectively.

f) Permeability

Notwithstanding the preceding specifications, it is the Contractor's responsibility to ensure the permeability of the no-fines concrete. The Contractor shall be required to demonstrate the permeability of cast no-fines concrete on request of the Engineer. Any portion of the said no-fines concrete, deemed by the Engineer to be of insufficient permeability, shall be broken out and replaced at the Contractor's expense.

g) Batching and mixing

Cement shall be measured by mass or full bags of 50 kg each and aggregate shall be measured by volume in approved measuring boxes or barrows.

The quantity of water added shall be just sufficient to form a smooth paste that will adhere to and completely coat each and every particle of aggregate and that is just wet enough to ensure that at points of contact of the aggregate the grout will run together to

form a small fillet to bond the aggregate together. The mix shall contain no more than 20 litres of water per 50 kg of cement.

Mixing shall be carried out in an approved batch-type mechanical mixer.

h) Placing

No-fines concrete shall be placed in accordance with the procedure agreed to by the Engineer. It shall be placed in a single operation in its final position within 30 minutes of mixing.

The concrete shall be worked sufficiently to ensure that it completely fills the space to be concreted and that adjacent aggregate particles are in contact with one another. Excessive tamping or ramming must be avoided and under no circumstances shall the concrete be vibrated.

i) Protection

All no-fines concrete shall be protected from the elements and from loss of moisture. Protection against loss of moisture shall be accomplished in one or more of the following ways:

- Retaining formwork in place.
- Covering exposed surfaces with sacking or other approved material kept wet continuously.
- Covering exposed surfaces with plastic sheeting complying with the requirements of Clause PSG-5.5.8.

No-fines concrete placed during cold weather shall be adequately protected against frost for at least 3 days."

PSG-5.5.3 Mixing

PSG-5.5.3.2 Ready-mixed concrete

Add the following:

"The use of ready-mixed concrete for this contract shall be permitted provided that it complies with the requirements of this specification. Test results obtained by such a production facility

shall not be regarded as part of the quality control system, and the Contractor shall take his own samples of concrete on site and have them tested in accordance with Clause 7 of SANS 1200 G and Clause PSG-7.1.2.

Ready-mixed concrete shall only be acceptable for incorporation into the works if supplied from commercial sources complying with the following criteria:

The batching plant supplying the ready-mix concrete for the contract shall be either:

a) a SARMA member in good standing, which has been evaluated by means of a

SARMA S.H.R.E.Q. Audit and attained a minimum compliance score of 80% or

b) ISO 9002 – Standardization; ISO 14001 – Environmental; ISO 39001 – Road Transport Safety Management System; OHSAS 18001 – Legal and SANS 878:2004 – Quality compliant.

Where a commercial ready-mix supplier is commissioned to supply concrete, the contractor shall submit documented proof, to the satisfaction of the Engineer, to prove compliance with the above requirements."

PSG-5.5.5 Placing

PSG-5.5.5.1 Add the following to sub clause 5.5.5.1:

“The casting procedure shall be approved by the Engineer prior to casting. The Contractor shall give the Engineer at least 48 hours’ notice of his intention to cast concrete.”

PSG-5.5.5.3 Add the following to sub clause 5.5.5.3:

“Fresh concrete shall not be placed against concrete which has been in position for more than 30 minutes unless a construction joint has been formed or unless a retarding additive has been used in the concrete.

Care shall be taken when casting elements of substantial thickness to avoid layering of the concrete, i.e. the 450 mm thick layer guideline in clause 5.5.5.3 is waived for foundations and other elements thicker than 450 mm. The entire thickness shall be placed in one pass.”

PSG-5.5.5.5 Add the following to sub clause 5.5.5.5:

"Concrete in water-retaining structures shall not be allowed to fall freely through a height of more than 2,4 m. This implies that walls in these structures may not be cast in heights exceeding 2,4 m in height unless a chute or tremy pipe is used."

PSG-5.5.5.9 Add the following to sub clause 5.5.5.9:

"Aluminium pipes shall not be used for pumping concrete.

When concrete is pumped the slush used to prime the pump shall be wasted before commencing placing of the concrete."

Add the following new sub clauses:

"PSG-5.5.5.10 No kickers in walls or columns will be allowed.

PSG-5.5.5.11 During summer months, when maximum ambient temperatures is forecast to be 30℃ or more, concreting shall start as early as possible in the mornings, but not later than 07:00. In any event, completion of casting shall be not later than 10:30 to ensure no concrete is cast during the hottest time of day. If required, steel formwork shall be sprayed with cold water to lower the temperature thereof.

During winter months, when minimum ambient temperatures are below 5℃, concreting shall start towards mid-morning. In any event, the ambient temperature shall have risen to at least 5°C before concrete placement commences."

PSG-5.5.7 Construction Joints

PSG-5.5.7.1 Add the following to sub clause 5.5.7.1:

"Construction joints shall only be permitted as shown on construction drawings. Otherwise, before construction work commences the Contractor shall indicate on the drawings his proposal for positioning construction joints and submit these to the Engineer for his comment and approval."

PSG-5.5.7.3 The following additional requirements shall be applicable to water retaining structures:

The Engineer may allow the Contractor to cut an additional straight construction joint if it is possible without prejudicing the water tightness of the structure. The additional construction joint shall be sealed with the same seal that is specified for planned construction joints at the expense of the Contractor.

Construction joints in reinforced concrete walls, embankments, etc. shall consist only of horizontal joints unless noted otherwise. No vertical joints other than those indicated on the drawings may be constructed without the written approval of the Engineer.

Horizontal joints shall be formed by casting against a timber or metal former. Recesses shall be formed as detailed on the drawings.

The application of compounds to the surfaces of stop ends at vertical joints to retard the setting of a film of concrete in contact with the stop end will be permitted subject to the Engineer's approval of the compound to be utilized and the Contractor's methods for the application and removal of the compound.

The exact position of construction joints shall be marked on the formwork in order to obtain truly horizontal joints.

Preparation of Surface

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

Before Placing Concrete

Where the concrete of the previous lift is more than three days old, it shall be kept wet to create a concrete surface that is saturated but surface-dry when the fresh concrete is placed.

On all construction joints the following steps shall be taken after the surface has been prepared and at the most, 30 minutes before placing the concrete:

i) Install the swellable bar where applicable (strictly in accordance with the manufacturer's specification).

ii) Apply a thin layer (approximately 10mm, maximum 25 mm thick) of mortar concrete consisting of the same grade concrete to be placed but made richer by reducing the coarse aggregate content by 25% and increasing the sand content by the same mass as the 25% aggregate. (This special procedure may be omitted if the Contractor can prove to the Engineer that its omission will not affect the joining of the old and new concrete and will not cause gaps or even minor honeycombing at the previous pour-shutter interface. Permission to omit this procedure must be given in writing by the Engineer.)

iii) Place concrete within 30 minutes.

Alternative methods of preparing the surfaces of construction joints to those given above will be considered. The Contractor shall submit proposed alternative methods to the Engineer for approval.

Should the Engineer at any time withhold or withdraw permission for alternative methods to be used then the Contractor shall prepare the surfaces of construction joints and execute the concrete placement in accordance with the above specification.

PSG-5.5.8 Curing and Protection

Replace this clause with the following:

"**PSG-5.5.8.1** Early age protection

A suitable curing compound approved by the Engineer shall be applied to all horizontal or near-horizontal surfaces immediately after the final surface finish has been applied.

PSG-5.5.8.2 Curing

a) Footings not forming part of a water retaining surface and inclined surfaces (e.g. dome roofs)

The first morning following completion of final surface finishing, the surfaces shall be covered with geotextile sheets complying with the requirements below. It shall be thoroughly soaked with water and immediately thereafter it shall be covered with plastic sheets in compliance with the requirements below. Each morning during the prescribed curing period, the plastic sheets shall be removed, the geotextiles soaked in water again and the plastic sheets shall be replaced.

b) Floors

Floors of water retaining structures shall have ponded water maintained at all times on the surface during the prescribed curing period. Ponding depth shall be approximately 30 mm but at no point shall this depth be allowed to reduce to less than 15 mm. Ponding on suspended slabs shall be carefully controlled, never to exceed a depth of 50 mm.

Floors in building structures shall be treated as above or similarly to inclined surfaces mentioned in (a) above.

c) Columns

Columns shall be thoroughly sprayed with water immediately after the removal of formwork, and removal of formwork shall strictly conform to the times as stated in Table 2 in PSG 5.2.5. Thereafter columns shall be wrapped with minimum 15 micron thickness plastic wrapping of approximately 450mm width (i.e.17 micron pallet wrapping rolls), which shall have a minimum overlap of 50 mm. Final product to be approved by the Engineer.

d) Walls

Walls shall be thoroughly sprayed with water immediately after the removal of formwork, and removal of formwork shall strictly conform to the times as stated in Table 2 in PSG 5.2.5. Thereafter walls shall be covered with geotextile sheets which shall be maintained in contact with the concrete surface by fastenings spaced at no more than 2 m centers. These sheets shall be kept in a continuous state of saturation.

e) Determination of intervals and duration of application of water

The duration of water application and the intervals of application will be the responsibility of the Contractor to ensure the stated level of saturation. The saturation will be to the satisfaction of the Engineer.

f) Plastic sheets and geotextiles

Plastic sheets used for curing shall be new, waterproof and may not be torn or be otherwise discontinuous. Plastic sheets shall be at least 250 micron thick. Joints in plastic sheets shall be taped to prevent loss of moisture from the concrete (overlapping only would not be sufficient). Sheets shall overlap by at least 500 mm, shall extend at least 500 mm past the area to be cured, and shall be draped and secured around the edges and ends of elements to prevent any loss of moisture from the concrete.

Geotextile sheets shall be new, of the Kaymat A4 type (or equivalent to be approved by the Engineer) and may not be torn or discontinuous.

Plastic and geotextile sheets may be re-used for curing of further elements, but shall be replaced with new sheets when torn or damaged

Plastic and geotextile sheets shall be held down or fixed securely to the elements being cured.

g) Duration of curing

The curing period shall be as follows:

- For surfaces part of water retaining structures: at least 10 days from date of concrete casting in summer and at least 14 days in winter
- For surfaces part of building structures: at least 7 days from date of concrete casting in summer and at least 10 days in winter

h) General

The use of curing compounds, other than what is stated above, for curing is prohibited and will not be allowed without written approval of the Engineer.

Before casting of concrete may commence, the Contractor shall prove to the satisfaction of the Engineer that all measures to comply with the requirements of curing and protection of concrete, have been put in place.

Notwithstanding the preceding specifications, the Contractor shall also ensure that the concrete shall not be exposed to thermal shocks during the first 28 days after casting and he shall take the necessary, additional precautionary measures to shield the concrete during extreme warm, cold, dry or windy weather conditions. Curing shall be done in such a manner as not to cause staining, contamination or marring of the surface of the concrete.
Only potable water shall be used for the curing process, unless expressly otherwise instructed by the Engineer in writing.

The Contractor shall take the necessary precautions to prevent water used for curing from penetrating the soil underneath or adjacent to the structures. The water shall be drained away effectively as soon as possible to prevent any ponding.

Non-compliance with the above-mentioned protection and curing requirements shall be considered as sufficient grounds by the Engineer to order demolition and replacement of affected structural elements."

PSG-5.5.9 Adverse Weather Conditions

PSG-5.5.9.1 Add the following:

"No concrete shall be placed when the ground or air temperature is below 5°C or if it is likely to fall below 2°C within six hours of placing the concrete."

PSG-5.5.9.2 Replace the first sentence with the following:

"The Contractor shall ensure that the temperature of fresh concrete at time of casting does not exceed the ambient temperature by 5°C. In any event, the temperature of the concrete when cast shall not be allowed to exceed 30°C."

PSG-5.5.10 Concrete Surfaces

PSG-5.5.10.1 Delete sub clause 5.5.10.1 and replace with the following:

"Striking off: after placement and compaction of concrete as specified, the top surface shall be struck off with a template to the required cross section and tamped with a tamping board to compact the surface thoroughly and to bring mortar to the surface, so as to leave the surface slightly rough but at the required level/elevation to within the dimensional tolerances specified in PSG-6.2.3.

This finish is considered to be included in the concrete rate.

PSG-5.5.10.2 Add the following to sub clause 5.5.10.2:

"a) Wood-floated Finish

When a wood-floated finish is specified, the surface shall first be treated as specified in sub clause 5.5.10.1, and after the concrete has hardened sufficiently, it shall be floated to a uniform surface free from trowel marks with a wood float. The levelled surface shall be wood-floated either by hand or by machine only, to remove trowel marks.

b) Broom Finish

The surface shall first be given a wood-float finish (as defined in PSG-5.5.10.2(a)). Then the broom finish will be applied. The corrugations produced by the hard-bristled broom shall be approximately 1 mm deep, uniform of appearance and width and shall be perpendicular to the direction of traffic.

c) Steel-floated Finish

When a steel-floated finish is specified, the surface shall be treated as specified for a wood-floated finish above, except that when the bleed water has disappeared and the concrete has hardened sufficiently to prevent the migration of concrete foam to the surface, the levelled surface shall be floated with a steel trowel on which a firm uniform pressure shall be applied to provide a dense, smooth, uniform surface free from trowel marks.

d) Power-floated Finish

When a power-floated finish is specified, the surface shall be treated as specified for a wood-floated finish above, except that the levelled concrete surface shall be power-floated to provide a dense, smooth, uniform surface of high quality free from trowel marks."

PSG-5.5.11 Watertight Concrete

Add the following to this clause:

"All water retaining structural elements (refer PSG-2.3) shall be required to be watertight. They shall be watertight without the addition of supplementary cement plaster, coatings or membranes. Ensuring water tightness is the exclusive responsibility of the Contractor and he shall take all the measures necessary to achieve this.

The structural elements not forming part of the water containment reservoir shall be deemed watertight in terms of this contract if no visible leakage or obvious damp spots are apparent on any visible surface of the structure. Failure to comply shall be deemed to be a result of insufficient curing, notwithstanding any proof to the contrary, and shall be subject to repairs (refer PSG 5.5.14.2) at the expense of the Contractor.

Should any form of cracking be present and be so prolific and of such widths that is be deemed unacceptable, the Engineer reserves the right to order demolition and reconstruction of the affected structure/structural element at the expense of the Contractor (refer PSG-5.5.8.2 h))."

Joints

Construction and movement joints are key areas in the concrete structure(s) that may either result in watertight concrete when executed correctly or otherwise result in leaks. The following types of joints are generally applicable and the relevant types will be indicated on the drawings:

a) Floor joints and floor-wall movement joints: Bandage System

The bandage joint sealing system shall be the Sikadur Combiflex Hypalon system as supplied by Sika (Pty) Ltd. The bandage shall have a tensile strength of 6 MPa and an elongation at failure of not less than 400%.

The concrete shall be meticulously prepared strictly in accordance with the manufacturer's specification whereafter the bandage shall be bonded to the concrete with Sikadur 31 epoxy paste adhesive.

b) Floor joints and floor-wall movement joints: Water bars

Except where otherwise specified waterbars shall be manufactured from virgin polyvinyl chloride complying with BS 2571: latest amendment (Class 3 compounds) and the Tenderer shall provide full details of the composition and properties of the material in the relevant annexure where applicable.

Samples of waterbars shall be submitted for approval and all material subsequently supplied shall be identical in size, shape, colour and quality to the approved sample. The waterbar shall be of uniform cross-section and size and shall have lugs welded at 1m centres on both edges of the waterbar to hold it securely in position during concreting operations.

It shall be possible for all sizes of waterbar to be turned through a 75mm radius without damage or permanent set to the waterbar.

Joints in waterbars shall be kept to a minimum by the use of the longest possible lengths.

Waterbars shall be held to the required shape, lines, etc, in suitable formwork: site joints shall be bonded as directed by the manufacturer in such a way as to form a continuous watertight seal free from pin holes at any point of the length or width of the strip.

Formwork shall be designed to accommodate the waterbars without subsequent bending and the waterbars shall be adequately supported and protected from damage and sunlight until finally encased in concrete.

Waterbars shall be tested in accordance with BS 2782 and ISO R527.

c) Floor and floor-wall movement joints: combination of a) and b) above

d) Wall joints and wall-floor rigid joints: surface sealants

The surface shall be at least four weeks old and clean, dry and free of latance. Two layers of bitumen emulsion shall be applied, 250 mm wide with an intermediate nonwoven polyester cloth/reinforcing membrane of similar width (e.g. Safbond) as intermediate layer.

e) Wall joints and floor-wall rigid joints, and pipe penetrations through walls: swellable bar

The swellable bar system shall be the Penebar SW55 as supplied by Penetron (Pty) Ltd.

The concrete shall be meticulously prepared where applicable and Penebar Primer waterbased surface primer shall be applied strictly in accordance with the manufacturer's specification, whereafter the Penebar shall be bonded to the primed surface in the middle of the wall joint or onto the pipe penetration, all strictly in accordance with the manufacturer's specification.

f) Wall joints and floor-wall rigid joints: combination of d) and e) above

g) Wall joints: combination of d) and e) above

Ferrules

Ferrules required for the fixing of formwork may be either standard ferrules or of the permanent sacrificial type.

For standard ferrules, firstly drill out the ferrule tube, then enlarge the hole on both side of the wall, but ensure depth of enlargement to be 60mm on the water retaining side. Clean out the entire area with wire brush and then compressed air to remove all fines and dust. The mid-section and outer face of wall can be plugged, after initial soaking, with a 3:1 sand:cement mortar (sand shall specifically be sourced from the concrete supplier; the same sand as that used in the concrete shall be used here).On the water retaining side, the repair shall be performed by an approved applicator. Apply a Penetron o.s.a slurry coat, followed by a Pennycrete o.s.a. mortar/Penetron slurry combination, all strictly in accordance with the manufacturer's specification.

For sacrificial ferrules, generally the same procedure applies as for standard ferrules, save for the drilling out and filling of center part.

The surface finish of all the repaired areas shall match that of the surrounding concrete and curing compound shall be applied over the area.

NOTE: Specialist products such as those from Sika and Penetron shall be applied/installed by an applicator approved by the product supplier in order for the product warranties to be valid.

PSG-5.5.14 Defects

PSG-5.5.14.2 Add the following to sub clause 5.5.14.2:

"a) Where repair of surface defects is ordered, the Contractor shall consult specialist suppliers of concrete repair products, obtain from them a proposal(s) for a suitable repair product(s) along with a detailed method statement from such specialists and submit it to the Engineer for approval. All products shall be applied strictly in accordance with the manufacturer's specification.

The repaired area shall match the surrounding concrete as closely as possible in both colour and texture. All repair materials shall be equivalent to concrete in respect of thermal properties and structural elasticity.

b) If the finish of exposed formed surfaces does not comply with the requirements for accuracy, smoothness at shutter joints or uniformity of texture, appearance and colour, the Contractor shall upon instruction by the Engineer, rub down the exposed surfaces of the entire structure or any part of it as specified below:

The surface shall be saturated with water for at least one hour. Initial rubbing shall be done with a medium-coarse carborundum stone, where a small amount of mortar (having a sand:cement ratio equal to that of the concrete being repaired) is used on the surface. Rubbing shall be continued until all form marks, projections and irregularities have been removed and a uniform surface has been obtained. The paste produced by the rubbing shall be left in place. The final rubbing shall be carried out with a fine carborundum stone and water. This rubbing shall be continued until the entire surface is of a smooth, even texture and is uniform in colour. The surface shall then be washed with a brush to remove surplus paste and powder.

"PSG-5.5.15 Records

Replace the first sentence and clause a) with the following:

"The Contractor shall monitor and record the following on a form (to be drafted by the Contractor and approved by the Engineer), to ensure compliance with the specifications:

a)
- date and time of casting and the time taken to place the concrete;
- structural element and description of pour;
- daily maximum and minimum temperatures;
- ambient temperature at time of casting (start and finish);
- temperature of mixing water (to be obtained from supplier in case of the use of readymix;
- temperature of concrete on arrival at the point of casting.

Add at the end:

To this effect, the Contractor shall install a mini weather station (to be approved by the Engineer) to record meteorological data such as humidity, wind speed, precipitation and ambient temperature continuously. A Major Tech MT605 (or equivalent to be approved by the Engineer) digital pen type thermometer shall be used to record mixing water and concrete temperatures."

Add the following clauses:

"PSG-5.6 ITEMS BUILT INTO WATER-RETAINING STRUCTURES

The building in of items, such as puddle pipes etc. into water-retaining structures shall be executed as follows:

a) the items shall be positioned prior to construction of the relevant part of the water-retaining structure, a swellable bar secured onto the pipe near or at the centre of the wall and subsequently cast in simultaneously with the concreting of the specific element of the water-retaining structure. (Also refer to PSG-5.5.11d)

The Contractor's attention is drawn to the following:

- Water-retaining structures shall be fully watertight, especially around cast in items, and no leaks or damp areas will be allowed. Irrespective of the presence or omission of a puddle flange on pipes where it penetrates walls, a swellable bar shall be provided around the full perimeter of the item and positioned between the reinforcing steel layers.
- The concrete of the water-retaining structure around the built-in item shall be free of any honeycombing, shall have an acceptable smooth finish and the colour of the whole relevant part shall be uniform.

- Pipes passing through water-retaining structures shall be properly aligned as specified and as detailed on the drawings, and valve stems intended to be vertical shall, for example, be 100 % vertical in both planes.

Building in of items will not be measured separately as it is included in the supply and installation of the pipes and specials measured in SANS 1200 L.

PSG-5.7 ITEMS BUILT INTO EXISTING STRUCTURES

Where pipes or other items have to be built into existing water-retaining structures, the existing concrete shall be cut out carefully to obtain sufficient space to install the items.

The building in of the items shall then be executed as follows:

a) recesses or holes to be subsequently grouted or concreted in: The procedure entails sandblasting and water jetting the recess surfaces followed by installing a swellable bar and the application of an approved wet-to-dry bonding agent. The same swellable bar shall also be applied to the pipe passing through the opening. The pocket shall be filled with the same type and strength of concrete as the original and properly cured after removal of the formwork.

Building in of the items will not be measured separately as it is included in the supply and installation of the pipes and pipe specials as measured in SANS 1200 L. The cost of breaking into existing concrete and making good after installation will however be measured separately."

PSG-6 TOLERANCES

PSG-6.2 PERMISSIBLE DEVIATIONS (PDs)

PSG-6.2.1 General

Degree of Accuracy II shall apply in general, but Degree of Accuracy I shall apply for certain surfaces as identified on the drawings..

PSG-6.2.3 Specified PDs

Amend this clause to read as follows:

"(d)4): Level: -10 mm , +10 mm;
(d)5): Verticality: 2 mm/m height, subject to a maximum of 25mm;
(d)7) ii): Abrupt changes in a continuous surface: -1.0 mm , +1.0 mm

Add the following:

(d)7)iii): Abrupt changes between different concrete pours of floor or other construction joints: -1.0 mm, +1.0 mm."

PSG-7 TESTS

PSG-7.1 FACILITIES AND FREQUENCY OF SAMPLING

PSG-7.1.2 Frequency of Sampling

PSG-7.1.2.1 Replace this clause with the following:

"Subject to the requirements of sub clause 7.1.2.4, while concrete of a particular grade and in sufficient quantity is being placed under the same conditions, sets of samples (each sample, as defined in clause 2.3(b), being sufficient for six cubes) shall be taken until a maximum of 30 valid test results (5 sets of samples) have been obtained.

The sets of samples shall be taken in accordance with SANS 5861-2 from different batches of concrete, chosen on a random basis. At least one sample shall be taken from each day's placing and from at least every 50 m^3 of concrete of each grade. The frequency of sampling shall be determined by the importance of the work, i.e. a critical structural element may require that additional samples be taken (e.g. one sample every 10 m^3 of concrete, as directed by the Engineer)."

PSG-7.2 TESTING

PSG-7.2.1 General

Add the following:

"Concrete materials and operations shall be tested and inspected as the work progresses. Failure to detect any defective work or material shall not in any way prevent later rejection when such defect is discovered nor shall it obligate the Engineer to final acceptance.
The Contractor shall allow in his tendered rates for all the costs for quality or process control testing."

PSG-7.2.4 Early-Strength Testing

Add the following to this clause:

"Of each sample of six cubes, three cubes shall be tested at 7 days and the remaining three cubes at 28 days."

Add new sub clauses:

"PSG-7.2.5 Sterilization of Reservoirs

Before a reservoir is sterilized, the roof shall have been tested for water tightness as set out in Clause 7.2.6 below, and the pipelines serving the reservoir shall have been sterilized. The reservoir shall then be thoroughly cleaned out and washed down with clean water.

The roof, beams, columns and walls shall thereafter be thoroughly sprayed down, using pressurised equipment, and the floors shall be scrubbed with water containing 0,015g per litre of chloride of lime.

On completion of the sterilisation, the sterilising solution shall be run to waste before the reservoir is filled for testing its water tightness.

Should additional work be required to be done inside the reservoir after the water tightness test has been completed, the reservoir shall be re-sterilised at the Contractor's expense.

PSG-7.2.6 Testing for Water Tightness

Roofs

Roofs shall be tested prior to the containment structure. The cost of water required for the testing of the roofs shall be included for in the tendered rates.

The roof slabs that are required to be water-retaining shall be ponded with water to a maximum depth of 80 mm and a minimum depth of 20 mm for a period of at least two days (48 hours). The ponding shall be carried out in an approved systematic manner over the entire top surface area of the slab. The roof slab shall be deemed watertight if there is no visible leakage or damp spots on the soffit of the slab."

Domed roofs or sloped roofs of reservoirs shall first be visually inspected from above. Access for visual inspections of the roof soffit shall be arranged while scaffolding that supported the roof shutters are still in place. Sufficient and safe access walkways shall be provided to enable the Engineer to complete a full visual survey of the roof soffit. Should the Engineer not be afforded an opportunity to access the roof soffit up close, whether for the initial inspection or any inspections thereafter that may be required after any repair works have been completed, the Contractor shall arrange for a suitable means of access and/or recording of the entire dome roof soffit surface (technology possibly affords, amongst others, the use of high definition footage from drones and/or ultra-high definition cameras with software to stitch all the images into a single image).

The Contractor shall provide sufficient lighting to the roof soffit to the satisfaction of the Engineer during all inspections that may be required up until final acceptance of the reservoir roof structure.

The water tightness of a domed/sloped reservoir roof shall be tested by water being continuously sprayed over the roof in an approved manner so that a film of water is maintained on the dome surface. The roof shall be considered watertight if no damp patches are visible on the dome roof soffit after two days (48 hours) of continuous spraying.

Reservoirs and other water retaining structures

All water levels shall be carefully noted and recorded by the Engineer. The Contractor is free to attend the taking of all measurements by the Engineer.

Water-containment structures (reservoirs) shall be subjected to watertight testing. Prior to filling, a thorough inspection shall be done to ensure that all joints are properly sealed and that all inlet and outlet pipes are closed. The structure shall be filled with water to its maximum operating level at a rate that shall not exceed a rise in water level of 2,0 m in 24 hours.

In structures where the water surface is exposed to the atmosphere a small cylindrical watertight container (like a 20 litre tin) floating in the water should be filled with water to approximately 80% of its capacity.

If there are no visible leakages, the structure shall be allowed to remain filled for a saturation period of two weeks to permit complete saturation of the concrete.

If any leakages are visible, the water test shall be aborted, depending on the seriousness of the leakages, and the leakages repaired by the Contractor at his own cost, in accordance with an approved method and product(s) before another water test shall be done.

During the saturation period, readings of the water levels shall be taken by the Engineer at regular intervals. The water level in the structure (and the container, where applicable) shall be carefully noted and recorded by the Engineer. Where applicable, the change in water level in the container (due to precipitation or evaporation) shall be used to make corrections/adjustments to the recorded water levels in the structure.

At the end of the saturation period, water shall be added, if necessary, to bring the water level back to the maximum operating level (and the water level in the container to the original level, where applicable).

The water levels in the structure and the underfloor drainage pipes shall then be monitored daily for a period of at least four days (96 hours).

The structure shall be deemed watertight if:

a) no visible leakage or obvious damp spots are apparent on the outside of the structure; and

b) the drop in water level after being corrected for evaporation and precipitation where applicable during the four day test period does not exceed 0.06% of the volume of the reservoir.

If the structure fails the water tightness test the Contractor shall determine the cause of the leakage. The Contractor shall repair at his own cost the leakage on the inside of the structure after the water has been drained, in accordance with an approved method and product(s). Thereafter the structure shall again be subjected to a complete water test as described above. Full payment under Item 8.4.3 will only be made once the water tightness test has been passed (refer to Clause PSG-8.1.3 hereafter).

Water will be supplied free of charge by the Employer for the initial filling and testing of the reservoir only. Should the failure of the reservoir to pass the first or any subsequent test for water tightness necessitate the drainage of the structure, the Employer reserves the right to utilise the water discharging it into its water-reticulation network, in which case the Contractor –

a) shall not have to pay for the subsequent refilling of the reservoir:

b) shall, if applicable, reimburse the Employer for any additional costs incurred to make the water fit for consumption, and

c) shall not be entitled for extra time whilst waiting for the water to be discharged into the network.

The costs of re-testing the reservoir for water tightness shall be borne by the Contractor."

PSG-8 MEASUREMENT AND PAYMENT

PSG-8.1 MEASUREMENT AND RATES

PSG-8.1.1 Formwork

Add the following clause:

"PSG-8.1.1.7 No formwork will be measured to edges of blinding layers under structures. The cost for such formwork (if needed) will be deemed to be included in the rates tendered for the concrete in blinding layers.

PSG- 8.1.1.8 Back-shuttering or formwork to top revealed surfaces of sloping or conical formwork will only be measured to surfaces at angles of over 40° and up to 85° to the horizontal.

PSG- 8.1.1.9 Formwork to horizontal surfaces in pump stations, valve chambers, manholes, sumps, etc. can either be designed to be removed through the manhole cover opening or the Contractor may use permanent formwork at his own cost as no claims in this regard will be considered."

PSG-8.1.2 Reinforcement

PSG- 8.1.2.2 Replace subparagraph (a) with the following:

"The mass of steel bars will be measured as the total mass of the steel, irrespective of diameters."

PSG-8.1.2.3 Amend the clause as follows:

"Delete the words "nominal size 25 mm" in the first line of subparagraph (a).

Delete subparagraph (b)."

Add the following clause:

"PSG-8.1.4 Casting in of pipes and specials

No separate items will be scheduled for building in items supplied under this Contract except for those specially measured in the Bills of Quantities. The relevant rates for supply and installation shall cover the cost for casting in the items supplied under this Contract whether the items are positioned prior to construction or subsequently placed in blocked-out holes."

PSG-8.4 SCHEDULED CONCRETE ITEMS

PSG-8.4.3 Strength Concrete, Grade ..... Unit: m^3

Add the following to the payment paragraph:

"The tendered rate for concrete to be used in water-retaining structures shall also include all measures necessary to store cement, water and aggregates in a cool environment to ensure that the ingredients of the concrete are cool at the time of mixing in order that the allowable concrete temperature at time of placement is not exceeded."

Add the following items:

"PSG-8.4.7 No-fines Concrete (describe class and position) ..... Unit: m^3

The relevant measurement and payment clauses for strength concrete (clause 8.4.3) shall apply.

PSG-8.4.8 Concrete screed

Description of application and thickness ..... **Unit: m^2**

The rate shall include all costs associated with the installation of a screed and the average thickness and proportions of the screed stated, enhanced with Sikacem 810 or Penetron admixture (or equivalent to be approved by the Engineer) to the manufacturer's specifications."

PSG-8.4.9 Screeds

Description of application and thickness ..... **Unit: m²**

Floor screeds (1:3) with falls including V-joints to form panels and a steel trowelled finish to the top surface.

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-8.5 Joints ..... Unit: m or m²

The tendered rate shall cover the cost of all materials and labour for the construction of each wall/floor joint as specified in Clause PSG-5.5.7 and PSG-5.5.11 and shown on the drawings, including the cost of formwork, testing and making good."

Add the following items:

"PSG-8.9 Installation of pipes and pipe specials in existing ..... Unit: Sum concrete structures (*describe items and locality***)**

The tendered sum for each item shall cover the cost of breaking out existing concrete sufficient to allow the installation of the item in its correct position, additional cost for installation not measured elsewhere, and making good of the concrete after completion of the installation of the item. The sum tendered shall be regarded as an extra over the cost for supply and installation of the item which has been measured elsewhere under SANS 1200 L.

PSG-8.10 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-8.11 Sterilization of reservoir ..... Unit: Sum

Separate items will be scheduled for each type of structure to be sterilised in accordance with PSG-7.2.5.

PSG-8.12 Testing for water tightness ..... Unit: Sum

Separate items will be scheduled for each type of structure to be tested in accordance with PSG-7.2.6.

PSH STRUCTURAL STEELWORK

PSH1 SCOPE (Clause 1)

This specification shall apply to the structural steel tank stand and handrails.

PSH2 DRAWINGS AND SHOP DETAILS (Clause 5.1)

The Contractor will be responsible for the preparation of engineering drawings and workshop details for the Engineer's review prior to the commencement of fabrication.

PSH3 **HANDRAILS** (Subclause 5.7.1)

PSH3.1 All handrails shall be of the ball type tubular handrails and shall be manufactured by a reputable firm specializing in the manufacturing of this type of hand railing.

PSH3.2 Tubular hand railing shall be manufactured from mild steel tubing (unless otherwise specified on the drawings) with a minimum yield strength of 300 MP7ya. The tubing shall have a minimum outside diameter of 33 mm and a minimum wall thickness of 2,5 mm. The knee rail shall have a height of 500 mm above floor level and the top rail shall have a height of 1 000 mm above floor level.

PSH3.3 Stanchions shall be manufactured from mild steel tubing (unless otherwise specified on the drawings) with a minimum yield strength of 300 MPa. The tubing shall have a minimum outside diameter of 42 mm and a minimum wall thickness of 3,0 mm. The stanchions shall be placed at 1,0 mm centres on stairs and at a maximum of 1,8 m centres on platform and walkways.

PSH4 WELDING (Clause 5.3.4)

Welding shall be done in accordance with the relevant requirements of SABS 0162, BS 5135 and AWS.D.1/18 American Welding Society).

The qualification of welders shall be in accordance with the relevant clauses of the above standards, and specifically SABS 044 Part III and shall be Grade 1 welders. Grade 2 welders shall be permitted only with the Engineer's approval.

The Contractor shall provide evidence, acceptable to the Engineer, that welding procedures and welders have been tested in accordance with the requirements of AWS D1.1.

PSH5 PROTECTIVE TREATMENT (Clause 5.3.9)

Standard Specification 1200 HC shall apply to protective treatments.

PSL MEDIUM-PRESSURE PIPELINES

PSL1 MATERIALS (Clause 3)

PSL 1.1 Steel pipes

Steel pipes shall comply with the following Particular Specifications:

PLN: Manufacture, supply and testing of steel pipes.
PLQ: Corrosion protection of steel pipes and fittings.
PLS: Cement mortar lining of steel pipelines

PSL 1.2 Glass Reinforced Plastic Pipe (GRP)

GRP pipes shall have a stiffness of at least SN 5000.

Manufacturing of the GRP shall be strictly in accordance with SABS 1748-1.

Quality control by a suitable 3rd party quality inspectorate approved by the Engineer shall be implemented during manufacturing, handling, transport and installation of the GRP pipework and the cost for this external inspectorate shall in be included in the rates tendered.

PSL 1.3 uPVC pipe and HDPE pipes

uPVC and HDPE pipes shall comply with the following Particular Specification:

PLTP: Manufacture, supply and testing of plastic pipes

PSL2 HANDLING AND RIGGING (Clause 4.1)

Pipes, fittings, specials and valves shall be protected during transportation and handling against damage.

Pipes, fittings, specials and valves shall not be laid or stacked directly onto the ground but shall be supported on suitable padded cradles or other approved material near each end of the pipe, fitting, special or valve. Particular care shall be taken with pipes with fitted couplings to prevent pressure on the couplings. Cradles, spiders, jacks etc. shall be used to maintain the shape of pipes during transport, laying, welding and jointing.

The Contractor shall thoroughly inspect all pipes, fittings, specials and valves delivered to site.

All pipes with MDPE, 3LPE or Bituguard coatings shall be painted with a white PVA overcoat (to be approved by the Engineer) for protection against ultraviolet damage. The overcoat to be maintained by applying additional layers until the pipe is backfilled.

All pipes shall be stored (at the factory or on site) on sandbags at third of the pipe length from each pipe end. The width of the sand bags shall be at least 500 mm for pipes with Bituguard coating.

PSL2 WELDING (Clauses 5.2.3 and 7.2)

The welding specifications are applicable to all pipe diameters (not only 600 mm or greater).

100% of all site welds shall be examined radiographically in accordance with API 1104 and the Contractor shall price for it accordingly.

Only under special circumstances where allowed by the Engineer, 100% of the site welds of each welder shall be examined radiographically in accordance with API 1104 initially. When a 100% success rate of at least ten consecutive welds is achieved by a welder, the frequency of testing may be reduced to 50%. When a 100% success rate of at least five consecutive tests is achieved by a welder, the frequency of testing may be reduced to 10%. When a weld defect occurs again, the previous five welds of the relevant welder must also be radiographically examined and the frequency of further tests shall immediately increase to 100%. Any defect in the previous five welds will activate the testing of five further previous welds until a 100% success rate of the five welds is achieved. The testing rate may always be reduced to 50% and 10% as described above.

The following site welds shall in all cases be 100% radiographically examined:

- All welds not subject to hydraulic testing;
- All welds under road and railway lines, under river/stream crossings, under any structures, in sleeve pipes, in culverts and where the pipe will be encased in concrete;
- All mitres.

PSL3 DISINFECTION OF POTABLE WATER PIPELINES (Clause 5.10)

The disinfection shall be done in accordance with SANS 1200L with the exemption that the concentration of calcium hypochlorite can be reduced to 60mg/ℓ.

PSL4 CONSTRUCTION (Clause 5)

Add the following clauses:

PSL4.1 Connection to pipelines in operation

The Contractor shall give the Employer 14 days' notice in writing for connections to pipelines in operation. The Contractor shall ensure that all required material is available and all preparation work is completed at least 12 hours before the "shutdown" of existing works for the connections. The Contractor shall complete and commission the connections within 12 hours after commencement of the "shutdown".

The Employer will empty the reservoir and existing pipelines as far as possible through existing scour valves. It is the responsibility of the Contractor to control and pump out water which cannot be drained at existing scour valves or water in the pipe as a result of leaking valves. No claims will be considered for standing time due to the scouring of pipes or any other work which is done by the Employer.

PSL4.2 Additional external protection for pipes cast into chamber walls

After the concrete has cured for 7 days, wire brush or scabble the exterior and interior surfaces of the wall to remove laitance. Dry brush to remove all loose powder.

Mix ABE Super Laykold (or similar material approved by the Engineer) and water (1:1 ratio) and apply as a primer to the concrete and the pipe surfaces. After 1 hour apply a thick coat of ABE Super Laykold to the concrete and the pipe and immediately embed 250mm wide ABE non-woven polyester membrane "SBP" into the Super Laykold. After 3 hours apply another coat of Super Laykold.

This additional protection is required on the inside and outside of chamber walls.

There must be no contact between the steel pipe and the chamber reinforcement.

PSL4.3 Deflection/ovality of pipes

The Contractor shall ensure that his handling and construction methods do not result in horizontal or vertical pipe deflection more than 2% for steel pipes with cement mortar lining and 3% for steel pipes with epoxy lining and plastic pipes.

The deflection is calculated as follows.

- Measure the actual vertical diameter of the pipe [D_Y]
- Calculate the difference [Δd] between D_Y and the inside diameter of a perfectly round pipe
- The deflection $\Delta = \frac{\Delta d}{ND} \times 100$ %, where ND is the nominal diameter of the pipe

After completion of the main backfilling (including joint / "fox" holes) the Contractor shall determine the internal deflection of the pipe every 20m for pipes with a nominal diameter of 600 mm and larger. Should these 20m measurements indicate a position where the allowable deflection is exceeded, additional measurements shall be taken to determine the extent of the problem.

These measurements shall be done within 2 working days of the completion of the main backfill unless otherwise approved by the Engineer in writing.

The Contractor shall submit a method statement for the review of the Engineer to rectify deflection problems.

PSL4.4 Pipe coating performance requirements and integrity surveys

PSL4.4.1 Introduction

This section of the Specification provides the performance requirements for the external coatings after installation and field joint repairs.

Excessive apparent coating conductance may be caused by defective field joint coatings, mechanical damage, or spurious contacts to foreign objects or valve chamber reinforcement.

Location of such defective areas may be assisted by the DCVG surveys during construction.

The overall performance of the coated pipeline is defined in terms of specific coating conductance, in accordance with NACE TM 0102. Values normalised for soil resistivity are not utilised.

It should be noted that the requirements of both the construction DCVG survey and the coating conductance measurement must be fulfilled.

Also surveys shall be done by specialist Subcontractors to be nominated by the Engineer or proposed by the Contractor for the Engineer's approval, as specified in the Bill of Quantities.

PSL4.4.2 Standards

The following normative standards are referenced in this section:

NACE TM 0102	Measurement of Protective Coating Electrical Conductance on Underground Pipelines
NACE TM 0109	Aboveground Survey Techniques for the Evaluation of Underground Pipeline Coating Condition

NACE SP 0207	Performing Close-Interval Potential Surveys and DC Surface Potential Gradient Surveys on Buried or Submerged Metallic Pipelines
NACE SP 0502 – 2002	Pipeline External Corrosion Direct Assessment Methodology

PSL4.4.3 Construction DCVG Survey

The coating system is required to be free of significant (as defined by %IR below) defects at the time of installation. This will be ensured by the use of over-the-ditch holiday detection and a DCVG survey after backfilling and consolidation.

A minimum of three months shall elapse between backfilling and evaluation, unless the backfill is hydraulically compacted or significant rainfall has occurred which ensures that the pipeline is fully bedded and in intimate contact with the soil. The timing of this inspection will be determined by the Engineer, and is dependent on the backfill becoming conductive. This may take considerably longer than three months, at least until the soil becomes conductive (due to infiltration of groundwater or seasonal rains).

The coating integrity survey shall be undertaken by means of DCVG survey technique in accordance with NACE TM 0109 Section 6. All DCVG indications shall be geo-referenced by means of DGPS

On completion of the survey, sufficient calibration digs shall be conducted to characterise %IR values in the range of 1 – 5% for determination of the repair level required.

Evaluation of the construction DCVG results shall be undertaken in accordance with the following categories for %IR:

<1% IR	No repairs required.
1 – 5% IR	Repairs may be required based on results of calibration digs.
>5% IR	Repairs required

The %IR values quoted above are only applicable to new construction. Pipeline coatings which have been buried for longer than 2 years shall be evaluated in terms of NACE SP0502 – 2002 Appendix A6.4

All excavations and repairs shall be undertaken at the cost of the Contractor.

PSL4.4.4 Coating Performance Requirements

The CP design is based on the use of coated pipe. The coating is required to be resistant to the effects of high voltage transients due to the proximity of high voltage overhead power lines and

existing and future AC traction systems (e.g. of the railways). The performance of the coating is evaluated by means of a current drainage test (CDT)

The specific coating electrical characteristics form an integral part of the CP and ACM design in determining, inter alia, spacing between anode installations.

After installation and backfilling of the pipeline, the pipeline coating shall be evaluated in sections not exceeding 5 km in terms of NACE TM 0102.

A minimum of three months shall elapse between backfilling and evaluation, unless the backfill is hydraulically compacted or significant rainfall has occurred which ensures that the pipeline is fully bedded and in intimate contact with the soil.

The specific coating conductance of the 5 km construction sections shall be less than 60µS/m².

In the event that the pipeline does not meet the coating conductance criterion, alternative survey techniques shall be utilised to determine the cause of the non-compliance. These techniques may include any of the surveys described in NACE TM 0109 or SP 0207 as appropriate and subject to the approval of the Engineer.

All surveys shall be conducted by Contractor.

PSL4.4.5 Tests on Completion and end of Defects Notification Period

On completion of construction and prior to the issue of the Taking Over Certificate (TOC), the pipeline shall be subjected to a CDT and a coating integrity survey.

The coating conductance shall be calculated on the current requirement for the completed pipeline.

The specific coating conductance for the completed pipeline shall be <60µS/m^2.

The pipeline coating integrity shall be evaluated over the entire pipeline length by means of a hybrid CIPS/DCVG survey, which shall be completed in accordance with NACE SP 0207 utilising a 10m longitudinal DCVG component. The results of the survey shall be correlated with those of the construction DCVG surveys.

The significance of coating defects or other anomalies identified from the DCVG survey results will be evaluated by assessing the relative loss of polarisation at the coating defect utilising CIPS results. Where DCVG defects result in a local loss in polarisation to a level below the relevant cathodic protection criterion, the Contractor will be required to rectify the defect.

The hybrid CIPS/DCVG survey shall be repeated at the end of the Defects Notification Period (DNP) prior to the issue of the Performance Certificate.

The CDT and CIPS/DCVG tests related to TOC and DNP shall be undertaken by a Specialist Service Provider/Sub-Contractor approved by the Engineer.

Any non-compliance with the requirements of the CDT or the hybrid CIPS/DCVG survey shall be investigated and rectified by the Contractor. The Contractor shall prepare method statements for the investigation and rectification and submit it to the Engineer for approval.

PSL4.5 Curing of cement mortar lining of pipes on site

The Contractor responsible for the construction of the pipeline shall be responsible for the following curing process of cement mortar lined pipes for a period of 28 days after it has been off-loaded on site:

- The pipes must be stored horizontally
- Seal pipe ends with plastic cover
- Add 5 litre water per day into each pipe and keep pipe ends closed

PSL4.6 UV protection of joint coating

Joint coatings shall be protected by the Contractor against ultra violet (UV) damage with filter cloth (Kaymat or similar) if exposed for more than 7 days.

PSL4.7 Pipeline markers

Pipeline markers shall be installed exactly above the pipe centre line at the following positions:

- Horizontal bends
- Servitude boundaries of provincial roads and railway lines
- Both ends of concrete encased sections
- Property boundaries
- Between horizontal bends and valve chambers where distances in between exceed 300m

PSL5 STANDARD HYDRAULIC PIPE TEST (Clause 7.3)

Unless otherwise specified on the Drawings, the test pressure for field testing shall:

- Not be less than 1.25 times the maximum operating pressure at design flow or static flow conditions whichever is the highest (excluding transient/surge pressure);
- Not be less than 1.10 times the design pressure including transient/surge pressure with surge protection measures as designed operating effectively;
- Not exceed 1.5 times the maximum allowable operating pressure of the pipeline;
- Not exceed the allowable test pressure for the specific pipe class;
- Not exceed 1.5 times the allowable working pressure of the specific valve and fitting class;
- Not exceed 800 microstrain (circumferential) for metallic pipes with cement mortar lining.

Immediately after the completion of the hydraulic pipe testing, the valves shall be tested as follows:

- Air valves

  Isolate the air valve and remove the drain plug on the air valve to check that the float is dropping. Check that the isolating valve is sealing. Put the drain plug back and open the isolating valve to check that the float is closing and the air valve is sealing.

- Scour valves

  Check the opening, closing and sealing of the scour valves and the functioning of the scour outlet structure and erosion protection measures.

PSLB BEDDING (PIPES)

PSLB1 SELECTED GRANULAR MATERIAL (Clause 3.1)

Replace the clause with the following:

Refer to drawing LB-2. For flexible pipes, the bedding cradle shall be from the trench bottom up to 300 mm above the top of the pipe.

Requirements for the bedding cradle (from trench bottom up to 300 mm above the pipe) for flexible pipes are:

- 100% of material shall pass a 9.5mm sieve opening except for steel pipes, joints, specials and fittings with Polymer Modified Bitumen (Bituguard) or tape wrapping coating where 100% of material shall pass a 3mm sieve opening;
- Compatibility factor (as determined in test given in section LB of Part 3 of SABS 0120) shall not exceed 0.4;
- To be free from vegetation and other organic material to a standard acceptable to the Engineer;
- Material types SW, SP, GW and GP under the USC Classification with 12% or less passing the No. 200 sieve (0.075 mm)
- Material types GM, GC, SM and SC under the USC Classification with more than 12% passing the No. 200 sieve (0.075 mm).

The use of A-3 and A-2-4 material (based on AASHTO classification) shall be subject to the Engineer's approval and it shall be compacted at Optimum Moisture Content (OMC) plus 2% or minus 1%. This material shall not be placed and worked in wet conditions nor be allowed to become saturated before it has been placed in position and compacted. If the material has dried out before it is covered, the top surface will break down during activities on the surface and the material shall then be reworked to achieve the specified density.

PSLB2 SELECTED FILL MATERIAL (Clause 3.2)

Replace the clause with the following:

Requirements for the selected fill blanket for flexible pipes (where applicable) are:

- Plasticity Index (PI) less than 20;
- Material does not contain vegetation or stones exceeding 50mm in diameter.

In accordance with PSLB1 above, the selected fill blanket forms part of the bedding cradle and is not applicable for flexible pipes on this contract.

PSLB3 MAIN FILL

Main fill shall be well graded material with particles less than 200mm in diameter with no organic material. All material above the selected fill blanket (drawing SABS LB-2), or bedding cradle where the selected fill blanket is not applicable, will be regarded as main fill and shall be compacted to at least 87% modified AASHTO maximum density.

PSLB4 SELECTION OF SUITABLE MATERIAL

The Contractor shall use the following sources for material for bedding and selected backfilling if it complies with the Specifications:

a) Separation of excavated material
The Contractor shall separate the suitable material from the unsuitable material during excavation.

b) Sieving / screening of excavated material.
Where provision is made for this item in the Bill of Quantities, the Contractor shall allow in the rate for sieving/screening of the excavated material for bedding and selected backfilling. The Contractor shall only use source b) if the material from source a) is not sufficient.

c) Commercial sources
The Contractor shall only use source c) if the material from sources a) and b) is not sufficient.

PSLB5 DETAILS OF BEDDING (Clause 5.1.2)

Rigid Pipes:

All clay and concrete pipes will be regarded as rigid and shall be laid on a class C bedding as shown on Drawing LB-1 of SANS 1200LB.

Flexible Pipes:

Steel, uPVC, mPVC, PVC-O, GRP, Ductile iron and polyethylene pipes (PE) will be regarded as flexible and shall be bedded as per Drawing LB-2 of SANS 1200 LB, as amended in the drawings.

PSLB6 CLASS A BEDDING (Sub-Clause 5.2.1)

Concrete to be used in class A bedding to pipes shall be of class 20/19.

PSLB7 CONCRETE CASING TO PIPES (Sub-Clause 5.4)

Concrete to be used in the casing of pipes shall be of class 20/19.

PSLB8 TOLERANCE ON COMPACTION OF BEDDING MATERIAL (Clause 6.1)

Degree of accuracy II shall prevail.

PSLB9 VOLUME OF BEDDING MATERIAL (Sub-Clause 8.1.3)

The volume computed for bedding material is net, excluding the volume of the pipe and based on trench width specified in SANS 1200 LB.

PSLB10 STONE BEDDING (Sub-Clause 8.2.6)

Add the following new sub-clause:

Stone bedding will be measured per cubic metre under the appropriate item in SABS 1200LB. Type A bedding (crushed stone wrapped in a geotextile blanket) shall be measured per linear metre along the centreline of the trench. The provision, operation and removal of a de-watering pump where authorised by the Engineer will be measured as dayworks under the appropriate item in schedule 2.

PSLE STORMWATER DRAINAGE

PSLE1 SKEWED ENDS (Sub-Clause 3.1)

Skew ends shall be obtained from the manufacturer.

PSLE2 SOILCRETE LINING AND BACKFILL (New clause)

Soilcrete lining and backfill shall consist of an approved soil or gravel, 9 % OPC in channel linings and 5 % OPC in culvert backfill, calculated as a percentage of the dry mass of the soil used, a sand filler if required by the Engineer and a suitable volume of water, determined to ensure the correct slump and consistency. The exact mix proportions shall be determined in association with the Engineer after suitable trials. Soilcrete shall be mixed in a mechanical mixer and all constituents properly batched. Cubes manufactured form the approved mix shall be crushed in an approved laboratory and a proof strength determined. This proof strength and the average deviation obtained on cubes manufactured form batches controlled by the Engineer will be used to establish the strength of soilcrete produced during construction of the Works.

The aggregate used for soilcrete shall be sandy material, but may contain particles of diameter up to 38 mm and shall have a PI of less than 10. Material containing detrimental amounts of silt or clay shall not be used for soilcrete. The aggregate shall be obtained from an approved source.

The soilcrete shall be placed and then thoroughly compacted by means of vibrators so that all voids are filled. Stones or other approved formwork shall be packed at culvert ends to prevent the soilcrete from flowing outside the required limits.

The height to which the backfill in soilcrete is done shall be determined by the Engineer or shown on the Drawings and any remaining backfilling shall be carried out with a granular material as specified.

Payment for soilcrete shall be made per m^3. The volume will be calculated form the authorised plan dimensions of the excavations and the height of the backfilling in soilcrete. The volume occupied by the conduits or other structures will not be included in the quantities measured.

The rate shall cover the cost of constructing soilcrete backfilling or channel linings complete, including OPC.

Overhaul will not be paid on any cement, water, or aggregate used for soilcrete.

PSME SUBBASE

PSME1 REGIONAL FACTOR (Sub-clause 3.2.1)

A regional factor of 0.6 is applicable to the area of the Works.

PSME2 THICKNESS OF LAYERS (Sub-clauses 5.4.1 and 6.1.4)

The thickness of the layers shall be as indicated on the Drawings.

PSMJ SEGMENTED PAVING

PSMJ1 CLASS (Sub-clause 3.1.2)

Class 30 blocks are required. Type A, S-A blocks as shown in Figure 17 of UTG2 shall be used.

PSMJ2 LAYING OF UNITS (Sub-clause 5.4)

Units will be laid in the herringbone pattern.

PSMJ3 DEGREE OF ACCURACY

Paving shall be constructed to a degree of accuracy I.

PSPLT FLOW METERS (Particular Specification PT)

Each flow meter supplied under this contract shall be equipped with separate mountable signal converter unit complete with sufficient length of signal cable. The signal converter shall be locally programmable and shall be supplied complete with programmer unit. The signal converter shall furthermore have a LCD display for instantaneous flow and totalize flow and shall have a 4-20mA and pulsed output for remote indications. The signal converter unit will be mounted in an outdoor type cubicle.

C3.4.4 PROJECT SPECIFICATIONS FOR ELECTRICAL AND ELECTRONIC WORKS

C3.4.4.1 VARIATIONS AND ADDITIONS TO PARTICULAR SPECIFICATIONS (PROJECT SPECIFICATIONS)

C3.4.4.1.1 STATUS OF SPECIFICATION

Clauses under this Section C3.4.3.1 should be read in conjunction with Particular Specifications for Electrical and Electronic Engineering Works which are numbered by adding a “PS” prefix to the numbering of the Particular Specification. As per example, any variation to the Particular Specification pertaining Motor Control Centres (EMCC) will be numbered “PSEMCC” followed by the relevant clause number as detailed within the Particular Specifications.

Refer to Section C3.4.3.2 for the list of Particular Specifications as applicable to this project.

The full extent of the Electrical and Electronic Engineering Works are specified on the Drawings, the General Clauses provided under section C3.4.1 and the Project Specifications included under section C3.4.3.1. Cognisance shall also be taken of the mechanical specifications included under sections C3.4.2. These documents shall be treated as mutually explanatory. However, should there be any ambiguity in the requirements stated therein, the priority of documents shall be (a) General Clauses (section C3.4.1); (b) Project Specification; (c) Particular Specifications, (d) Drawings and (e) Standard Specifications (if applicable).

C3.4.4.1.2 CONTRACT DETAILS

The Contractor shall design, execute and complete the Works in accordance with the Contract, and shall remedy any defects in the works. When completed, the works shall be fit for purposes for which the Works are intended as intended in the Contract.

The Contractor shall provide the Plant and Contractor Documents specified in the Contract, and all Contractors Personal Goods, consumables and other things and services, whether of a temporary or permanent nature, required in and for this design, execution, completion and remedying of defects.

The Works shall include any work which is necessary to satisfy the Employer’s Requirements, Contractor’s Proposal and Schedules, or is implied by the Contract, and all works which (although not mentioned in the Contract) are necessary for stability or for the completion, or safe and proper operation, of the Works.

The Contractor shall be responsible for the adequacy, stability and safety of all Site operations, of all methods of construction and all the Works.

The Contractor shall, whenever required by the Engineer, submit details of the arrangements of the Works. No significant alternations to these arrangements and methods which the Contractor proposes to adopt for the execution of the Works. No significant alternation to these arrangements and methods shall be made without this having previously been notified to the Engineer.

C3.4.4.1.3 MATERIALS AND EQUIPMENT RECOVERED

All materials and equipment covered under this contract remains the property of the Employer and shall, unless explicitly otherwise agreed, be handed to the Employer's Official in charge for storage and safekeeping.

C3.4.4.1.4 MECHANICAL SCOPE OF PROJECT

Should there be conflicting specifications between the specifications in this section with regard to mechanical equipment required and electrical control equipment specified this must be brought to the attention of the Engineer not later than one week before the tender close, who will give clarity the matter or issue an addendum in this regard.

C3.4.4.1.5 ALTERNATIVE PROPOSALS

Alternatives may be proposed for sections of the Works. These alternatives will be considered in the adjudication of the bids. If alternative mechanical proposals are submitted the electrical scope must be adjusted accordingly to allow for the complete mechanical change as part of the alternative offer.

Acceptance of an alternative proposal or offer shall not relieve the Contractor of any of his obligations in terms of the Contract. The Contractor's cost of preparation and sub-mission of an alternative proposal shall be deemed to be included in the rates as quoted for the execution of the Work.

C3.4.4.1.6 EQUIPMENT

All equipment offered under this contract shall be selected to be equal to and similar of make as the existing equipment installed on site as far as possible and the contractor shall do a site inspection prior to submission of the tender to ensure that they comply with this requirement (if applicable to existing structure and buildings).

Contractor shall provide electrical equipment for all motor starter panels with at least Type 2 coordinated capabilities. If moulded case circuit breakers and miniature circuit breakers are cascaded and / or discrimination all proven documentation must be supplied by the contractor.

C3.4.4.1.7) ABBREVIATIONS

AI	Analogue Inputs
AO	Analogue Outputs
C&I	Control and Instrumentation
COC	Certificate of Compliance
CPU	Central Processing Unit
DB	Distribution Board
DI	Digital Input
DO	Digital Output
EC&I	Electrical, Control and Instrumentation
FT	Flow Transmitter
GA	General Arrangement
HMI	Human Machine Interface
LT	Level Transmitter
LV	Low Voltage
FDS	Functional Description Specification
FM	Flow Meter
MCC	Motor Control Centre
MV	Medium Voltage
O&M	Operations & Maintenance
OHL	Overhead Line
PLC	Programmable Logic Controller
PST	Primary Settling Tank
PT	Pressure Transmitter
RCC	Regulatory Conformance Certificate
RIO	Remote I/O
SABS	South African Bureau of Standards
SLD	Single Line Diagram
SOW	Scope of Work
SST	Secondary Settling Tank
TB	Turbidity sensor
TT	Temperature Transmitter
VSD	Variable Speed Drive
WTW	Water Treatment Works
WWTW	Wastewater Treatment Works

C3.4.34.1.8) DETAILS OF CONTRACT – Scope of Work (SOW)

The Bospoort Water Treatment Works (WTW) is situated at 25°33'42.37"S & 27°20'57.16"E. The plant was constructed in the mid 1950's. The plant was upgraded to a capacity of 12 Ml/d during 2003 and is currently being upgraded to a capacity of 24 Ml/d to address water shortages in Rustenburg.

This contract involves the upgrading of the High Lift Pump Station from the current capacity of 12 Ml/day to 24 Ml/day. Water is currently pumped to the Booster and Industrial reservoirs in Rustenburg. The upgraded High Lift Pump Station will pump water to the existing and future Bospoort reservoirs. To facilitate pumping to the Bospoort reservoirs the existing Bospoort-Rustenburg high lift pipeline must to be linked to the existing Vaalkop-Bospoort high lift pipeline. Valve chambers, pipework and valves required for linking up with the Vaalkop-Bospoort pipeline will form part of this contract.

The scope of work of the Electrical and Control and Instrumentation required for the process upgraded and extension of the treatment works will includes the below equipment. All associated mechanical equipment shall be detailed in a separate section of this document under the Mechanical Scope of Work.

PSEPLC PROGRAMMABLE LOGIC CONTROLLERS

PS EPLC-1 SCOPE

Programmable Logic Controllers shall be provided in Motor control centres (MCC) and distribution boards (DB) as specified in the following locations:

No.	DESCRIPTION	LOCATION
A	Telemetry Outstation Control Room PLC	Bospoort North Reservoir

A detailed C&I design must be submitted by the Tenderer that includes the following returnable documentation;

- Loop diagrams
- Hoop-up diagram
- Logic diagrams
- Cable schedules
- O&M Manuals
- Instrument Index
- Cable layouts
- Piping and instrumentation diagrams
- C&I data sheets and technical schedules
- Control system philosophy
- Control system network layout
- RTU, instrumentation and communication specifications and technical details

PS EPLC-6.A TELEMETRY OUTSTATION CONTROL ROOM PLC [BOSPOORT NORTH RESERVOIR]

The Bospoort North reservoir Network Chamber PLC, supplied and installed under this contract, shall communicate via telemetry to the Bospoort Water Treatment Works.

The PLC equipment shall be installed in a separate panel inside the control room.

Type: CPU and I/O modules
Protocol: Ethernet

Equipment will be the following:

QTY	DESCRIPTION	IDENTIFICATION
One	**Panel comprising the following:** **(Panel door shall be purple powder coated)**	**UPS supply**
1	10Amp sized continuous current rated SP door interlocked protection MCB (**Estimated and shall be confirmed by contractor and all calculations shall be supplied to Engineer for approval**): Plus	Main Circuit Breaker UPS
2	125Amp continuous current rated HRC fuse holders and fused links: Plus	Surge arrestors connection fuses
1	Single Phase Class 2 Surge protection unit connection type 2 as per SANS 10142-1 equal or similar to DEHNguard. DG M TT 275: Plus	Surge arrestor plus signals
1	Selector switch for normal/UPS power selection: Plus	Maintenance purposes
1	A UPS that will provide battery standby power for at least one hour during a power failure must be supplied and installed under this contract: Plus	UPS with 3 hour back-up
All	Relays and contactors for automatic transfer to UPS power once the UPS power is restored: Plus	Automatic change over
All	Termination blocks necessary for signal cable connections from motors and instrumentation equal and similar to Weidmuller: Plus	All Terminals
All	Halogen free wiring ducts, covers, fix-O-Rapid, rapid clip for din rails, rapid clip for base plate shall be used: Plus	All
All	UPS monitoring functions as specified: Plus	UPS
1	10Amp continuous current rated SP MCB (**Estimated and shall be confirmed by contractor and all calculations shall be supplied to Engineer for approval**): Plus	PLC supply
1	10Amp continuous current rated SP MCB (**Estimated and shall be confirmed by contractor and all calculations shall be supplied to Engineer for approval**): Plus	HMI supply
1	10Amp continuous current rated SP MCB (**Estimated and shall be confirmed by contractor and all calculations shall be supplied to Engineer for approval**): Plus	PLC supply
1	10Amp continuous current rated SP MCB (**Estimated and shall be confirmed by contractor and all calculations shall be supplied to Engineer for approval**): Plus	Alarm system supply
One	**Panel comprising the following:** **(Panel door shall be purple powder coated)**	**PLC**

QTY	DESCRIPTION	IDENTIFICATION
1	6Amp continuous current rated SP door interlocked protection MCCB (**Estimated and shall be confirmed by contractor and all calculations shall be supplied to Engineer for approval**): Plus	Main Circuit Breaker PLC
1	230V/24DC stabilized power supply for 24V DC inputs to PLC input modules. (Power supply shall have adequate capacity for the application) **(Estimated and shall be confirmed by contractor and all calculations shall be supplied to Engineer for approval)**: Plus	Power Supply
1	PLC processor unit complete with CPU, base plate, bus terminators, Ethernet communication with I/O modules that will satisfy the application with at least the following specifications: 1. 1024 I/O Multi-rack configuration capability, 2. 256 I/O multi-rack configuration capability, 3. The minimum communication service: bandwidth management, Ethernet TCP/IP Data Editor, Ethernet TCP/IP Modbus TCP messaging, Ethernet TCP/IP Rack Viewer, Ethernet TCP/IP SNMP network administrator, Ethernet TCP/IP Network management (NMT) CANopen Process Data Object (PDO) CANopen Service Data Object (SDO) CANopen Special functions (SYNC, EMCY, TIME) CANopen, 4. Erthernet port, 5. Memory description: 4096 kB internal RAM, 256 kB internal RAM for data, 3584 kB internal RAM for program constants and symbols and shall be supplied with additional memory, and 6. Shall comply with the following standards: IEC 61131-2 UL 508 EN 61131-2 CSA C22.2 No 142 CSA C22.2 No 213 Class I Division 2 Equal and similar to BMXP3420302 M340 from Schneider Electric. **Provide 35% Spare CPU capacity for plant (Estimated and shall be confirmed by contractor and all calculations shall be supplied to Engineer for approval)**: Plus	PLC CPU
All	High performance signal modules for digital and analog I/O plus provide **10% Spare I/O capacity for plant**: Plus	Input and Output modules
All	Interposing relays for surge protection of field statuses to PLC: Plus	Surge Protection
All	Termination blocks necessary for signal cable connections from motors and instrumentation equal and similar to Weidmuller: Plus	All Terminals

QTY	DESCRIPTION	IDENTIFICATION
All	Halogen free wiring ducts, covers, fix-O-Rapid, rapid clip for din rails, rapid clip for base plate shall be used: Plus	All
All	All signals shall be protected with digital and analog Surge arrestor modules equal or similar to Blitzductor from DEHNguard.	Surge Protection for all signals
One	**Panel comprising the following:** **(Panel door shall be purple powder coated)**	**HMI**
1	6Amp continuous current rated SP door interlocked protection MCB **(Estimated and shall be confirmed by contractor and all calculations shall be supplied to Engineer for approval)**: Plus	Main Circuit Breaker PLC
1	230V/24DC stabilized power supply for 24V DC inputs to PLC input modules. (Power supply shall have adequate capacity for the application) **(Estimated and shall be confirmed by contractor and all calculations shall be supplied to Engineer for approval)**: Plus	Power Supply
1	Ethernet field bus connections: Plus	Connections
1	Human machine interface with 7.5" Inch advanced touchscreen panel 320 x 240 pixels LCD colour touch screen with sufficient flash memory, soft function and static function keys and Ethernet communication port. Software as may be required must be provided: Plus	HMI
All	Halogen free wiring ducts, covers, fix-O-Rapid, rapid clip for din rails, rapid clip for base plate shall be used: Plus	Wiring ducts
All	Termination blocks necessary for signal cable connections from motors and instrumentation equal and similar to Weidmuller: Plus	All Terminals
All	**Software programming for indication of the following monitoring functions on the HMI display and all I/O as indicated in schedule of supervisory and control I/O's underneath. All mimics will supplied for the Engineer for approval.**	**Programing**
All	1. Alarm history page: Plus	Alarm history
All	2. Alarm setup page: Plus	Setup page
All	3. Graphic displays shall be used for variable parameter indications: Plus	Displays
All	4. Animated mimic displays shall be used for equipment	Displays

QTY	DESCRIPTION	IDENTIFICATION
	displays: Plus	
All	5. Password protected settings: Plus	Protection
All	6. All motors, blowers and pumps information protected settings, control and monitoring functions: Plus	Displays
All	7. All Instrumentation settings, monitoring and control functions: Plus	Displays
All	8. All valves, actuators and control valves open / close / trip conditions settings, monitoring and control functions: Plus	Displays
All	9. All monitoring and control functions as indicated schedule of supervisory and control I/O's underneath: Plus	Displays
One	**Panel comprising the following:** **(Panel door shall be purple powder coated)**	**Alarm System**
1	6Amp continuous current rated SP door interlocked protection MCB **(Estimated and shall be confirmed by contractor and all calculations shall be supplied to Engineer for approval)**: Plus	Main Circuit Breaker PLC
1	Stabilized transformer / power supply for (Power supply shall have adequate capacity for the application) **(Estimated and shall be confirmed by contractor and all calculations shall be supplied to Engineer for approval)**: Plus	Power / transformer Supply
All	Big metal box enclosure box from equal and similar Paradox including including Mirco SD card loaded with Paradox TM50 keypad software and all accessories to complete the installation: Plus	Accessories
3	Backup battery 7Amp Hour ,12 volt lead acid	Back-up battery
1	Alarm control panel unit complete with base plate, bus terminators, Ethernet communication, dual SMS module that will satisfy the application with at least the following specifications:	Control Panel
	StayD Mode, Built-in transceiver (433MHz), 32 zones (any of which can be wireless), 32 users and 32 remote controls (one per user), 2 partitions, 4-wire communication bus (connect up to 15 keypads), Supports REM3 hand-held remote keypad, Supports up to 8 K32RF / K37 wireless keypads, Supports up to 2 RPT1 wireless repeaters, Supports PCS100, PCS200 and PCS250 series SMS modules, Supports IP100, IP150 Internet Module, Supports VDMP3 Plug-in voice dialer,	

QTY	DESCRIPTION	IDENTIFICATION
	Supports 16 PGMs (any of which can be wireless), Supports Insite Gold application, In-field firmware upgrade via 307USB and Babyware, Menu-driven programming for the Installer, Master and Maintenance codes, Multiple telephone numbers for event reporting: 3 monitoring, 5 for Personal Dialing and 1 for pager, Patented 2 opto coupler dialer circuit - the most reliable dialer in the industry (US Patents 5751803, RE39406), Calendar with Daylight savings Time, New Sleep arming method, Push button power reset, RF Jamming Supervision, 9.6k baud communication with Babyware and 256 events buffered Equal or similar to Paradox MG5050 including Paradox PCS250 SMS module connects directly to the control panel.: Plus	
1	Keypad equal or similar to Paradox K32: Plus	Keypads
1	Wireless Passive equal or similar PMD75 from Paradox: Plus	Keypads
All	Wireless door open / close contact: Plus	All panel doors, gate and main control room door.
All	Halogen free wiring ducts, covers, fix-O-Rapid, rapid clip for din rails, rapid clip for base plate shall be used: Plus	Wiring ducts
All	Termination blocks necessary for signal cable connections from motors and instrumentation equal and similar to Weidmuller: Plus	All Terminals
All	Contractor will responsible for the application for sim card and contract made out to client and applications fees which will be able to send all the required info and data for 1 year subscription.	Sim card

PSEPLC-6.16.A SCHEDULE OF SUPERVISORY AND CONTROL I/O'S FOR TELEMETRY OUTSTATION CONTROL ROOM PLC [BOSPOORT NORTH RESERVOIR]

DESCRIPTION	RTD IN	ANALOG IN	ANALOG OUT	24V DC IN	24V DC OUT	VOLT FREE OUT	NETWORK LINK		
							SCADA	HMI	PLANT
UPS Normal/Fail				2			2	2	2
UPS Low Battery				1			1	1	1
UPS DC voltage below 190 Volt				1			1	1	1
UPS Main Supply / UPS Power				2			2	2	2
Power Mains Live / Off					2		2	2	2
Alarm System Normal/Fail				2			2	2	2
Alarm System Low Battery				1			1	1	1
Alarm System DC voltage below 190 Volt				1			1	1	1
Alarm System Main Supply / Battery Power				2			2	2	2
Remote Activating Alarm System				1	1		2	2	2
Control Room Alarm Triggered				1		1	2	2	2
Control Room Door Open / Close						2	2	2	2
Panel Doors Open / Close						10	10	10	10
Gate Open / Close						1	1	1	1
Actuator No.1 Healthy				1			1	1	1
Pressure Relief Valve No.1 – No.3 Trip				3			3	3	3
Pressure Relief Valve No.1 – No.3 Open / Close				3	3		6	6	6
Pressure Relief Valve No.1 – No.3 Remote / Manual				6			6	6	6
Pressure Relief Valve No.1 – No.3 Modulating Control			3				3	3	3
Turbine Flow Meter No.1 – No.3		3					3	3	3
Tamper Outstation Door Cubicles						5	5	5	5
Turbine Flow meter Totalized flow measurement [captured every day at selectable / programmable predetermined / time]		3					3	3	3
Contractor to allow 10% Spare capacity for future	All	All	All	All	All	All	All	All	All

PSEPLC-15 OPERATION OF PLANT

The final control philosophy of the plant will be the responsibility of the Contractor. The operation description of the plant below only services as brief description of the works and minimum requirement in terms of the Contract.

PS EPLC-15.A HIGH LIFT PUMP STATION

The existing four Bospoort high lift pump sets [4 pumps] are connected in a series and operate as two series duty configuration and two series standby configuration. This contract includes the upgrade of the exiting high lift pump sets [from 12M/l a day to 24M/l a day].

Part of this contract will include the upgrading of the existing soft starters from 225kW to 355kW [Estimated - the electrical contractor must confirm the new exact motor starter with the mechanical contractor].

Manual – Timers and relays
Automatic – PLC control

An electronic pre-start warning siren shall be supplied and installed under this contract and shall be activated for a period of five seconds before the starting of a pump which is set in either automatic or manual modes of operation. The siren shall be installed in a position that will provide an audible warning to maintenance staff for safety reasons. Only the High Lift pump sets will have to be equipped with this siren.

The motor starting sequence for the series set shall be as follows:

a) Suction motor will start and at full speed,
b) The delivery motor will start and at full speed the actuator will open.

The soft starters shall be programmed in manual and in automated mode of operation to ramp up the motor speed to reduce the starting current to a minimum [all shall be similar programmed]. In the event that series motors receive a the stop or manual stop command, the delivery motor will be the first to ramp down to limit the water surge to the maximum allowable. Once the delivery motor has stopped, only then will the shutdown procedure for the suction motor proceed. The suction motor will ramp down to limit the water surge to a maximum and once the motor has stopped, only then can the actuator should close.

The pump sets shall be interlocked to prevent both pump sets to be in operation simultaneously in both manual and automatic modes of operation. In manual mode of operation the operator must select which pump set will be used and the normal start pressures will be exactly similar to the Automated PLC mode of operation.

- [Pump Set No.1 [Pump No.1-No.2], or
- Pump Set No.2 [Pump No.3-No.4], or
- Automatic Mode

The duty cycle of these pump sets must be rotated after each duty cycle in manual and automatic mode of operation. The pump sets shall be interlocked with the water level in the relevant section of the clear water reservoir that is located next to the pump station.

The Tenderer shall provide for all the wiring of the following protection devices in manual as well as automated mode of operation:

- 3 x Winding RTD's [Red, White and Blue phase]
- NDE Bearing RTD on motor
- NDE Bearing RTD on pump
- DE Bearing RTD on motor
- DE Bearing RTD on pump
- Thrust Bearing RTD's on pump
- Vibration sensors x, y and z axis
- Anti-condensation heater
- No flow switch in suction lines
- Pressures sensor in common delivery pipe lines

No-flow sensors [equal or similar to Endress and Hauser] shall be supplied and installed under the electrical scope of the work in the suction pipeline of each of the four high lift pump sets. The sensors monitor for no flow conditions and will be interlocked with the pump sets for protection purposes. Sockets for mounting these sensors will be provided under the mechanical section of the work and the electrical shall coordinate with mechanical contractor.

Supplied and installed under this contract will be electronic pressure transducers to monitor the common suction pipe and the delivery pressure. The pressure transducer will serve a dual function of producing an alarm at predetermined high/low pressures as well as trip the pump-sets via the PLC at high-high/low-low pressures.

All protection devices must be interlocked with the pump set control circuitry and must trip or prevent the pump from starting up if a protection device is in a trip condition. The trip condition shall be displayed on the HMI unit and SCADA system. Possible causes for this fault condition must be included on the SCADA system for maintenance staff assistance.

PS EPLC-15.B BOSPOORT NORTH RESERVOIR NETWORK CHAMBER

Civil Contractor will construct the valve chambers while the mechanical Contractor will install the following equipment at the locations below listed:

Bospoort to Vaalkop / Bospoort North HLPL Link Chamber

a) Four flow control valves [all accessories will be included with the valves to control] and
b) Three turbine flow meters [only turbine].

The Bospoort North to: Thlabane Pipeline; Boitekong Pipeline and Boitekong Network Chamber

a) Three pressure relief valves [all accessories will be included with the valves to control] and
b) One turbine flow meter [only turbine].

Part of this contract will be to control the flow control valves via the flow meters and transfer all information to Bospoort Water Treatment Works. Bospoort North reservoir will be built and the control of those valves will form part of this contract:

Now:

a) Bospoort Water Treatment Works to Bospoort Reservoirs [Magalies Water] until predetermined full level.
b) When the Bospoort Reservoirs [Magalies Water] are at predetermined full level then the valves must close and then water must be diverted to the existing Bospoort pipeline.

Required under this Contract to Change the exiting Control Philosophy to:

a) Bospoort Water Treatment Works to Bospoort North Reservoirs until predetermined full level.
b) When Bospoort North Reservoirs are at a predetermined full level then valves will close and divert the water to Bospoort Reservoirs [Magalies Water] until at a predetermined full level.
c) When the Bospoort Reservoirs [Magalies Water] are at predetermined full level then the valves must close and then water must be diverted to the existing Bospoort pipeline.

Also:

a) Should Bospoort Reservoirs [Magalies Water] be at a predetermined full level then the control valve must open to pump to Bospoort North Reservoirs.

PSEPTM TELEMETRY SYSTEM

PSEPTM -1 SCOPE OF WORKS

The standard conditions of contract is a FIDIC Yellow book and the contractor shall design, execute the complete the works in accordance with the contract.

Drawing 1890.11.00.WPA.21.U001 shows the proposed locations of the masts including the control rooms. Earthing and lightning protection, palisade fence, masts, telemetry systems and control room forms part of this contract. The bulk earth works will be done under the civil contract.

The scope of work for the Telemetry entails Point-to-Point (PTP) and Point-to-Multipoint (PMP) links. All the PTP and PMP links shall be designed utilizing the latest equipment technologies available. It must also be noted that the equipment selected shall conform to the rugged terrain requirements of the greater Rustenburg area.

These PTP links transmit large amounts of data and voice in both directions between links. These types of links also place a high requirement on data encryption, which provides a certain level of comfort to the end user. These types of links therefore conform to both the stringent data encryption and high speed data transmission requirements of secure and reliable Microwave Radio Network design philosophy.

The design of the PTP Radio Network shall be done according to the particular specification and all international standards referenced in particular specification.

PSEPTM -6 OUTSTATION CABINETS

All outstation cubicles shall comply with the requirements for motor control centres and distribution boards in the Particular Specifications.

Outdoor outstations shall be constructed from 3CR12 stainless steel, powder coated frame mounted and with front access. The lockable front door shall be equipped with a tamperproof lock protection cover.

The telemetry equipment cubical shall be of sufficient size to accommodate double the number of I/O modules installed under this contract.

Battery termination box with LED voltage indicators. Sufficient space shall be provided for a second battery installation in future,

Field junction box with all field cables and wiring connected to DYN rail mounted termination blocks.

The field termination box shall be of sufficient size for termination of all hard-wired field equipment, monitoring and control requirements. At least 20% spare terminals for future connections shall be provided.

All of the Telemetry links to Networks shall conform to the following minimum technical requirements:

PSEPTM -6.A TELEMTRY OUTSTATION CONTROL ROOM [BOSPOORT NORTH RESERVOIR]

Type: Outdoor outstation shall be constructed from 3CR12 stainless steel, powder coated frame mounted and with front access only. All outstation cubicles shall comply with the requirements for motor control centres and distribution boards in the Particular Specifications.

Supply: 1 x 16mm² 3 core Cu PVC SWA PVC cable plus 1 x 10mm² kwena copper earth cable from the Eskom connection.

Colour: Electric orange

Fault level: 5kA

Equipment will be the following:

QTY	DESCRIPTION	IDENTIFICATION
One	**Panel comprising of the following:**	**Incomer Section**
1	60Amp continuous current rated SP distribution MCB with electronic trip, monitoring relays with automatic reset and all accessories: Plus	Main Circuit Breaker
Set	80/1Amp continuous current rated current transformer: Plus	Current inputs
1	Ammeter scaled 0-80Amp: Plus	Ammeter
1	3 Position Selector switch	R-W-B phase

QTY	DESCRIPTION	IDENTIFICATION
		indication
3	2Amp HRC fuse holders and fused links: Plus	Voltage inputs
1	Front panel mounted LCD digital display supply network analyser comprising of combined voltage, current, maximum demand power measurement and power factor correction measurement complete with Communications module must be provided, communication links with PLC/DCS Units. The communication interface must comply with either of the following: • Profibus-DP • Profinet • Industrial Ethernet • Modbus TCP/IP Equal or similar to Power Logic PM800: Plus Under no circumstances, shall the use of proprietary protocols be allowed: Plus	Power Analyser
2	80Amp continuous current rated copper bus bars: Plus	1 Phase + N
1	50Amp continuous current rated copper bus bar: Plus	Earth
1	Three Phase combined class 1&2 surge arrestor unit connection type 2 as per SANS 10142-1: Plus	Surge arrestor plus signals
3	2Amp continuous current rated HRC fuse holders and fused links: Plus	Indicator Lamp Protection
3	Robust LED indicator lamps connected load side of the circuit breaker: Plus	Indicators for 3 Phase (Red , White and Blue Indications)
1	20Amp SP + N earth leakage with overload protection: Plus	Earth Leakage

QTY	DESCRIPTION	IDENTIFICATION
1	10Amp continuous current rated SP MCB: Plus	Area Lighting
1	16Amp continuous current rated SP Contactor: Plus	Area lighting contactor
1	5Amp continuous current rated SP MCB: Plus	Coil Protection
1	Time switch equal and similar Schneider electric ITA digital with 100 hour standby capacity.	Digital Timer Switch
All	Continuous current rated thermal magnetic motor circuit breakers with adjustable current setting and auxiliary contact (monitor trip condition): plus	All valves which must be coordinated with the mechanical contractor
All	Continuous current rated SP MCB: Plus	All flow meters which must be coordinated with mechanical contractor
1	10Amp continuous current rated SP MCB: Plus	Lighting
1	Continuous current rated SP MCB that will satisfy the application: Plus	UPS Feeder
All	Halogen free wiring ducts, covers, fix-O-Rapid, rapid clip for din rails, rapid clip for base plate shall be used: Plus	Wiring ducts
All	Termination blocks necessary for signal cable connections from motors and instrumentation equal and similar to Weidmuller: Plus	All Terminals
All	**Panel comprising the following:** **(Panel door shall be purple powder coated)**	**Telemetry equipment as specified below**
All	**Panel comprising the following:** **(Panel door shall be purple powder coated)**	**UPS for PLC Equipment as specified under PLC**

PSEPTM -19 OUTSTATIONS HARDWARE

An outdoor type enclosure as specified above shall be provided for each telemetry outstations. Hardware shall be as follows:

PSEPTM -19.A TELEMTRY OUTSTATION CONTROL ROOM [BOSPOORT NORTH RESERVOIR]

The telemetry equipment shall be installed in a separate panel inside the outstation cabinet.

Protocol: Ethernet

Equipment will be the following:

QTY	DESCRIPTION	IDENTIFICATION
One	**Panel comprising the following:** **(Panel door shall be purple powder coated)**	**Telemetry Hardware**
1	10Amp continuous current rated SP door interlocked protection MCCB: Plus	Main Circuit Breaker PLC
All	230V/24DC stabilized power supply for 24V DC inputs to telemetry system. (Power supply shall have adequate capacity for the application): Plus	
All	Ethernet communication with I/O modules that will satisfy the application: Plus	All communications
All	Interposing relays for surge protection of field statuses to Telemetry, equipment and mast : Plus	Interposing relays
All	Termination blocks necessary for signal cable connections from motors and instrumentation: Plus	Termination blocks
All	Ethernet radios transceivers supporting 360–512 MHz, shall be 5.0 W RF power. The Ethernet radios shall be robust/secure two-way wireless communications in extremely challenging outdoor industrial environments. The Ethernet Radios shall have the following features: Multi-hop repeater and gateway functionality	Radio transceiver

QTY	DESCRIPTION	IDENTIFICATION
	Gather-scatter and block mapping Modbus TCP and RTU I/O gateway DNP3 remote I/O and DNP3 TCP gateway Internal programmable data and event logging with remote access Configurable digital, pulse, and analog I/O to 14-bit resolution 360–512 MHz frequency licensed bands 10 mW to 5 W RF power (Shall be set to 5W) Radio data rates from 4800 bps to 19.2 kbps 12.5 kHz and 25.0 kHz channel bandwidth options: Plus	
All	Ethernet communication cable link: Plus	Communication
All	All equipment leaving the control room Signal & Data Surge protection unit suitable for the application equal or similar to Blitzductor XT from DEHNguard.	Signal & Data Surge Protection
All	Antenna adequate capacity for the application. Antenna shall be designed, calculated, supplied, installed and commissioned by the Contractor. The antenna communication shall have protected with surge arrestor.	Antenna
All	Halogen free wiring ducts, covers, fix-O-Rapid, rapid clip for din rails, rapid clip for base plate shall be used: Plus	Wiring ducts
All	Termination blocks necessary for signal cable connections from motors and instrumentation equal and similar to Weidmuller: Plus	All Terminals

CONTROL INSTRUMENTATION SYSTEM

PS ECIS-1 SCOPE OF WORKS

Equipment shall be provided as specified and indicated on the drawings on the site of the Works.

PS ECIS-3 FLOW METER EQUIPMENT

Magnetic and turbine type flow meters will be supplied and installed by the mechanical or civil contractor. The above mentioned flow meter controllers as free issue items will have to be installed under this contract in flow meter kiosks complete with a supply of electricity, surge protection and earthing system.

Clamp on flow meters will be supplied and installed under this contract. The Contractor shall coordinate with the mechanical contractor if all requirements are met regarding the clamp on flow meters.

PS ECIS-3.A BOSPOORT NORTH RESERVIOUR [x2]

Type: Outdoor powder coated 3CR12 steel frame mounted with lockable front door and transparent window for meter reading purposes. Transparent window must be covered with top-hinged powder coated 3CR12 cover for ultra violet protection of controller.

Supply: 2.5mm² x 3 core PVC SWA PVC cable plus 10mm² bare copper earth plus 1mm² x 4pr twisted PVC SWA PVC (individually and overall screened) from the outstation distribution board.

Colour: Electric orange

Fault level: 5kA

Equipment will be the following:

QTY	DESCRIPTION	IDENTIFICATION
1	10Amp Continues Rated SP MCB: Plus	Main
All	Single Phase class 2 surge arrestor unit connection type 2 as per SANS 10142-1 equal or similar to Dehnguard: Plus	Surge arrestor

QTY	DESCRIPTION	IDENTIFICATION
1	Meinecke type FM1 D/K frequency converter complete with opto-pulser at flow meter position: Plus	Controller
1	Front panel mounted LCD instantaneous flow display: Plus	Display
All	Terminals and interconnecting monitoring and control wiring equal and similar to weidmuller: Plus	Connection and monitoring
All	Signal & Data Surge protection unit suitable for the application equal or similar to Blitzductor XT from DEHNguard..	Signal & Data Surge Protection

PS ECIS-4 ELECTRONIC LEVEL CONTROL

An electronic intelligent level transducers shall be supplied and installed on a grade 3CR12 stainless steel brackets and a ball type level sensor as indicated.

Field mounted level sensors shall be installed complete with local surge protection and earthing system. The level controllers shall be installed inside kiosk and mounted as specified. Stainless steel brackets, onto which the level sensors shall be screwed, shall be bolted to the wall; their mounting brackets being modified accommodate the insertion of the level sensors.

PS ECIS-4.A RESERVOIR LEVELS [X1]

Type: Outdoor powder coated 3CR12 kiosk. The kiosk shall be steel frame mounted with lockable front door and transparent window for meter reading purposes. The enclosure / kiosk shall be designed and submitted for approval to the Engineer and will be so designed to easily accommodate the equipment described below. The controller, surge arrestor, terminals shall be mounted inside the enclosure. The transparent window must be covered with a top hinged powder coated 3CR12 cover for ultraviolet protection of the controller display. The enclosure shall be ventilated by means of vent plug. The Contractor shall design and supply a rigid channel iron frame or support structure to lift the kiosk so that the centre of the panel is 1500mm above final floor level. The channel support structure shall be fixed to the precast plinth structure with adequate number of fasteners and the entire support shall be subject to approval by the Engineer. The plinth is part of the entire installation and shall be supplied as complete package.

The vent plug shall incorporate an internal PTFE-membrane, designed to balance internal enclosure temperature with external ambient temperature, avoiding internal condensation without compromising the IP rating of the enclosure.

- Protection degree: IP68-10

- Influent pressure: >5 Bar
- Temperature: -50°C...+120°C
- Nylon or Nickel plated brass

Supply: 2.5mm² x 3 core PVC SWA PVC cable plus 10mm² bare copper earth plus 1mm² x 4pr twisted PVC SWA PVC (individually and overall screened) from the outstation distribution board.

Equipment will be the following:

QTY	DESCRIPTION	IDENTIFICATION
1	10Amp Continues Rated SP MCB: Plus	Main
All	Single Phase class 2 surge arrestor unit connection type 2 as per SANS 10142-1: Plus	Surge arrestor
All	Ultrasonic level controller equivalent to the FMU90, paired with a ultrasonic type transducer sensor unit, should be mounted on a Grade 304 stainless steel bracket. This setup will be housed within a ventilated Grade 3CR12 stainless steel enclosure, in accordance with the manufacturer's recommendations for level monitoring. The installation should include all necessary cabling and accessories: Plus	Level Controller & Transducer
All	Weir type flow meter transducer. The Contractor to allow for 10m cable to be to including cabling and all accessories.	Transducer
All	Terminals and interconnecting monitoring and control wiring: Plus	Connection and monitoring
All	Signal & Data Surge protection unit suitable for the application equal or similar to Blitzductor XT from DEHNguard..	Signal & Data Surge Protection

PS EG&M GENERAL AND MISCELLANEOUS

PS EG&M-8 NOTICES AND DANGER PLATES

This specification deals with the provision of Notices, Danger Plates and signage as required in terms of the Occupational Health and Safety Act No. 85 of 1993, as well as any other notices that may be required by law or by the nature of the finished Works.

All notices, danger plates, signage and building names signage ie [“Inlet Works”] on equipment shall be supplied under this contract and it is the Contractor’s responsibility to familiarize themselves with the applicable standards referred to in the Particular Specifications and supply all necessary signage.

PS EG&M-8.2 MATERIALS AND FINISH

Outdoor signs shall be either of vitreous enamel or of cast aluminium with raised or embossed letters.

The colours and sizes of letters and background colour shall be in accordance with requirements of SANS 0140 and as approved by the Engineer.

Symbolic signs shall conform to the requirements of SANS 1186.

The following building names shall be added under the Notices and Danger Plates:

- Bospoort North Reservoir Network Chamber (1 sign)

PS EG&M-9 FIRE EXTINGUISHERS

The supply and installation of 5kg CO2 and powder fire extinguishers in all pump stations and treatment plant buildings shall be done in accordance with the requirements of the Local Authority. Each fire extinguisher shall have an extinguisher cabinet, mounting bracket, tags, seals, inspection label, tags, and double sided signage above the extinguisher.

The following locations shall be fitted with fire extinguishers:

- Bospoort North Reservoir Network Chamber (1 Unit, mounted next to telemetry cubicle)

PS EELS EARTHING AND LIGHTNING PROTECTION

PS EELS-1 SCOPE

This specification, read together with the applicable Particular Specifications included under section C3.4.2.2, covers the performance specifications, design parameters, manufacture, supply and delivery to site, installation, testing, adjustment and commissioning of the all earthing and lightning protection equipment to be provided under this Contract.

PS EELS-6 AIR-TERMINATION SYSTEM

The Contractor shall use an air-termination system, and shall be composed combination of the following elements:

- Rods;
- Stretched wires;
- Meshed conductors.
- Any exposed conductors shall be done with Kwena anti – theft conductors
- All bonding which are exposed shall be done with Kwena anti – theft conductors

PS EELS-10 INTERNAL & EXTERNAL LIGHTNING PROTECTION SYSTEM

Class 1 earthing and lighting protection shall be provided at the following locations:

- Bospoort North Reservoir Network Chamber ([proposed mast, control room and antenna]

The lighting protection shall be done by a qualified specialist. They will be required to submit approved SABS drawings and all associated calculations. Lighting protection certificate (COC) for each building and structure shall be completed, approved and registered by the Engineer and only then submitted to the Engineer for approval.

All exposed external earthing and bonding shall be done with Kwena Anti-Theft Cable.

PS ESLS SITE LIGHTING

PS ESLS-1 SCOPE

This specification, read together with the applicable Particular Specifications included under section C3.4.2.2 covers the performance specifications, design parameters, manufacture, supply and delivery to site, installation, testing, adjustment and commissioning of the site lighting to be provided under this Contract.

PS ESLS-2 15M HIGH MASTS

Supply and install **four** (x**4**) 15m high scissor mast as indicated on the site layout drawing, complete with mast foundation and earthing system, final positions will be determined on site by the engineer or his representative. Provide three (x4) LED type M on top of each mast.

Type M	:	**135W Neutral White LED Floodlight.** The luminaire consists of an LED engine, power supply and spigot compartment. It shall be secured by stainless steel latches and an access screw. The LED engine, consisting of the LED light source and the power supply, shall be easily replaceable. Both compartments are rated IP66. Electronic temperature monitoring prevents overheating of LEDs and power supply, positioned directly next to LEDs. The luminaire housing shall be manufactured of marine grade aluminium. Equal or similar to Omistar from Beka.

PS ESPL ELECTRICAL INSTALLATION IN BUILDINGS AND ON STRUCTURES

PS ESPL-1 SCOPE

The scope for the distribution board sections shall include everything required to provide a complete small power distribution and lighting system. The design of the distribution board shall allow for single and three phase supplies to equipment on site.

PS ESPL-4 LIGHT FITTINGS

Note: All luminaires must be approved by the Engineers prior to the installation of or any order being placed. Only light fittings as well as all light fitting components carrying the SABS mark of approval

Type A : **19W LED** Enclosed dust, moisture, vandal and corrosion proof luminaire. The luminaire shall be be made of a high-pressure die-cast marine grade aluminium body with a robust clear polycarbonate diffuser. The luminaire shall bear the SANS 60598-2-1 safety mark. Equal or similar to Roughguard from Beka.

Type B : **19W LED** Enclosed dust, moisture, vandal and corrosion proof luminaire. The luminaire shall be be made of a high-pressure die-cast marine grade aluminium body with a robust clear polycarbonate diffuser. The luminaire shall bear the SANS 60598-2-1 safety mark. Equal or similar to Roughguard from Beka plus 1hour EMG maintained (emergency).

Type C : **55W LED** Enclosed dust, moisture, vandal and corrosion proof luminaire. The luminaire shall be be made of a high-pressure die-cast marine grade aluminium body with a robust clear polycarbonate diffuser. The luminaire shall bear the SANS 60598-2-1 safety mark. Equal or similar to Roughguard from Beka.

Type D : **55W LED** Enclosed dust, moisture, vandal and corrosion proof luminaire. The luminaire shall be be made of a high-pressure die-cast marine grade aluminium body with a robust clear polycarbonate diffuser. The luminaire shall bear the SANS 60598-2-1 safety mark. Equal or similar to Roughguard from Beka plus 1hour EMG maintained (emergency).

Type E : **40W LED** enclosed dust, moisture, vandal and corrosion proof **Zone 2** luminaire. The luminaire shall consist of an Injection-moulded, flame retardant polycarbonate with a robust clear polycarbonate diffuser and shall be designed to operate LED's of up to 65W, and fluorescent lamps up to 80W. The luminaire shall bear the SANS 60598-2-1 safety mark. Equal or similar to Vapourline from Beka.

Type F : **40W LED** enclosed dust, moisture, vandal and corrosion proof **Zone 2** luminaire. The luminaire shall consist of an Injection-moulded, flame retardant polycarbonate with a robust clear polycarbonate diffuser and shall be designed to operate LED's of up to 65W, and fluorescent lamps up to 80W. The luminaire shall bear the SANS 60598-2-1 safety mark. Equal or

similar to Vapourline from Beka plus 1hour EMG maintained (emergency).

Type G : **65W LED** enclosed dust, moisture, vandal and corrosion proof **Zone 2** luminaire. The luminaire shall consist of an Injection-moulded, flame retardant polycarbonate with a robust clear polycarbonate diffuser and shall be designed to operate LED's of up to 65W, and fluorescent lamps up to 80W. The luminaire shall bear the SANS 60598-2-1 safety mark. Equal or similar to Vapourline from Beka.

Type H : **65W LED** enclosed dust, moisture, vandal and corrosion proof **Zone 2** luminaire. The luminaire shall consist of an Injection-moulded, flame retardant polycarbonate with a robust clear polycarbonate diffuser and shall be designed to operate LED's of up to 65W, and fluorescent lamps up to 80W. The luminaire shall bear the SANS 60598-2-1 safety mark. Equal or similar to Vapourline from Beka plus 1hour EMG maintained (emergency).

Type I : **18W LED Bulkhead** warm white enclosed dust, moisture, vandal and corrosion proof luminaire. The luminaire shall consist of a high-pressure die-cast marine grade aluminium body with a robust clear polycarbonate diffuser and shall be designed to operate 18W LED's lamps. The luminaire shall bear the SANS 60598-2-1 safety mark. Equal or similar to Bekabulk.

Type J : **18W LED Bulkhead** warm white enclosed dust, moisture, vandal and corrosion proof luminaire. The luminaire shall consist of a high-pressure die-cast marine grade aluminium body with a robust clear polycarbonate diffuser and shall be designed to operate 18W LED's lamps. The luminaire shall bear the SANS 60598-2-1 safety mark. Equal or similar to Bekabulk plus 1hour EMG maintained (emergency).

Type K : **18W LED Bulkhead** warm white enclosed dust, moisture, vandal and corrosion proof and **Zone 2** luminaire. The luminaire shall consist of a high-pressure die-cast marine grade aluminium body with a robust clear polycarbonate diffuser and shall be designed to operate 18W LED's lamps. The luminaire shall bear the SANS 60598-2-1 safety mark. Equal or similar to Bekabulk.

Type L : **18W LED Bulkhead** warm white enclosed dust, moisture, vandal and corrosion proof and **Zone 2** luminaire. The luminaire shall consist of a high-pressure die-cast marine grade aluminium body with a robust clear polycarbonate diffuser and shall be designed to operate 18W LED's lamps. The luminaire shall bear the SANS 60598-2-1 safety mark. Equal or similar to Bekabulk plus 1hour EMG maintained (emergency).

Type M : **53W LED** Street Light Manufactured from marine grade aluminium allows for corrosion resistance and optimal thermal management. A silicon sponge gasket fixed into a groove to seal the spigot base casting to the LED engine casting to IP66. The high-impact clear glass protector allows for impact resistance of IK08 with the option of Polycarbonate protector with an impact resistance of IK10. Equal or similar to LEDLUME-MINI from Beka.

Type N : **216W LED Floodlight** warm white enclosed dust, moisture, vandal and corrosion proof luminaire. The luminaire shall be die-cast aluminium gear and optical housing for the lamp and control gear with a polycarbonate

diffuser. It shall be designed to operate LED light sources between 108W and 216W. Equal or similar to LEDflood from Beka.

Type O : **216W LED Highbay** warm white enclosed dust, moisture, vandal and corrosion proof luminaire. The luminaire shall be die-cast aluminium gear and optical housing for the lamp and control gear with a polycarbonate diffuser. It shall be designed to operate LED light sources between 108W and 216W. Equal or similar to LEDbay-midi from Beka.

Type P : **216W LED Highbay** warm white enclosed dust, moisture, vandal and corrosion proof luminaire. The luminaire shall be die-cast aluminium gear and optical housing for the lamp and control gear with a polycarbonate diffuser. It shall be designed to operate LED light sources between 108W and 216W. Equal or similar to LEDbay-midi from Beka plus 1hour EMG maintained (emergency).

PS ESPL-A BOSPOORT NORTH RESERVOIR NETWORK CHAMBER

PS ESPL-A.1 Light Switches

NUMBER	DESCRIPTION	LOCATION
S1	One lever 16Amp surface mounted light. Manufactured from tough impact resistant thermoplastic which provides strength and durability The light switch will housed inside weatherproof protection IP55 rated enclosure. The enclosure shall have protective membrane, which will allow the operator to comfortably operate the switch through the membrane. Equal or similar to Schneider Electric IP55 weatherproof range.	1.25m above final floor level

PS ESPL-A.2 Socket Outlets

NUMBER	DESCRIPTION	LOCATION
P1-P3	20Amp surface mounted Double switch socket outlet. Manufactured from tough impact resistant thermoplastic which provides strength and durability. The switch socket outlet will housed inside weatherproof protection IP55 rated enclosure. The enclosure shall have protective membrane, which will allow the operator to comfortably operate the switch through the membrane. Equal or similar to Schneider Electric IP55 weatherproof range. It shall bear the SABS approved stamp of approval.	1.35m above final floor level

PS ESPL-A.4 Light Fittings

Light fittings shall be equal and similar to the requirements of the general technical specification as specified under.

NUMBER	LOCATION	TYPE
L01	Luminaries fitted against roof	A
L02 – L05	Luminaries fitted against concrete against structure 2300mm AFFL	I

PS ESPL-A.6 Bosal Conduit

QTY	DESCRIPTION	MOUNTED
All	25mm Bosal conduit including all accessories: Plus	Surface mounted
All	25mm conduit saddles and all accessories: Plus	Surface mounted
All	Solid Coupling Galvanized & Female Threaded Adaptor Galvanized & Male Threaded Adaptor Galvanized	Surface mounted
All	Round Conduit box plus cover and all accessories	Surface mounted

PS ESPL-A.7 Pratley Junction Boxes or GCC Boxes

QTY	DESCRIPTION	MOUNTED
All	Pratley Ex e/n Ezee-Fit Junction Box plus corrosion resistant cover which will suite the application.	Surface Mounted

PS ESPL-A.8 Wiring Cable

QTY	DESCRIPTION	MOUNTED
All	The Engineer will not reference all the cables. It is the responsibility of Contractor to allow for all wiring for all the equipment as specified. Single core and multicore cable shall be 600 / 1000V SANS 1011 complaint. These cables are only a guide and Contractors must make due allowance for all cabling to complete the works in its entirety.	Surface and flush mounted

PS EMCA MULTICORE CABLES AND EARTHWIRES

PS EMCA-1 SCOPE

1. All earth wires shall be bare copper conductors, unless otherwise specified and cables shall be as specified.

2. These cables are only a guide and Contractors must make allowance for all cabling to complete the works in its entirety.

3. Before ordering cables the contractor shall obtain the correct cable lengths by measuring required cable routes on site.

PS EMCA-8 CABLE TRAYS AND CABLE LADDERS

All cable trays and cable ladders shall be galvanised steel. Cable trays will only be acceptable for cable supports where small cables are involved.

Vertically installed cable ladders are preferred wherever possible.

PS EMCA-9 INSTALLATION OF CABLES

It is the responsibly of the Contractor, as this is a design and build contract, to ensure the correct supply and signal cabling is specified and utilized for the relevant electrical and electronic equipment.

In order to support the cable sections, the following information and documentation should be supplied before project implementation;

1. Equipment schedules (motor, valves, etc.);
2. Instrumentation list;
3. Motor List
4. Cable Schedules;

END OF SECTION

C3.5.1 CONTRACTOR'S PROJECT MANAGEMENT PLAN

The Contractor is required to prepare and submit a project management plan for the construction. The particular contents that should be included in the Contractor's Project Management Plan are listed below:

- **Project structures and agreements**

  The Contractor shall indicate how responsibility for the various work packages will be divided between joint venture partners (where applicable) and sub-contractors. A contract organogram shall be provided showing work apportionment and project management responsibilities. The particular division of work shall match the established capabilities and capacities of each particular partner or subcontractor.

- **Plant, materials and equipment**

  The Contractor shall prepare a Plant and Materials procurement plan, indicating the source of key Plant and Materials designated for inclusion in the Works, and demonstrating that such Plant and Materials have a proven track record of successful maintenance support in South Africa.

  The Contractor shall also prepare a plan of Contractor's Equipment, indicating the source and details of construction equipment planned for use on the Contract and based on the Contractor's particular approach.

- **Staffing plan**

  The Contractor shall prepare a detailed staffing plan showing in an organogram all key members of the Contractor's Personnel, providing a detailed CV for each such key position. The Contractor shall also show the numbers and source of all non-key staff and indicating the particular local content offering of the Contractor.

- **Method statements**

  The Contractor shall clearly describe the overall methodology proposed for construction of the Works and include particular method statements for each work discipline included in the Works.

C3.5.2 CONSTRUCTION PROGRAMME

C3.5.2.1 General

The Contractor shall submit within the period stated in the Contract Data a suitable and realistic construction programme for the consideration of the Engineer.

The programme shall be of a Gantt chart and shall include the following details:

- A work breakdown structure, identifying the major activity groups.
- For each activity group further details shall be provided with regard to the scheduled start and end dates of individual activities.
- The linkages between activities shall be clearly indicated and the logical network upon which the programme is based, shall be separately submitted to the Engineer if requested. Any constraints shall be classified as being time-related or resource-related.
- The critical path(s) shall be clearly indicated and floats on non-critical activities shall be shown (also to be used for the valuation of Contractor's claims)
- The Contractor shall indicate the working hours per day, night, week and month allowed for in the programme.
- Where relevant the Contractor shall state the production rates for key activities, e.g. earthworks, etc.

The Programme shall comply with the Time for achieving Practical Completion as specified in the Contract Data (Section C1.2).

Together with the programme as detailed above the contractor shall submit to the Engineer a cash flow projection, indicating projected monthly invoice amounts. The cash flow projection shall be updated at monthly intervals to reflect actual payments to date and anticipated further payments.

The programme will be reviewed at the monthly site meetings at which the Contractor shall provide sufficient detail that will allow the comparison of completed work per activity that has fallen behind. The updated programme shall be submitted to the Engineer at least two days prior to the monthly meetings.

If the programme has to be revised by reason of the Contractor falling behind his programme, he shall produce a revised programme showing how he intends to regain lost time in order to ensure completion of the Works within the time for completion or any granted extension of time. Any proposal to increase the tempo of work must be accompanied by positive steps to increase production by providing more labour and plant on site, or by using the available labour and plant on site, or by using the available labour and plant in a more efficient manner.

Failure on the part of the Contractor to submit the programme or to work according to the programme or revised programmes shall be sufficient reason for the Engineer to take steps as provided in the General Conditions of Contract.

The approval by the Engineer of any programme shall have no contractual significance other than that the Engineer will be satisfied that the work is carried out according to such programme and that the Contractor undertakes to carry out the work in accordance with the programme. It shall not limit the right of the Engineer to instruct the Contractor to vary the programme if required by circumstances.

The initial Programme shall be approved by the Engineer in writing and shall constitute the baseline programmes. The critical path shall be clearly indicated on the programmes and shall be used to assess any claims by the Contractor for extension of time due to any reason whatsoever. No extension of time will be granted in the absence of an approved baseline programme, which may be updated from time to time as ordered by the Engineer. Any revisions of the baseline program that influences the critical path shall be brought to the Engineer's attention in writing, also stating the reason for such changes.

C3.5.3 QUALITY MANAGEMENT

C3.5.3.1 General

The Contractor will be solely responsible for the production of work that complies with the Specifications to the satisfaction of the Engineer. The Contractor will provide experienced personnel as well as all the necessary transport, instruments and equipment, to ensure adequate supervision and positive control of the works at all times in order to comply with the requirements. The Contractor shall deliver to the Engineer, for his consideration, quality assurance programmes prior to the Contractor's appointment of any suppliers or commencement of the Works.

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 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.

Where applicable the Employer will appoint an independent inspectorate (Employer's Inspectorate) to assist the Engineer with quality control. This item could also form part of the provisional sums in the Bill of Quantities.

The Quality Plan shall specify quality control hold points (subject to the approval of the Engineer) that will be applicable to specific activities. Work shall not proceed beyond the hold points unless the Engineer or Employer's Inspectorate has signed off the quality control at the specific hold point.

The onus to produce work that conforms in quality and accuracy to the requirements of the specifications and the drawings rests with the Contractor, and the Contractor shall, at its own expense, institute a QA system and provide experienced engineers, foremen, surveyors, materials technicians, other technicians and technical staff, together with all transport, instruments and equipment to ensure adequate supervision and positive control of the quality of the Works at all stages of the Contract. The cost of the Contractor's supervision and process control, including all testing carried out by the Contractor, shall be deemed to be included in the amounts tendered.
Before commencement of manufacturing of plant and materials and construction, the Contractor shall submit a comprehensive proposal for a quality assurance plan to the Engineer for consideration. Only the Engineer may sign off quality assurance plans.

The Contractor shall keep systematic records of the test results and all worksheets relating thereto. All test results obtained by the Contractor in the course of his process control of the Works shall be submitted to the Engineer or his Representative prior to requesting inspection of the relevant portions of the Works. Any request for inspection shall be submitted on the prescribed forms.

The Contractor and all sub-contractors shall work to defined quality assurance programmes compliant with ISO 9001 or similar approved standard. ISO 14001 will be applicable to environmental management.

In respect of sub-contractors, the Contractor shall undertake, where no such acceptable information is available or where the sub-contractor has not been subject to an acceptable external quality audit in accordance with the Contractor's QA procedures, to carry out a quality audit of that sub-contractor to ensure that completion of the work shall be compliant with the Contract requirements.

Nominated sub-contractor(s) shall also be subject to quality audit by the Contractor in which the Engineer may participate.

The Contractor shall establish and maintain a document inspection system capable of producing objective evidence that major components comply with the quality requirements of the Contract.

The Contractor shall include in its orders to sub-contractors a note advising that materials and equipment will be subject to inspection as determined by the Quality Plan.

The Contractor shall advise the Engineer of the readiness for inspection at least ten (10) working days prior to a nominated witness or hold point. Work shall not proceed beyond a hold point without the written agreement of the Engineer or after five working days, if no such agreement or rejection is given.

The Contractor shall keep the Engineer informed in advance of the time of starting and of the progress of the work in its various stages so that arrangements can be made for inspections and tests.

The inspections and tests by the Engineer or Employer's Inspectorate of any components, or lack thereof, do not relieve the Contractor of any responsibility regarding defects or other failures.

The Contractor shall be responsible under the Contract for the quality and testing of materials, workmanship and production processes in fulfilment of the Contract. To this end the Contractor shall institute and operate a quality management system which details the following in order to satisfy the Specifications relevant to each operation pursuant to the Works in accordance with the Contract:

- Quality control procedures;
- Personnel responsibilities;
- Procurement procedures;
- Testing procedures, both on and off-site;
- Equipment and calibration;

- Frequency of testing, calibration, etc.;
- Hold points in production for inspection;
- Rejection and rectification procedures;
- Documentation and communication;
- Drawing issue procedures; and
- Drawing register

As much of the testing as is practicable shall be carried out on Site, including trial, acceptance and routine testing to be implemented by the Contractor and any other tests as instructed by the Engineer for any complementary investigations required from time to time during the course of the Contract.

The Contractor shall submit a general outline of the above Quality Management system with comprehensive examples of documentation to be used with its tender.

Within 28 days after the Commencement Date and based on the general outline and any amendments thereto requested, the Contractor shall submit comprehensive details of the system as required above, making use wherever possible of diagrams, charts, organograms, etc., in preference to lengthy description, all for the approval of the Engineer. Such details shall be updated from time to time as appropriate or as directed by the Engineer.

The Contractor shall commence the operation of the Quality Management system without delay and in accordance with the Engineer's approval of the general outline and documentation examples as accepted and shall thereafter modify the system from time to time in accordance with further details as approved by the Engineer.

Unless otherwise stated in the Specifications, all testing shall be carried out and interpreted in strict accordance with the methods specified in the relevant South African and British Standards.

Unless otherwise stated in the Specifications, the testing laboratories of the South African Bureau of Standards, the Council of Scientific and Industrial Research (South Africa), and the Portland Cement Institute (South Africa) will be accepted as approved independent laboratories in which tests or design work required in terms of a Specifications may be carried out. Other testing laboratories may be used by the Contractor subject to the approval of the Engineer.

When required by the Engineer, the Contractor shall furnish all information of the materials to be used in the Works and shall give the Engineer such other particulars as may be required.

When requested, the Contractor shall provide samples, information and manufacturer's test certificates of the materials to be incorporated in the Works.

Unless otherwise specified, all proprietary materials shall be used and placed in strict accordance with the relevant manufacturer's instructions.

The competence of personnel required to undertake operations involving particular skills affecting the quality of the Works shall be demonstrated to the Engineer by means of tests arranged by the Contractor. These could include the following activities: welding, concrete compaction, repairs, grouting, formwork erection, etc. Should the competence of any member of the Contractor's workforce be in doubt, the Engineer may order any re-testing he considers necessary at any stage throughout the Contract.

Workmen shall only receive their practical training on those parts of the Works as agreed by the Engineer.

The Contractor shall carry out sufficient inspection and tests to satisfy himself that all requirements of the Specifications are being met and the results of inspections and tests shall be submitted to the Engineer in accordance with the Contractor's Quality Management System. The Engineer may carry out such inspections and tests as he deems necessary and the results of the Engineer's inspections and tests will be made available to the Contractor if requested. Where the Contractor's or Engineer's inspections and/or tests reveal that the requirements of the Specifications have not been attained, the Contractor shall, at his expense, rectify the work to the extent that it conforms to the Specifications.

Whenever the normal period for carrying out work is to be changed, the Engineer shall be given notice in sufficient time (at least 10 working days) to rearrange staffing for proper inspection. The Engineer shall be given notice of any other proposed changes to normal working times at the weekly progress meetings or as necessary to cope with emergencies.

Reports to the Engineer shall be in a format acceptable to the Engineer.

The Contractor shall submit detailed reports at monthly intervals (at site meetings) of personnel on Site, principal materials ordered, stocks on Site, Contractor's Equipment, Plant and Temporary Works on the Site. The Contractor shall also submit a detailed report at monthly intervals on progress of manufacture of any Plant or Contractor's Equipment ordered.

Records shall be kept daily of labour, materials and equipment where there is an agreement to pay by dayworks. Such records shall be valid only when signed by the Engineer or his Representative. Failure to submit daywork sheets on a daily basis could result in the rejection of the sheets by the Engineer.

In cases where there is any dispute or uncertainty on payment procedure, sheets shall be signed daily by both parties as an agreed record of work done but shall not imply any commitment concerning payment. These sheets shall be annotated "For record purposes only".

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.

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

Acceptance control, record keeping and payment certificates shall be done in accordance with the Engineer's standard system except if the Engineer approves that the Contractor's standard system may be used.

C3.5.3.2 Method Statements

The Contractor shall prepare method statements and acquire the Engineer's approval before commencing work. A method statement is required for each and every activity, including site establishment. The following minimum information will be required in each method statement:

- Goal of activity
- Dangers identified
- Safety measures
- Security measures
- Measures to accommodate environmental and social requirements
- Work method
- Material to be used
- Quality assurance procedure to ensure compliance to specifications
- Reference to the relevant specifications
- Reference to other relevant method statements

Inspectors and workmen shall be trained to execute the work in accordance with the approved method statements and a copy of the method statement shall be available on site where the work is executed.

The Contractor shall allow for the following time periods for the approval of method statements:

Review by the Engineer and Employer of first submission	2 weeks
Amendments by Contractor (if required)	1 week
Final review and approval by Engineer	2 weeks

Work on an activity shall not commence without a method statement approved by the Engineer. Approval of a method statement by the Engineer will not release the Contractor from his responsibilities and liabilities and it will not mean that the Engineer will be responsible or liable for the construction of the work.

C3.5.3.3 Quality assurance for welding, lining and coating of pipelines on site

The following requirements are applicable to welding, lining and coating of pipelines.

a) Storage, handling and transport of pipes, pipe specials and valves

Pipes, specials and valves shall not be transported before the corrosion protection has cured in accordance with the guidelines of the manufacturers of the materials. Minimum 500mm wide soft slings that cannot damage the pipe coating shall be used for handling of the material and each item shall be adequately supported on padded cradles and properly fastened to prevent movement during transport. Each truck load has to be checked for conformity and signed off by the Employer's Inspectorate at the factory.

On site all material shall be supported on padded supports in a cleared area, where it cannot be damaged by veld fires or construction activities.

b) Welding of pipes

Welding rings shall be used to align pipe ends for welding. The welding of a joint must be 100% completed before the end of a working day. Each weld must be approved and signed off by the Employer's Inspectorate before the coating repair can commence.

c) Corrosion protection on site

- Coating

Each pipe and pipe fitting delivered to or manufactured on site shall be tested by the Contractor for coating damage and pinholes by means of holiday detection and repaired at the following stages:

– Before it is moved into the trench
– Before backfilling commences

Each stage shall be a hold point and further work shall only proceed after each pipe has been signed off by the Employer' Inspectorate.
The following stages of coating repair at joints and damaged areas shall be hold points and work can only proceed after the approval by the Employer's Inspectorate:

– After surface preparation
– After repair

Coating integrity surveys are required as specified elsewhere.

The selected bedding and blanket of the pipeline must be completed within seven days after the coating repair to prevent ultraviolet damage of the material.

- Lining

The surface preparation of each epoxy lining joint and lining damage must be approved and signed off by the Employer's Inspectorate before the joint repair can commence (hold point).

Lining repairs shall follow the pipe laying activities as specified in paragraph C3.5.2.

Method statements for lining and coating protection

The following method statements shall be submitted by the Contractor for approval by the Engineer before the relevant activity can commence:

- Transport and handling of pipes.
- Repair of coating damage on site.
- Repair of coating at joints on site.
- Prevention of damage to linings by movement of workmen and inspectors inside the pipe.
- Repair of lining damage on site.
- Repair of lining at joints on site.

C3.5.4 OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT

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 (OHSA) No 85 and Amendment Act No 181 of 1993, and the OHSA Construction Regulations GNR.84 of 7 February 2014.

The successful Contractor shall, on receipt of notification that he has been awarded the contract, submit without delay his own documented Health and Safety Plan for the execution of the work under the contract in accordance with the OHSA and Construction Regulations to the Engineer. The Health and Safety Plan must at least cover the following:

- a proper risk assessment of the works, risk items, work methods and procedures;
- pro-active identification of potential hazards and unsafe working conditions;
- provision of a safe working environment and equipment;
- 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;

- monitoring health and safety on the site of works on a regular basis, and keeping of records and registers;
- details of the Construction Supervisor, the Construction Safety Officers and other competent persons he intends to appoint for the construction works;
- details of methods to ensure that his Health and Safety Plan is carried out effectively.

The Contractor's Health and Safety Plan will be subject to approval by the Employer or Engineer 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 or the Engineer's written approval of his Health and Safety Plan.

Approval of the Contractor's Health and Safety Plan by the Employer or the Engineer will not release the Contractor from his responsibilities and liabilities and the Employer or the Engineer will not be responsible or liable for any activities forming part of the Contractor's responsibilities and liabilities in terms of the Contract.

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.

The rates and prices tendered by the Contractor shall be deemed to include all costs for conforming to the requirements of the OHSA, 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, he will be liable for penalties as provided in the Construction Regulations and in the Employer's Health and Safety Specification.

The Employer's SHE Management System is included in Section C3.5.B

C.3.5.5 ENVIRONMENTAL MANAGEMENT

The Works shall comply with the Environmental Authorisation (Record of Decision), the Environmental Management Plan and the Employer's Specifications (if applicable). The applicable documents are included in Section C3.5.C.

C3.5.6 GENERAL CONSTRUCTION AND MANAGEMENT REQUIREMENTS

C3.5.6.1 General

The Contractor is referred to SANS 1921: 2004: Construction and Management Requirements for Works Contracts, Part 1: General Engineering and Construction Works, and COLTO 1500 - Accommodation of Traffic. 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.

C3.5.6.2 Management and disposal of water

The Contractor shall pay special attention to the management and disposal of water and storm water 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.

The Contractor shall implement special measures to keep storm water out of excavations and pipe trenches. These measures shall include for example, cut-off berms, cross-fall of construction road away from trench, coffer dams and drainage pipes across the trench or diversions at water courses, limiting length of open trenches, adequate water pumps.

C3.5.7 SITE ADMINISTRATION

C3.5.7.1 General

Acceptance control, record keeping and payment certificates shall be done in accordance with a system approved by the Engineer.

C3.5.7.2 Daily site diary

The daily site diary, in accordance with Bigen Africa's pro forma, shall be kept up to date by the Contractor's Representative and will be signed on a daily basis by the Engineer's Representative.

C3.5.7.3 Information in respect of Plant

Information relating to plant on Site shall be recorded in the daily site diary. In addition, the Contractor shall deliver to the Engineer, on a monthly basis, a detailed summary of construction plant kept on the Site, full particulars given for each day of the month. Distinction shall be made between plant in working order and plant out-of-order. Such inventory shall be submitted by the first day of the month following the month to be reported.

C3.5.7.4 Information in respect of Employees

Information relating to labour and management on Site shall be recorded in the daily site diary. In addition, the Contractor shall deliver to the Engineer, on a monthly basis, a detailed summary of supervisory staff, labour employed (own and local labour) by category, and sub-contractors (both local and imported) for each day of the month. Such return shall be submitted by the first day of the month following the month to be reported.

C3.5.7.5 Rainfall records

Rainfall records for the period of construction shall be taken on Site and recorded in the daily site diary. The Contractor shall provide and install all the necessary equipment for accurately measuring the rainfall. The Contractor shall also provide, erect and maintain a security fence plus gate, padlock and keys at each measuring station, all at his own cost. The Contractor shall take and record the daily rainfall readings. The Employer's Agent or his Representative shall be permitted to attend these readings, or take separate readings. Access to the measuring gauge(s) shall at all times be under the Engineer's control.

C3.5.7.6 Site instructions

Site instructions by the Engineer, addressed to the Contractor, will be numbered consecutively and will be deemed to have been received by the Contractor's Representative unless a break in the sequence of numbers is brought to the notice of the Engineer in writing immediately.

C3.5.7.7 Site meetings

The Contractor and his authorised representative shall attend all meetings held on the Site as requested by the Engineer at dates and times to be determined by the Engineer. Such meetings will be held to evaluate the progress of the Contract and to discuss matters pertaining to the Contract. It is not the intention to discuss day-to-day technical matters at such meetings.

Progress meetings shall be held at least once a month on Site from the Commencement Date to the date of Taking-over for coordination purposes and to evaluate the progress of the Contract.

Ad-hoc technical meetings will be arranged at a suitable venue as and when required.

The Contractor shall also allow in his tender for attending at least one HAZOP meeting at the Engineer's offices once the mechanical designs have been completed.

The Contractor or his authorized representative(s) shall attend all steering committee meetings with the appointed Community Liaison Officer.

Weekly commissioning meetings shall be held during the testing and commissioning stages.

The Engineer will chair all progress and technical meetings, prepare and circulate minutes, as determined by him in consultation with the Employer. The Contractor shall chair the commissioning meetings and be responsible for associated administration.

The Contractor shall submit monthly progress reports as required by Sub-Clause 4.21 of the Conditions of Contract in a format to be agreed between the Contractor and Engineer.

C3.5.7.8 Payment certificates

Monthly progress payment certificates shall be submitted by the Contractor to the Engineer not later than the 20th of each month (or on the last working day prior to this date) in order to allow for checking and reconciliation of all quantities, rates, extensions and additions in the certificate. All quantity calculations and certificates submitted by the Contractor for checking shall be in accordance with the Engineer's standard site administration forms and formats.

Where dayworks have been instructed by the Engineer, the Contractor shall submit the returns to the Engineer for signature and approval within twenty-four (24) hours of the end of the working day on which the work was executed. Daywork returns shall be submitted on forms according to the Engineer's standard format. Failure to comply with the terms of this clause could result in non-payment for such dayworks, depending on the Engineer's decision in this regard.

The tax invoice submitted with the certificate shall be dated the date of submission to the Engineer of the payment certificate that was agreed between the Contractor and the Engineer. All costs for the preparation and submission of progress certificates shall be borne by the Contractor.

C3.5.7.9 Photographic records

The Contractor shall keep photographic records of the Works also showing progress, including the following:

- The pipeline routes before commencing work and after clearing.
- State of existing fencing before commencing work and during work and the new fencing at completion.
- Trench excavation and the materials encountered
- Pipe laying operations, including earthworks
- Pipe jacking, river and stream crossings, road and railway crossing etc.
- Borrow and spoil areas, before, during and at completion of activities
- Structures
- Ancillary structures
- Landscaping and rehabilitation activities
- Other specific photographs requested by the Engineer
- Environmental aspects
- Health and safety aspects
- Social aspects
- The completed pipeline route

The photos shall be inscribed with the date taken, location and brief description.

Three prints and an electronic copy on CD shall be delivered to the Engineer each month.

C3.5.8 CONTRACT SKILLS DEVELOPMENT GOALS

C3.5.8.1. General

The Contractor shall, in the performance of the Contract, achieve the Contract Skills Development Goal (CSDG) as established in Government Gazette No. 48491 of 28 April 2023.

The applicable CSDG for this contract is 0.25%.

C3.5.8.2. Procurement

Based on the agreed skills methods the contractor may employ part/full Occupational Qualification Learners and /or Trade Qualification Learners and/or Work Integrated Learners and/or Candidates directly or through a Skills Development Agency (SDA), training provider or skills development facilitator (Form A1 - List of CIDB accredited SDAs). The contractor shall ensure that no more than one Method shall be applied to any individual concurrently in the calculation of the CSDG for the contract.

The contractor may only place 33% employees employed by him or that of his subcontractors contributing to the CSDG.

The contractor shall employ at least 60% of the learners from a Public FET / TVET college should the contractor select to have trade qualification learners (Method 2) contributing to the CSDG.

C3.5.4.3. Management

The contractor shall achieve the measurable CSDG by providing opportunities to learners requiring structured workplace learning using one or a combination of any of the Skills Methods as agreed: Part/Full Occupational Qualification Learners (Method 1) and/or Trade Qualification Learners (Method 2) and/or Work Integrated Learners (Method 3) and/or Candidates (Method 4) as per the Standard in relation to work directly related to the contract or order as indicated under **clause 4.2 and 4.3 in the Standard**.
The contractor must ensure all beneficiaries of the Standard are registered with CIDB Skills Development Agency (SDA)

The Format of Communications:

The contractor shall, within 30 days of award of the contract and in the specific format (Form A2 Baseline Training Plan), submit to the Employer's Agent a baseline training plan.

The contractor shall submit to the Employer's Agen:

- an interim contract compliance training report in the specific format **(Form A3 Project Interim Report)** at intervals which do not exceed 3 months; and

- a final contract compliance training report, in the specific format **(Form A5 Project Completion Report).** This report shall, respectively, be submitted within 15 days of; reaching completion, end of the service, the delivery date for all work required or practical completion (in the case of professional service), service, design and construct contracts, and engineering and construction works contracts

The Key Personal:

For Structured Workplace Learning Opportunities for Learners (Method 1 and Method 2)

The Contractor shall:

- appoint a responsible supervisor to allocate learning tasks, to learners in line with their training plans.
- appoint an artisan in the applicable trade with a minimum of 3 years to mentor learners associated with structured workplace learning.

For Structured Workplace Learning for Candidates (Method 3 and Method 4)

The contractor shall:

a. appoint a supervisor who is actively engaged in work directly associated with the contract to issue tasks,
b. appoint a suitable mentor as required by the professional body or statutory council.

Management Meetings:

The contractor shall report to the Employer's Agent on the implementation and progress of the CSDG.

The Forms for contract administration:

The contractor shall submit to the Employer's Agent the following proformas:

- Form A2 Baseline Training Plan
- Form A3 Project Interim Report
- Form A5 Project Completion Report

Records:

The contractor shall:

- keep records for learners and candidates of the hours worked and registration with the cidb SDA, Sector Education Training Authorities SETA's (where required) and professional statutory councils (where required) particulars towards compliance with this Standard.
- ensure all the documentation required in terms of clause 4 in the Standard is provided in a timely manner and according to a prescribed format where applicable.

- upon termination of the opportunities provided to satisfy the CSDG, certify the quantum and nature of the opportunity and submit the certificate and counter-certified by the relevant individual, to the Employer's representative for record-keeping purposes.

Payment Certificates:

The contractor shall:

- achieve the measurable CSDG as agreed by providing opportunities to learners requiring structured workplace learning using one or a combination of any of the Skills Methods as per the Standard in relation to work directly related to the contract or order as indicated under **clause 4.2 and 4.3 in the Standard.**
- submit payment certificates to the Employer's Representative at intervals determined in the Contract.

PRO-FORMA DOCUMENTS

Annexure 1 - Form A1 List of Recognised Skills Development Agencies
Annexure 2 - Form A2 Baseline Training Plan
Annexure 3 - Form A3 Project Interim Report
Annexure 4 - Form A4 Supervisor Agreement
Annexure 5 - Form A5 Project Completion Report

Annexure 1 Form A1 List of Recognised Skills Development Agencies

CIDB Recognised Skills Development Agencies								
No.	**Name of SDA**	**SDA Registration Number**	**Status**	**Recognition date end**	**Province**	**Contact person**	**Contact number**	**Email address**
C1	CIDB SDA	SDA/ZA/16/0001	Active	01/04/2025	National	Pranveer Harriparsadh	012 482 7230	pranveerh@cidb.org.za
C2						Thabelo Remaru	012 482 7249	thabelor@cidb.org.za
C3								
C4								

Annexure 2 - Form A2 Baseline Training Plan

CIDB SKILLS STANDARD BASELINE TRAINING PLAN

Contractor Details						
Contractor Name:						
CRS Number:						
Estimated start date						
Estimated Completion date:						
Size of Organisation	Small (1-49 employees)		Medium (50-149 employees)		Large (≥150 employees)	

Contractor Contact Details	
Name of Contact Person	
Designation of Contact Person	
Contact Details	Cell Number:
	Landline Number:
	Email address:

Construction Skills Development Goal (CSDG) Baseline Training Plan					
Training Method	**Number of Employed Learners**	**Number of Unemployed Learners**	**Area/s of Specialisation/Trade**	**Duration of Placement**	**Total Notional Cost**
Method 1: Skills Programme	1	3	Scaffolding	3 months	R57 000
Method 2: FET College Graduates/ Apprenticeship	0	2	Bricklaying and Plastering	12 months	R92 000
Method 3: P1 and P2 learners or a 240 credit qualification	0	0			
Method 4: Candidacy with 360 credit qualification	0	1	Project Management	9 months	R184 500
Total	1	6			R333 500

Note: Refer to Table 3 in the Standard for Developing Skills through Infrastructure Contracts Government Gazette 43495 of 3 July 2020 for the notional costs

Contractor's Representative

Name: _____ Designation: _____

Signature: _____ Date: _____

Employer's Representative

Name: _____ Designation: _____

Signature: _____ Date: _____

Annexure 3 - Form A3 Project interim report

cidb PROJECT ASSESSMENT SCHEME. STANDARD FOR DEVELOPING SKILLS PROJECT INTERIM TRAINING REPORT	
Section A: Employer Information	
CIDB Employee Number:	
Employee Name:	
Section B: Contract Dale	
CIDB Contract Number:	
Contract Title:	
Tender Value (R):	
Contract Skills Development Goal (R):	
SIP Number (if applicable):	
SIP Project Code (if applicable):	

Definitions

Training Methods:
Method 1: structured workplace learning opportunities for learners towards the attainment of a part of full occupational qualifications.
Method 2: structured workplace learning opportunities for apprentices or other artisan learners towards the attainment of a trade qualification leading to a listed subject to at least 60% of the artisan learners being holders of public TVET college qualifications.
Method 3: work integrated learning opportunities for University of Technology or Comprehensive University students completing their national diplomas.
Method 4: structured workplace learning opportunities for candidates towards registration in a professional category by a statutory council in Table 1 above.

Learner / Candidates full name and surname	Gender		Ethnic Group					Identity Number	Training Method (please tick)				Placement state Date	Placement end date	Occupation description	Description of Practical Task completed (as per logbook or POE)	Status	Supporting documents available of request (please tick)						
	Male	Female	Black	White	Coloured	Indian	Other		M1	M2	M3	M4						Learner Training Plan	Attendance Register	Signed Logbook /	Medical Assessments	Induction	Health and Safety	PPE Register
Eg. Joe Smith	1				1			1234567891		X			01 May 2016	31 May 2016	Bricklaying	Read and interpret drawings	Completed	X	X	X	X	X	X	X
																Set out building as per drawing	In progress							
																Transfer leaves using dumpy level	In progress							
																Batch and mix concrete	Completed							

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Annexure 4 - Form A4 Supervisor Agreement

Supervisor/Learner Agreement

Memorandum of understanding between Supervisor and Learner

The Contractor is responsible for the effective management of the learning opportunities provided through the CIDB Standard for the Development of Skills through Infrastructure Contracts (CIDB Skills Standard). The attainment of successful learning outcomes and professional development of the learners is largely dependent on the relationship between the assigned Supervisor and the Learner. As a participant in the implementation of the CIDB Skills Standard you agree to the Supervisor relationship and commit to endeavour through the challenges of a construction project to give value to the training programme.

The Responsibilities of a Supervisor to the Learner include:

- stimulating a passion for construction,
- sharing technical and practical knowledge,
- fostering the development of technical and leadership skills,
- facilitating networking within the working community,
- instilling an expectation of personal growth and learning by the Learner,
- developing knowledge and understanding in the areas of health, safety, environment, quality and production,
- inculcating professionalism and a desire for continual improvement by the Learner,
- creating a nurturing relationship that instils a sense of discipline and professional pride,
- giving constructive feedback and
- signing the Learners logbook.

Supervisor's name _____

Signature: _____Date:_____

The Responsibilities of a Learner are:

- adhere to the Host Employer's onsite rules and policies,
- have an expectation of personal growth and learning,
- to be enthusiastic and motivated,
- to be open and accept supervision from the Supervisor and other colleagues,
- to develop a thorough understanding of health, safety, environment, quality and production,
- to have a positive attitude,
- to display a strong sense of discipline and to be conscious of time management,
- to operate within the team,
- to take the time to learn and practice new skills,

to make time to fill in your logbook and obtain the Supervisor's signature for completed tasks.

Intern's Name: _____ ID No: _____

Signature:_____ Date:_____

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Annexure 5 - Form A5 Project Completion Report

Form A5: cidb PROJECT ASSESSMENT SCHEME: STANDARD FOR DEVELOPING SKILLS
PROJECT COMPLETION REPORT

Section A: Contractor / JV Information

cidb Contractor Registration Number of main / lead contractor

Name of contractor /Joint Venture

Contact Person Title | Initials | Surname

Designation

e-mail

Mobile 0 - - -

Office Telephone 0 - - -

Section B: Employer Information

cidb Employer Number

Employer Name

Section C: Contract Data

cidb Contract Number

Contract Title

Date of Completion Y Y Y Y - M M - D D

Tender Value R . 0 0

Section D: Approved Exemptions and Variations Granted

Section E: Budgeted Training Costs

GB	0,50% x Tender Value =	R	. 0 0
CE	0,25% x Tender Value =	R	. 0 0
CE & GB	0.375% x Tender Value =	R	. 0 0
EB	0,25% x Tender Value =	R	. 0 0
EP	0,25% x Tender Value =	R	. 0 0
ME	0,25% x Tender Value =	R	. 0 0
SW	0,25% x Tender Value =	R	. 0 0

Section F: Actual Training Costs Achieved

Actual training costs achieved R . 0 0

CSDG achieved Yes No

END OF SECTION