

HARRY GWALA DISTRICT MUNICIPALITY



CREIGHTON BULK WATER SUPPLY SCHEME

**CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS:
INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION,
AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.**

CONTRACT No. HGDM 813/HGDM/2023

**CIDB CONTRACTOR GRADING
7CE OR HIGHER**

COMPILED BY:
Zimile Consulting Engineers
76 Hope Street
Kokstad
4700

Tel N°: +27 39 940 6729
Fax N°: N/A
Email: info@zimile.co.za

ON BEHALF OF:
Harry Gwala District Municipality
Private Bag X 501
Ixopo
3276

Tel N°: +27 39 834 8700
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Email : GqibaD@harrygwalamunicipality.gov.za

MAY 2023

NAME OF TENDERER	
ADDRESS OF TENDERER	
TELEPHONE	
FAX	
TENDER SUM	

TENDER CLOSING DATE: 12H00, 20 JUNE 2023



TENDER DOCUMENT CHECKLIST

Tenderers must complete this document checklist to ensure that all information is completed in the Tender Document.

ITEMS		CHECKED Tenderer
1)	Correct Tender Offer Amount carried forward to Cover Page and Form of Offer on Section C.1	<input type="checkbox"/>
2)	All pages requiring signatures signed by the Tenderer	<input type="checkbox"/>
3)	Bill of Quantities	
	i) Completed in BLACK INK only	<input type="checkbox"/>
	ii) Corrections crossed out and initialled.....	<input type="checkbox"/>
4)	Submission of All Returnable Documents and Schedules	
A	Authority for Signatory.....	<input type="checkbox"/>
B	MBD Forms.....	<input type="checkbox"/>
C	Schedule of work carried out by Tenderer.....	<input type="checkbox"/>
D	Amendments, Qualifications and Alternatives.....	<input type="checkbox"/>
E	Tax Clearance Certificate.....	<input type="checkbox"/>
F	Compulsory Enterprise Questionnaire.....	<input type="checkbox"/>
G	BBBEE Certificate.....	<input type="checkbox"/>
H	Key Personnel	<input type="checkbox"/>
I	Contractor's Health and Safety Declaration.....	<input type="checkbox"/>
5)	J Data to be provided by Tenderer.....	<input type="checkbox"/>

CREIGHTON BULK WATER SUPPLY SCHEME**CONTRACT N^o HGDM 813/HGDM/2023****CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.****TABLE OF CONTENTS**

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T2.2	List of Returnable Documents and Schedules	Yellow	RD 54 to RD 68
PART C1: AGREEMENTS AND CONTRACT DATA			C 1 to C 21
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CREIGHTON BULK WATER SUPPLY SCHEME

CONTRACT N° HGDM 813/HGDM/2023

**CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS:
INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION AND
INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS**

PART T1: TENDERING PROCEDURES

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T1.1:Tender Notice and Invitation to Tender



HARRY GWALA DISTRICT MUNICIPALITY INFRASTRUCTURE SERVICES DEPARTMENT

BID NOTICE

BID INVITATION

Bids are hereby invited, from qualified and experienced Bidders, for the construction of the following Infrastructure projects within the Harry Gwala District municipality

NO.	PROJECT NAME	CIDB GRADING	COMPULSORY BRIEFING DATE	TENDER NUMBER	CLOSING DATE
i.	CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS	7CE OR HIGHER	31 May 2023 at 11:00am at Harry Gwala District Municipal Boardroom. Then proceed to site.	HGDM813/HGDM/2023	20 June 2023 @ 12h00

Only Bidders that have the required CIDB Grading listed on the table above will be considered. Joint Ventures are also eligible to submit Bids provided that every member of the Joint Venture is registered with the CIDB, and a combined grade of Joint Venture calculated in accordance with the CIDB regulations is equal to or higher than the specified Contractor grading.

Invalid or non-submission of the following documents will lead to immediate disqualification.

- Central Supplier database registration.
- JV Agreement (if applicable).
- A signed MBD4 form must be submitted with all bids (available on our website or at reception).
- All tenders above R10 million must have audited annual financial statements.
- Utility bill: Municipal statement

The following will apply in all the above bids:

- Valid tax certificate or SARS pin.
- Price(s) quoted must be firm and must be inclusive of VAT.
- A firm delivery period must be indicated.
- All tenders must be valid for 90 days after the tender closing date.
- Specific goals will apply to claim preferential points.
- 80/20 Preference point system will be used in Evaluation. Functionality will be calculated first.

SPECIFIC GOALS

1. Ownership	Verification Method	Weighting
<ul style="list-style-type: none"> Black Ownership ≥ 51% 	ID Copies of directors, Company registration, CSD and shareholder certificates.	12
<ul style="list-style-type: none"> Less than 51 % owned by black people 	ID Copies of directors, Company registration, CSD and shareholder certificates.	10
<ul style="list-style-type: none"> Locality (Enterprise that is located within the Harry Gwala District Municipality, location to be determined by the address registered on the CSD). 	CSD Report.	8
<ul style="list-style-type: none"> Locality (Enterprise that is not located within the Harry Gwala District Municipality, location to be determined by the address registered on the CSD). 	CSD Report.	6
<ul style="list-style-type: none"> TOTAL POINTS 		20

COLLECTION OF BID DOCUMENTS

Bid documents may be collected from the **29 May 2023** between **09h00 to 16h00** at Harry Gwala District Municipality Offices, Finance Services Department, situated at Ixopo 40 Main Street, Ixopo 3276. Tender documents for the will be issued upon a non-refundable cash payment of **R1000.00** each.

NB: No documents will be sold after briefing meeting.

CLOSING DATE

The closing date for the bids is as per the table above. Bids must be enclosed in **SEALED ENVELOPES** and clearly labelled with the contract number and project name on the outside of the envelopes addressed to **The Municipal Manager**.

Bids must be deposited in the Bid Box at the reception area of Harry Gwala District Municipal, 40 Main Street, IXOPO before the closing date and time. Telegraphic, telexed or faxed bids will not be considered, and late bids will not be accepted.

Harry Gwala District Municipality does not bind itself to accept the lowest or any Bid and reserves the right to accept the whole or any part of the bid.

BID ENQUIRIES

All bid enquiries and other matters shall be directed to: Executive Director: Infrastructure Services: Mr. N Biyase during working hours on Tel.:039-834 8700.

.....
GM. Sineke

Municipal Manager

T1.2: Tender Data**GENERAL**

The Conditions of Tender applicable to this contract are the Standard Conditions of Tender as contained in Annexure F of the CIDB *Standard for Uniformity in Construction Procurement, including the amendment made through Board Notice 136 Government Gazette No 38960 of 10 July 2015*. This document is obtainable separately. Tenderers shall obtain their own copies.

The Tender Data make several references to the Standard Conditions of Tender for details that apply specifically to this tender. The Tender Data shall have preference in the interpretation of any ambiguity or inconsistency between it and the Standard Conditions of Tender.

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

Clause Number	Description
F.1	GENERAL
F.1.1	<p>Actions The Employer for this Contract is:</p> <p>Name : Harry Gwala District Municipality Contact Name : Mr N. Biyase Address : 40 Main Street Ixopo 3276 Private Bag X501, Ixopo 3276</p> <p>Tel : 039 834 8700 Fax : 039 834 2259 E-mail address : BiyaseNk@harrygwaladm.gov.za</p>
F.1.2	<p>The tender documents issued by the employer comprise the following:</p> <p>T1.1 Tender Notice and Invitation to Tender T1.2 Tender Data T2.1 List of Returnable Documents T2.2 Returnable Schedules</p> <p>Part 1: Agreements and Contract Data C1.1 Form of offer and acceptance C1.2 Contract data C1.3 Form of Guarantee C1.4 Adjudicator's Contract</p> <p>Part 2: Pricing data C2.1 Pricing instructions C2.2 Activity schedules / Bills of Quantities</p> <p>Part 3: Scope of work</p>

	<p>C3 Scope of work</p> <p>Part 4: Site information C4 Site information</p> <p>Part 5: Drawings C5 Drawings</p>
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F.1.4	<p>Communication and Employer's Agent The Employer's Agent's (also referred to as the Engineer) details are as follows:</p>
	<p>Name: Zimile Consulting Engineers Address: 76 Hope Street Kokstad 4700</p> <p>Tel N°: +27 39 940 9729 Fax N°: N/A</p> <p>Contact Person Innocent Masunungure Email: innocent@zimile.co.za</p>
F1.5	<p>The Employers right to accept or reject any tender offer The Employer is not obliged to accept the lowest or any tender offered</p>
F.2	<p>TENDERER'S OBLIGATIONS</p>
F.2.1	<p>Eligibility</p> <p>A Tenderer will only be eligible to submit a tender if he/she meets all of the following criteria:</p> <p>Only those Tenderers who are registered with the CIDB, in a contractor as stated in the Tender Notice and Invitation to Tender determined in accordance with Regulations 25 (1B) or 25 (7A) of the Construction Industry Development Regulations, are eligible to have their tenders evaluated</p> <p style="text-align: center;">See Returnable Documents T2.2.1 FORM A.</p> <p>Joint ventures are eligible to submit tenders provided that:</p> <p>every member of the joint venture is registered with the CIDB the lead partner has a contractor grading designation in the class of construction work as specified in the Invitation to Tender. the combined contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than the contractor grading designation required.</p> <p>Only those tenderers who have in their employ management and supervisory staff satisfying the requirements of the scope of work for supervisory and management staff are eligible to submit tenders.</p> <p>Tenderers are required to achieve the stipulated minimum thresholds, as per the relevant Treasury Instruction Note on local content and production. (See Returnable Documents T2.2.1 FORM J3)</p>

F2.7	<p>Site visit and clarification meeting The arrangements for the compulsory clarification meeting and site inspection are as stated in the Tender Notice and Invitation to Tender.</p> <p>Enquiries regarding the visit (at least one full working day in advance) may be directed to:</p> <p>Contact : Harry Gwala District Municipality Supply Chain Management Tel N°: 039 834 8773/8720</p> <p>OR</p> <p>Contact : Zimile Consulting Engineers (Consultant) Tel N°: 039 940 6729</p>
F.2.8	<p>Seek clarification Working days shall be defined as Monday to Friday Inclusive and shall exclude all gazetted public holidays.</p>
F2.11	<p>Alterations to documents</p> <p>A Tender offer shall not be considered if alterations have been made to the offer or contract data (unless such alterations have been duly authenticated by the Tenderer) or if any particulars required therein have not been completed in all respects.</p> <p>Use of correction fluid is not permitted, and the presence of correction fluid in the tender shall render the tender submission invalid.</p>
F2.12	<p>Alternative tender offers No Alternate Offers will be accepted</p>
F2.13	<p>Submitting a Tender Offer</p>
F2.13.2	<p>Tenderers to note that the returnable documents are listed in T.2 (Returnable Documents).</p>
F2.13.3	<p>Under no circumstances whatsoever may the tender forms be retyped or redrafted. Tenderers are to note that no loose documents will be accepted. All returnable documents must be separately bound and labelled.</p> <p>Tender offers shall be submitted as an original with one (1) copy. Where an original or certified copy of a particular returnable document is required, these shall be included as originals or certified copies, as appropriate in both the “original” and the “copy” documents.</p> <p>The “Copy” document need not have copies of the entire document. Parts T2.2 (Returnable Schedules and Documents), C1.1 (Form of Offer and Acceptance), C1.2 (Contract Data) and C2.2 (Bill of Quantities) shall be submitted as the “Copy” document. Failure to submit a copy document will render the tender submission invalid.</p>

F.2.13.5	<p>Delivery of Tender</p> <p>The Employer’s address for delivery of tender offers and identification details to be shown on each tender offer package are:</p> <p>Location of tender box: Harry Gwala District Municipality Building</p> <p>Physical address : 40 Main Street, Ixopo</p> <p>Identification details : HGDM813/HGDM/2023 : CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS</p> <p>Under no circumstances must documents be handed to an employee of Harry Gwala District Municipality or handed in at the Procurement Department. Tender documents sent via courier services must also be deposited in the Tender Box and not handed to an employee of Harry Gwala District Municipality</p> <p>Late tenders and tenders not in the tender box at the time of opening will not be accepted by the District Municipality and will be returned to the applicant unopened.</p> <p>NB: HGDM will not accept responsibility for tender documents which are not deposited in the Tender Box.</p>
F.2.13.6	<p>A two-envelope procedure will NOT be followed. (Read with F.3.5 hereafter).</p>
F.2.13.9	<p>Telephonic, telegraphic, telex, facsimile or e-mailed tender offers will not be accepted.</p>
F.2.15.1	<p>Closing Time The closing time for submission of Tender Offers is as stated in the Tender Notice and Invitation to Tender</p>
F.2.16.1	<p>Tender Offer Validity The Tender Offer validity period is 90 days from the closing time for submission of tenders.</p>
F.2.18	<p>Provide Other Material The tenderer shall, when requested by the Employer to do so, submit the names of all management and supervisory staff that will be employed together with satisfactory evidence that such staff members satisfy the eligibility criteria.</p>
F.2.19	<p>Inspections, tests, and analyses Access shall be provided for inspections and testing by personnel acting on behalf of the Employer, subject to prior arrangement.</p>
F2.20	<p>Sureties, Bonds and Policies The Tenderer is required to submit with his Tender a letter of intent from an approved financial institution registered with the Financial Services Board undertaking to provide the PERFORMANCE GUARANTEE - DEMAND GUARANTEE to the format included in Part T2.2 of this procurement document.</p>

F2.22	<p>Return of Tender Documents</p> <p>Where a tenderer who received a tender document does not submit a tender, the tender documents issued to him must be returned to the Employer within 35 days after the closing date for submission of tenders.</p>
F3	THE EMPLOYER'S UNDERTAKINGS
F3.1	<p>Respond to requests from the tenderer</p> <p>Working days shall be defined as Monday to Friday Inclusive and shall exclude all gazetted public holidays</p>
F3.4	<p>Opening of Tender Submissions</p> <p>Tenders will be opened immediately after closing time of tenders (see Tender Notice and Invitation to Tender) at the location of the tender box.</p>
F3.5	<p>Two-envelope system</p> <p>The two-envelope system will NOT be followed for this contract.</p>
F3.8	<p>Test for Responsiveness</p> <p>The minimum qualifying Functionality Evaluation Score shall be 65 (Sixty-five) points</p>
F3.11	<p>Evaluation of Tender Offers</p> <p>The procedure for the evaluation of responsive Tenders is Specific goal 1,2,3 (Financial Offer and Preference)</p>
F3.11.3	<p>Specific goal 1,2,3: Functionality, Price, and Preference</p> <p>1.1. The following preference point systems are applicable to all bids: - The 80/20 preference point system is applicable to bids with a Rand value equal to or up to a Rand value of R50 million (all applicable taxes included); and - The 90/10 preference point system is applicable to bids with a Rand value above R50 million (all applicable taxes included).</p> <p>1.2. The value of this bid is estimated to be less than R50 000 000 (all applicable taxes included) and therefore the 80/20 system shall be applicable.</p> <p>1.3. The points scored for price must be added to the points scored for specific goals to obtain the bidder's total points scored out of 100.</p> <p>1.4. The purchaser reserves the right to require of a bidder, either before a bid is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the purchaser.</p>
F3.11.8	<p>Scoring preferences</p> <p>Points for preference will be scored as set out in Returnable Documents T2.2.1 FORMS M (MBD 6.1). The tenderer is to complete this Section to claim points for Specific goal 1,2,3.</p>
F3.11.9	<p>Scoring Functionality</p> <p>The table below lists the returnable schedules that set out the scoring criteria and sub-criteria, and the percentage weighting for the score achieved against the relevant schedule:</p>

The financial offer will be scored using the following formula

80/20 preference points system for tenders with Rand value equal to or below R50 million

Specific goal 1,2,3: Financial Offer, Quality and Preferences

(a) Quality

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

80/20 preference points system for tenders with Rand value equal to or below R50 million

The following formula must be used to calculate the points for price in respect of an invitation for tenders, with a Rand value equal to or below R50 million, inclusive of all applicable taxes

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

Where-

Ps = Points scored for price of tender under consideration;

Pt = Price of tender under consideration; and

Pmax = Price of highest acceptable tender.

The quality will comprise scores for the following based on criteria indicated in the respective tender returnable and summarised as follows:

The score for quality can be further broken down per individual criteria as follows:

Description	Maximum Allocated Points
Experience of Key Personnel (Contracts Manager)	12
Experience of Key Personnel (Site Agent)	10
Experience of Key Personnel (Foreman)	8
Experience of Bidder with respect to water projects	50
Financial Capacity	20
TOTAL MAXIMUM POINTS	100

Returnable Schedule	Criteria			Total Weighting %	Verification Method
Form D1	Tenderer's experience in supply and installation of High lift pumps with associated Mechanical and Electrical works and construction of abstraction work of 5ML or above.	No of Projects completed	Points	25	Appointment letters and Completion Certificates (for subcontracting attach also appointment letter of main contractor). Completed, Signed and Stamped Form D1.
		1 – 2 Projects	5		
		3 – 4 Projects	10		
		5 – 6 Projects	15		
		7 – 9 Projects	20		
	More than 9 Projects	25			
		No of Projects	Points		

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS

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		Form D2	The Tenderer experience civil engineering contracts of a similar nature awarded to him for a value above R30 million. supply and installation of High lift pumps with associated Mechanical and Electrical works and construction of abstraction work	completed		25	Appointment letters and Completion Certificates (for subcontracting attach also appointment letter of main contractor). Completed, Signed and Stamped Form D2.
				1 – 2 Projects	5		
				3 – 4 Projects	10		
				5 – 6 Projects	15		
				7 – 9 Projects	20		
		More than 9 Projects	25				
		Form H	Financial Resources	Undoubted for your enquiry	A = 20	20	Rating by bank where account is held (Stamped by Bank not older than 3 months)
				Good for tender amount quoted	B = 18		
				Average to good for the amount of tender enquiry, if strictly in the way of business	C = 16		
				Rating below good (D)	D-F = 14		
		Form	Experience of Key Personnel (Contracts Manager)	Approved Degree/Diploma in built environment qualification and experience in the position		12	Certified Qualification certificates and Curriculum Vitae to be attached with traceable references. Experience must be on water projects
				Between 1 - 4 years' relevant experience	4		
				Between 5 - 7 years relevant experience in the position.	8		
				8 and above years' relevant experience in the position	12		
				No qualification with relevant experience in the position			
Between 4 - 6 years' relevant experience in the position	3						
Between 7 - 9 years' relevant experience in the position.	6						
10 and above years' relevant experience in the position	9						
Form	Experience of Key Personnel (Site Agent)	Approved Degree/Diploma in built environment qualification and experience in the position		10	Certified Qualification certificates and Curriculum Vitae to be attached with traceable references. Experience must be on water projects		
		Between 1 - 4 years' relevant experience	3				
		Between 5 - 7 years relevant experience in the position.	6				
		8 and above years' relevant experience in the position	10				
		No qualification with relevant experience in the position					
		Between 4 - 6 years' relevant experience in the position	2				
		Between 7 - 9 years' relevant experience in the position.	4				

		10 and above years' relevant experience in the position	6		
	Experience of Key Personnel (Foreman)	1 - 3 years' experience in the position	2	8	Curriculum Vitae to be attached with traceable references. Experience must be only on civil engineering projects specifically water.
		4 - 6 years' experience in the position	3		
		7 - 9 years' experience in the position	4		
		10 and above years' experience in the position	5		
	Total Possible Points			100	

Tenderers that score less than 65% of the total score allowed for quality will not be considered further.

The score allocated by each Bid Evaluation Committee member for a tender shall be the sum, of the scores relevant to each of the above listed returnable schedules multiplied by the percentage weighting for each as shown above.

b) Financial Offer

The financial offer will be scored using the following formula

80/20 preference points system for tenders with Rand value equal to or below R50 million

The following formula must be used to calculate the points for price in respect of an invitation for tenders, with a Rand value equal to or below R50 million, inclusive of all applicable taxes

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

Where-

Ps = Points scored for price of tender under consideration;

Pt = Price of tender under consideration; and

Pmax = Price of highest acceptable tender.

(c) Preferences

Up to **20** points (for financial values up to R50 000 000) or **10** points (for financial values over R50 000 000) will be awarded to tenderers who are found to be eligible for the preference claimed.

Points will be awarded to Tenderers for attaining the Specific Goal of contribution as per the preferential procurement policy framework Act, 2000: preferential procurement regulations, 2022 as detailed below. The table below was derived from preference goal 3 which is a combination of preference goals 1 and 2.

		80/20	Verification Method
	≥ 51 % owned by black people	12	ID Copies of directors, Company registration, CSD and shareholder certificates
	Less than 51 % owned by black people	10	ID Copies of directors, Company registration, CSD and shareholder certificates
	Locality (Enterprise that is located within the Harry District Municipality, Location to be determined by the address registered on the CSD)	8	CSD Certificate
	Locality (Enterprise that is not located within the Harry District Municipality, Location to be determined by the address registered on the CSD)	6	CSD Certificate
	TOTAL	20	
F3.13	Acceptance of Tender Offer		
F3.13.1	<p>Tender offers will only be accepted if:</p> <ul style="list-style-type: none"> a) the tenderer has in his or her possession an original valid Tax Clearance Certificate or SARS Pin issued by the South African Revenue Services, or has made arrangements to meet outstanding tax obligations b) the tenderer is registered with the Construction Industry Development Board in an appropriate contractor grading designation, by tender closing date; c) the tenderer is not in arrears for more than 3 months with the municipal rates and taxes and municipal services charges; d) the tenderer or any of its directors is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004 as a person prohibited from doing business with the public sector; e) the tenderer has not <ul style="list-style-type: none"> i) abused the Employer's Supply Chain Management System; or ii) failed to perform on any previous contract and has been given a written notice to this effect; and f) has completed the Compulsory Enterprise Questionnaires and there are no conflicts of interest which may impact on the tenderer's ability to perform the contract in the best interest of the employer or potentially compromise the tender process. g) the Tenderer or a competent authorized representative of the Contractor who submitted the tender has attended the compulsory clarification meeting and/or site inspection, as specified; h) the tender offer is signed by a person authorized to sign on behalf of the Tenderer; i) a Tenderer who submitted a tender as a Joint Venture has included an acceptable Joint Venture Agreement with his tender. 		
F3.17	<p>Provide Copies of the Contract The number of paper copies of the signed contract to be provided by the Employer is: one.</p>		
F.3.20	<p>Mandatory Sub-Contracting. The successful tenderer will be required to subcontract a portion of the works to designated groups as per the contract data.</p>		

APPENDIX: STANDARD CONDITIONS OF TENDER

(These Standard Conditions of Tender have been reproduced, without any changes, from Appendix A of the CIDB Standardized Construction Procurement Documentation for Engineering Construction Works (5 August 2005))

F.1 General

F.1.1 Actions

F1.1.1. The employer and each tenderer submitting a tender offer shall comply with these conditions of tender. In their dealings with each other, they shall discharge their duties and obligations as set out in F.2 and F.3, timeously and with integrity, and behave equitably, honestly and transparently, comply with all legal obligations and not engage in anticompetitive practices.

F1.1.2. 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 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 the 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 decision taken.

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

F.1.2 Tender Documents

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

F.1.3 Interpretation

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

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

F.1.3.3 For the purposes of these conditions for the calling for expressions of interest, 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 interest which make it difficult to fulfil his or her duties impartially;
 - ii) an individual or organisation is in a position to exploit a professional or official capacity in some way for their personal or corporate benefit; or
 - iii) incompatibility or contradictory interests exist between an employee and the organisation which employs that employee.
- (b) **comparative offer** means the tenderer's financial offer after the factors of non-firm prices, all unconditional discounts and any other tendered parameters that will affect the value of the financial offer 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; and
- (d) **fraudulent practice** means the misrepresentation of the facts in order to influence the tender process or the award of a contract arising from a tender offer to the detriment of the employer, including collusive practices intended to establish prices at artificial levels
- (e) **Organisation** means a company, firm, enterprise, association or other legal entity, whether incorporated or not, or a public body
- (f) **Quality (functionality)** means the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs.

F.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 read, copied, and recorded. Writing shall be in the English language. The employer shall not take any responsibility for non-receipt of communications from or by a tenderer. The name and contact details of the employer's agent are stated in the tender data.

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

F.1.5.1 The employer may accept or reject any variation, deviation, tender offer, or alternative tender offer, and may cancel the tender process and reject all tender offers at any time before the formation of a contract. The employer shall not accept or incur any liability to a tenderer for such cancellation and rejection but will give reasons for such action upon written request to do so.

F.1.5.2 The employer may not be subsequent to the cancellation or abandonment of a tender process or the rejection of all tender offers re-issue a tender covering substantially the same scope of work within a period of six months unless only one tender was received and such tender was returned unopened to the tenderer.

F.1.6 Procurement Procedures

F.1.6.1 General

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

F.1.6.2 Competitive Negotiation Procedure

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

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

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

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

F.1.6.3 Proposal Procedure using two stage system

F.1.6.3.1 Option 1

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

F.1.6.3.2 Option 2

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

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

F.2 Tenderer's obligations

F.2.1 Eligibility

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

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

F.2.2 Cost of tendering

Accept that 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 satisfy requirements.

F.2.3 Check documents

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

F.2.4 Confidentiality and copyright of documents

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

F.2.5 Reference documents

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

F.2.6 Acknowledge addenda

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

F.2.7 Site visit and clarification meeting

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

F.2.8 Seek clarification

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

F.2.9 Insurance

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

F.2.10 Pricing the tender offer

- F.2.10.1** Include in the rates, prices, and the tendered total of the prices (if any) all duties, taxes (except Value Added Tax (VAT), and other levies payable by the successful tenderer, such duties, taxes, and levies being those applicable 14 days before the closing time stated in the tender data.
- F.2.10.2** Show VAT payable by the employer separately as an addition to the tendered total of the prices.
- F.2.10.3** Provide rates and prices that are fixed for the duration of the contract and not subject to adjustment except as provided for in the conditions of contract identified in the contract data.
- F.2.10.4** State the rates and prices in Rand unless instructed otherwise in the tender data. The conditions of contract identified in the contract data may provide for part payment in other currencies.

F.2.11 Alterations to documents

Not make any alterations or additions to the tender documents, except to comply with instructions issued by the employer, or necessary to correct errors made by the tenderer. All signatories to the tender offer shall initial all such alterations. Erasures and the use of masking fluid are prohibited.

F.2.12 Alternative tender offers

- F.2.12.1** Unless otherwise stated in the tender data, submit alternative tender offers only if a main tender offer, strictly in accordance with all the requirements of the tender documents, is also submitted. The alternative tender offer is to be submitted with the main tender offer together with a schedule that compares the requirements of the tender documents with the alternative requirements the tenderer proposes.
- F.2.12.2** Accept that an alternative tender offer may be based only on the criteria stated in the tender data or criteria otherwise acceptable to the employer.

F.2.13 Submitting a tender offer

- F.2.13.1** Submit one tender offer only, either as a single tendering entity or as a member in joint venture, to provide the whole of the works, services or supply identified in the contract data, unless stated otherwise in the tender data.
- F.2.13.2** Return all returnable documents to the employer after completing them in their entirety, either electronically (if they were issued in electronic format) or by writing in black ink.
- F.2.13.3** Submit the parts of the tender offer communicated on paper as an original plus the number of copies stated in the tender data, with an English translation of any documentation in a language other than English, and the parts communicated electronically in the same format as they were issued by the employer.
- F.2.13.4** Sign the original and all copies of the tender offer where required in terms of the tender data. The employer will hold all authorized signatories liable on behalf of the tenderer. Signatories for tenderers proposing to contract as joint ventures shall state which of the

signatories is the lead partner whom the employer shall hold liable for the purpose of the tender offer.

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

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

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

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

F.2.13.9 Accept that tender offers submitted by facsimile or email will be rejected by the Employer, unless stated otherwise in the tender data.

F.2.14 Information and data to be completed in all respects

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

F.2.15 Closing time

F.2.15.1 Ensure that the employer receives the tender offer at the address specified in the tender data not later than the closing time stated in the tender data. Proof of posting shall not be accepted as proof of delivery. The employer shall not accept tender offers submitted by telegraph, telex, facsimile, or e-mail, unless stated otherwise in the tender data.

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

F.2.16 Tender offer validity

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

F.2.16.2 If requested by the employer, consider extending the validity period stated in the tender data for an agreed additional period.

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

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

F.2.17 Clarification of tender offer after submission

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

F.2.18 Provide other material

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

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

F.2.19 Inspections, tests, and analysis

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

F.2.20 Submit securities, bonds, policies, 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.

F.2.21 Check final draft

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

F.2.22 Return of other tender documents

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

F.2.23 Certificates

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

F.3 The employer's undertakings

F.3.1 Respond to requests from the tenderer

F.3.1.1 Respond to a request for clarification received up to five working days prior to the tender closing time stated in the Tender Data and notify all tenderers who drew procurement documents.

F.3.1.2 Consider any request to make 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 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 prequalification process.

F.3.2 Issue Addenda

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

F.3.3 Return late tender offers

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

F.3.4 Opening of tender submissions

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

F.3.4.2 Announce at the opening 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, the total of his prices, preferences claimed and time for completion, if any, for the main tender offer only.

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

F.3.5 Two-envelope system

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

F.3.5.2 Evaluate the quality 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 quality evaluation above the minimum number of points for quality stated in the tender data, and announce

the score obtained for the technical proposals and the total price and any preferences claimed. Return unopened financial proposals to tenderers whose technical proposals failed to achieve the minimum number of points for quality.

F.3.6 Non-disclosure

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

F.3.7 Grounds for rejection and disqualification

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

F.3.8 Test for responsiveness

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

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

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

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

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

F.3.9 Arithmetical errors

F.3.9.1 Check responsive tender offers for arithmetical errors between amounts in words and amounts in figures. Where there is a discrepancy between the amounts in figures and in words, the amount in words shall govern.

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

- a) The gross misplacement of the decimal point in the unit rate,
- b) Omissions made in completing the pricing schedule or bills of quantities or
- c) Arithmetic errors in

- Line-item totals resulting from the product of unit rate and a quantity in bills of quantities or schedule of prices; or
- The summation of the prices.

F3.9.2 Notify the tenderers of all errors or omissions that are identified in the tender offer and invite the tenderer to either confirm the tender offer as tendered or accept the corrected total of prices.

F.3.9.3 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 as quoted shall govern, and the unit rate will 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 a bill of quantities applies) to achieve the tendered total of the prices.

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

F.3.10 Clarification of a tender offer

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

F.3.11 Evaluation of tender offers

F3.11.1 General

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

F.3.11.2 Preference Goal 1: Ownership as specific goal

A maximum of 20 points (80/20 preference points system) or 10 (90/10) preference points system), may be allocated. Bidder may score preference points based on company ownership.

If the Municipality applies ownership as specific goal, the Municipality must advertise the tender with a specific tendering preferential procurement requirement that in order for a tenderer to claim 10 / 20 points for specific goals, bidder must have the following ownership structure:

- An EME or QSE
- an EME (exempted micro enterprise) or QSE (qualifying small business enterprise) which is at least 51% owned by black people.
- an EME (exempted micro enterprise) or QSE (qualifying small business enterprise) which is at least 51% owned by black people who are youth
- an EME (exempted micro enterprise) or QSE (qualifying small business enterprise) which is at least 51% owned by black people who are women
- an EME (exempted micro enterprise) or QSE (qualifying small business enterprise) which is at least 51% owned by black with disabilities

- a co-operative which is at least 51% owned by black people an EME (exempted micro enterprise) or QSE (qualifying small business enterprise) which is at least 51% owned by black people who are military veterans
Ownership verification may be conducted through the Companies and Intellectual Property Commission (CIPC).

F.3.11.3 Preference Goal 2: RDP Goals

The following activities may be regarded as a contribution towards achieving the goals of the RDP (published in Government Gazette No. 16085 dated 23 November 1994):

- (a) The promotion of South African owned enterprises;
- (b) The promotion of export orientated production to create jobs;
- (c) The promotion of SMMEs;
- (d) The creation of new jobs or the intensification of labour absorption;
- (e) The promotion of enterprises located in a specific province for work to be done or services to be rendered in that province;
- (f) The promotion of enterprises located in a specific region for work to be done or services to be rendered in that region;
- (g) The promotion of enterprises located in a specific municipal area for work to be done or services to be rendered;
- (h) The promotion of enterprises located in rural areas;
- (i) The empowerment of the work force by standardising the level of skill and knowledge of workers;
- (j) The development of human resources, including by assisting in tertiary and other advanced training programmes, in line with key indicators such as percentage of wage bill spent on education and training and improvement of management skills; and
- (k) The upliftment of communities through, but not limited to, housing, transport, schools, infrastructure donations, and charity organisations

Address declared by the prospective bidder in the National Treasury Central Supplier Database (CSD) or in the Harry Gwala Municipal supplier database shall be used to determine the location of a business enterprise for the purposes of allocating preference points for (e), (f), (g) and (h) above.

F.3.11.4 Preference Goal 3: Combinations of any other Goals

The municipality may also combine any specific goals above in a manner that will help them evaluate and apply preference points to tenders

The municipality shall set appropriate Local Economic Development Targets in the form of Contract Participation Goals and or Targeted Procurement objectives which must form part of the invitation to tender, set as performance criteria within contracts.

F.3.11.5 Decimal places

Points scored must be rounded off to the nearest 2 decimal places.

F.3.11.6 Scoring Price

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

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

where:

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

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

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

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

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

F.3.11.8 Scoring preferences

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

F.3.11.9 Scoring functionality

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

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

$$NQ = W2 \times SO / MS$$

where:

SO is the score for quality allocated to the submission under consideration;

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

$W2$ is the maximum possible number of tender evaluation points awarded for the quality as stated in the tender data

F.3.12 Insurance provided by the employer

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

F.3.13 Acceptance of tender offer

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

- 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.

F.3.14 Prepare contract documents

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

- 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.

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

F.3.15 Complete adjudicator's contract

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

F.3.16 Notice to unsuccessful tenderers

F.3.16.1 Notify the successful tenderer of the employer's acceptance of his tender offer by completing and returning one copy of the form of offer and acceptance before the expiry of the validity period stated in the tender data or agreed additional period.

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

F.3.17 Provide copies of the contracts

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

F.3.18 Provide written reasons for actions taken

Provide upon request written reasons to tenderers for any action that is taken in applying these conditions of tender but withhold information which is not in the public interest to be

divulged, which is considered to prejudice the legitimate commercial interests of tenderers or might prejudice fair competition between tenderers.

F3.19 Transparency in the procurement process

F3.19.1 The CIDB prescripts require that tenders must be advertised and be registered on the CIDB iTender system.

F3.19.2 The employer must adopt a transparency model that incorporates the disclosure and accountability as transparency requirements in the procurement process.

F3.19.3 The transparency model must identify the criteria for selection of projects, project information template and the threshold value of the projects to be disclosed in the public domain at various intervals of delivery of infrastructure projects.

F3.19.4 The client must publish the information on a quarterly basis which contains the following information:

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

F3.19.5 The employer must establish a Consultative Forum which will conduct a random audit in the implementation of the transparency requirements in the procurement process.

F3.19.6 Consultative Forum must be an independent structure from the bid committees.

F3.19.7 The information must be published on the employer's website.

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

CREIGHTON BULK WATER SUPPLY SCHEME

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

CONTRACT No. HGDM 813/HGDM/2023

PART T2: RETURNABLE DOCUMENTS AND SCHEDULES

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FORM Q: Schedule of Proposed Sub-Contractors.....	RD56
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FORM V: UIF Registration Certificate	RD63
FORM W: Certificate of Municipal Services.....	RD64
FORM X: Quality Management System (Quality Assurance Plan & Control	RD66
FORM Y: Supply Chain Management Policy.....	RD67

PART T2.1: LIST OF RETURNABLE DOCUMENTS AND SCHEDULES

1. List of Returnable Documents and Schedules Required for Tender Evaluation Purposes

- Certificate of Tenderers' Attendance at the Clarification Meeting
- Authority for Signatory
- Schedule of Work Carried out by the Tenderer
- Certificate of Registration with CIDB
- Preliminary Programme
- Amendments, Qualifications and Alternatives
- Tax Clearance Certificate
- BBBEE Certificate
- Tenderer's Financial Standing
- Form of Intent to Provide a Performance Guarantee
- Compulsory Enterprise Questionnaire
- UIF Registration Certificate
- Proof of Purchase of Tender Documents
- MBD4 Form
- Joint Venture Disclosure Form
- Company Registration Certificate
- Identity Documents
- VAT Registration Certificate
- Copy of Cashed Cheque for Company
- Project Specific Health and Safety Plan
- Certificate of Municipal Services

2. Other Returnable Schedules and Documents that Will be Incorporated into the Contract

- Schedule of Construction Plant & Equipment
- Schedule of Proposed Sub-Contractors
- Record of Addenda to Tender Documents
- Rates for Special Materials
- Contractor's Health and Safety Declaration
- Form of Offer and Acceptance (Part C1)
- Contract Data (Part C1)
- Form of Guarantee (Part C1)
- Adjudicator's Agreement (Part C1)
- Agreement in Terms of the OHS Act No 85 of 1993 (Part C1)
- Bill of Quantities (Part C2)
- Scope of Work (Part C3)
- Site information (Part C4)
- Drawings (Part C5)

FORM A: Certificate of Attendance at Clarification Meeting

CONTRACT N° HGDM 813/HGDM/2023

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

(Please print)

It is hereby CERTIFIED that I, (name)

in my capacity as.....and a duly authorized

representative of..... (the TENDERER)

of (address).....

in the company of.....(the ENGINEER)

attended the official Site Inspection on(date)

for and on behalf of the above-named Tenderer.

I hereby further DECLARE that I am satisfied with the description of the Works and the explanations given by the above-named Engineer.

SIGNATURE
(On behalf of TENDERER)

DATE

AS WITNESS :-
(On behalf of ENGINEER)

NAME

SIGNATURE

DATE

FORM B: Authority for Signatory

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

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

A. Certificate for Company

I,, chairperson
of the board of

hereby confirm that by resolution of the board (copy attached) taken on

..... 20....., Mr/Ms

acting in the capacity of, was authorised to sign all documents in connection with this tender for CONTRACT N° HGDM 813/HGDM/2023 and any contract resulting from it on behalf of the company.

As witnesses:

- | | |
|---------|-----------------|
| 1. | Chairman: |
| 2. | Date: |

Signature of Authorised Person:

B. Certificate for Partnership

We, the undersigned, being the key partners in the business trading as

....., hereby authorise

Mr/Ms, acting in the capacity of

....., to sign all documents in connection with this tender for

CONTRACT N° HGDM 813/HGDM/2023 and any contract resulting from it on our behalf.

Name	Address	Signature	Date

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

Signature of Authorised Person:

C. Certificate for Joint Venture

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 this tender for CONTRACT N° HGDM 813/HGDM/2023 and any contract resulting from it on our behalf.

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

Name of Firm	Address	Authorising Name and Capacity	Authorising Signature
Lead Partner:			

Signature of Authorised Person:

D. Certificate for Sole Proprietor

I,, hereby confirm that I am

the sole owner of the business trading as

As witnesses:

1. Sole Owner:

2. Date:

Signature of Authorised Person:

E. Certificate for Close Corporation

We, talculations must be set out in a clear and logical sequence and must clearly re

ect all design assumptions in the development of the pricing proposal.

Acceptance of an alternative tender offer will mean acceptance in principle of the offer. It will be an obligation of the c° HGDM 813/HGDM/2023 and any contract resulting from it on our behalf.

Name	Address	Signature	Date

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

Signature of Authorised Person:

FORM C: Certificate of Registration with CIDB

The Tenderer is to attach a copy (ies) of Tenderer’s Registration with CIDB or alternatively furnish the CIDB registration number and details in the table below. This information will be verified with the CIDB through the CIDB website. It is the Tenderer’s responsibility to ensure that their details are displayed on the website. If a joint venture is tendering, details of all the JV members are to be furnished.

Name of Tenderer/Contractor	CIDB Registration Number	Category and Class of Registration e.g. 1CE

My/Our failure to submit the certificate(s) or furnish the required details with my/our tender document will lead to the conclusion that I/we are not registered with CIDB and therefore are not eligible to tender.

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

DATE:

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

CONTRACT HGDM 813/HGDM/2023

FORM D 1: Schedule of Work Carried out by the Tenderer

The Tenderer shall list below all civil engineering contracts of Water projects. This information is material to the award of the Contract. List here Tenderer's experience in Supply and installation of High lift pumps with associated Mechanical and Electrical works and construction of abstraction works of 5ML or above.

D1	List below all civil engineering contracts of Water projects for each discipline/category as main contractor. THE APPOINTMENT LETTER AND CERTIFICATE OF COMPLETION, SIGNED AND STAMPED FORM D1 BY THE RESPECTIVE CLIENT FOR THE RESPECTIVE PROJECTS MUST BE INCLUDED IN THE TENDER SUBMISSION IN ORDER TO CLAIM POINTS. Along with a detailed description as provided on the forms below.					No of Projects Completed	Points	Score (S)
Category	Contract	Client Reference						
		Project Value	Contact Name	Client Organisation	Tel N°			
Supply and installation of High lift pumps with associated Mechanical and Electrical works and construction of abstraction works of 5ML or above.	Name of Project 1: Capacity of abstraction works.....ML Name of Project 2: Capacity of abstraction works.....ML					1 - 2 Projects	5	
	Signature (of person authorised to sign on behalf of the tenderer) :					Date:.....		

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

CONTRACT HGDM 813/HGDM/2023

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Category	Contract	Client Reference						
		Project Value	Contact Name	Client Organisation	Tel N°			
Supply and installation of High lift pumps with associated Mechanical and Electrical works and construction of abstraction works of 5ML or above.	Name of Project 3: Capacity of abstraction works.....ML Name of Project 4: Capacity of abstraction works.....ML					3 - 4 Projects	10	
Signature (of person authorised to sign on behalf of the tenderer) :		Date:.....						

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

CONTRACT HGDM 813/HGDM/2023

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Category	Contract	Client Reference						
Supply and installation of High lift pumps with associated Mechanical and Electrical works and construction of abstraction works of 5ML or above.		Project Value	Contact Name	Client Organisation	Tel N°			
		Name of Project 5: Capacity of abstraction works.....ML Name of Project 6: Capacity of abstraction works.....ML					5 - 6 Projects	15
	Signature (of person authorised to sign on behalf of the tenderer) :					Date:.....		

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

CONTRACT HGDM 813/HGDM/2023

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Category	Contract	Client Reference						
		Project Value	Contact Name	Client Organisation	Tel N°			
Supply and installation of High lift pumps with associated Mechanical and Electrical works and construction of abstraction works of 5ML or above.	Name of Project 7: Capacity of abstraction works.....ML Name of Project 8: Capacity of abstraction works.....ML Name of Project 9: Capacity of abstraction works.....ML					7 - 9 Projects	20	
	Signature (of person authorised to sign on behalf of the tenderer) :					Date:.....		

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

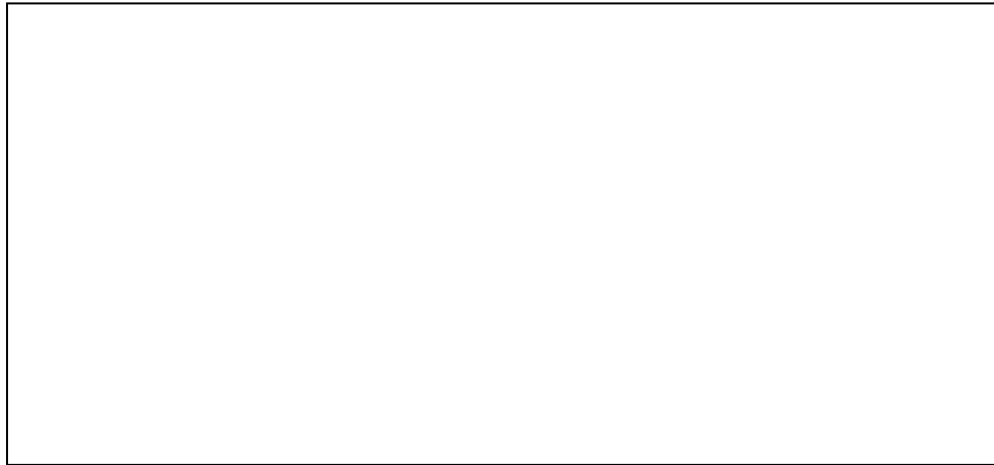
CONTRACT HGDM 813/HGDM/2023

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Category	Contract	Client Reference						
		Project Value	Contact Name	Client Organisation	Tel N°			
Supply and installation of High lift pumps with associated Mechanical and Electrical works and construction of abstraction works of 5ML or above.	Name of Project 10: Capacity of abstraction works.....ML Name of Project 11: Capacity of abstraction works.....ML Name of Project 12: Capacity of abstraction works.....ML					More than 9 projects	25	
	Signature (of person authorised to sign on behalf of the tenderer) :					Date:.....		
						Possible Full Points =	25	
						Actual Points Obtained S1=		

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

CONTRACT HGDM 813/HGDM/2023

Clients Name :
Name of Project: :
Capacity of abstraction works :ML



CLIENTS OFFICIAL STAMP

.....
SIGNATURE(S) OF CLIENTS REPRESENTATIVE

Signatures of the respective client to be added on this form for each project. Where there is more than one project, this form should be duplicated for the respective number of projects used.

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

CONTRACT HGDM 813/HGDM/2023

FORM D 2: Schedule of Work Carried out by the Tenderer

The Tenderer shall list below all civil engineering contracts of Water projects. This information is material to the award of the Contract. List here Tenderer's experience in civil engineering contracts of a similar nature awarded to him for a value above R30 million. supply and installation of High lift pumps with associated Mechanical and Electrical works and construction of abstraction work.

D2	List below all civil engineering contracts of Water projects for each discipline/category as main contractor. THE APPOINTMENT LETTER AND CERTIFICATE OF COMPLETION, SIGNED AND STAMPED FORM D1 BY THE RESPECTIVE CLIENT FOR THE RESPECTIVE PROJECTS MUST BE INCLUDED IN THE TENDER SUBMISSION IN ORDER TO CLAIM POINTS. Along with a detailed description as provided on the forms below.					No of Projects Completed	Points	Score (S)
Category	Contract	Client Reference						
		Project Value	Contact Name	Client Organisation	Tel N°			
Civil engineering contracts of a similar nature awarded to him for a value above R30 million. supply and installation of High lift pumps with associated Mechanical and Electrical works and construction of abstraction work.	Name of Project 1: Capacity of abstraction works.....ML Value of works R.....excl. VAT Name of Project 2: Capacity of abstraction works.....ML Value of works R.....excl. VAT					1 - 2 Projects	5	
Signature (of person authorised to sign on behalf of the tenderer) :						Date:.....		

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

CONTRACT HGDM 813/HGDM/2023

D2	List below all civil engineering contracts of Water projects for each discipline/category as main contractor. THE APPOINTMENT LETTER AND CERTIFICATE OF COMPLETION, SIGNED AND STAMPED FORM D1 BY THE RESPECTIVE CLIENT FOR THE RESPECTIVE PROJECTS MUST BE INCLUDED IN THE TENDER SUBMISSION IN ORDER TO CLAIM POINTS. Along with a detailed description as provided on the forms below.				No of Projects Completed	Points	Score (S)	
Category	Contract	Client Reference						
		Project Value	Contact Name	Client Organisation	Tel N°			
Civil engineering contracts of a similar nature awarded to him for a value above R30 million. supply and installation of High lift pumps with associated Mechanical and Electrical works and construction of abstraction work.	Name of Project 3: Capacity of abstraction works.....ML Value of works R.....excl. VAT					3 - 4 Projects	10	
	Name of Project 4: Capacity of abstraction works.....ML Value of works R.....excl. VAT							
Signature (of person authorised to sign on behalf of the tenderer) :						Date:.....		

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

CONTRACT HGDM 813/HGDM/2023

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Category	Contract	Client Reference						
		Project Value	Contact Name	Client Organisation	Tel N°			
Civil engineering contracts of a similar nature awarded to him for a value above R30 million. supply and installation of High lift pumps with associated Mechanical and Electrical works and construction of abstraction work.	Name of Project 5: Capacity of abstraction works.....ML Value of works R.....excl. VAT					5 - 6 Projects	15	
	Name of Project 6: Capacity of abstraction works.....ML Value of works R.....excl. VAT							
Signature (of person authorised to sign on behalf of the tenderer) :						Date:.....		

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

CONTRACT HGDM 813/HGDM/2023

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Category	Contract	Client Reference						
		Project Value	Contact Name	Client Organisation	Tel N°			
Civil engineering contracts of a similar nature awarded to him for a value above R30 million. supply and installation of High lift pumps with associated Mechanical and Electrical works and construction of abstraction work.	Name of Project 7: Capacity of abstraction works.....ML Value of works R.....excl. VAT					7 - 9 Projects	20	
	Name of Project 8: Capacity of abstraction works.....ML Value of works R.....excl. VAT							
	Name of Project 9: Capacity of abstraction works.....ML Value of works R.....excl. VAT							
	Signature (of person authorised to sign on behalf of the tenderer) :					Date:.....		

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

CONTRACT HGDM 813/HGDM/2023

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Category	Contract	Client Reference						
		Project Value	Contact Name	Client Organisation	Tel N°			
Civil engineering contracts of a similar nature awarded to him for a value above R30 million. supply and installation of High lift pumps with associated Mechanical and Electrical works and construction of abstraction work.	Name of Project 10:					More than 9 projects	25	
	Capacity of abstraction works.....ML							
	Value of works R.....excl. VAT							
	Name of Project 11:							
	Capacity of abstraction works.....ML							
	Value of works R.....excl. VAT							
	Name of Project 12:							
	Capacity of abstraction works.....ML							
	Value of works R.....excl. VAT							
Signature (of person authorised to sign on behalf of the tenderer) :						Date:.....		
						Possible Full Points =	25	
						Actual Points Obtained S2 =		

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

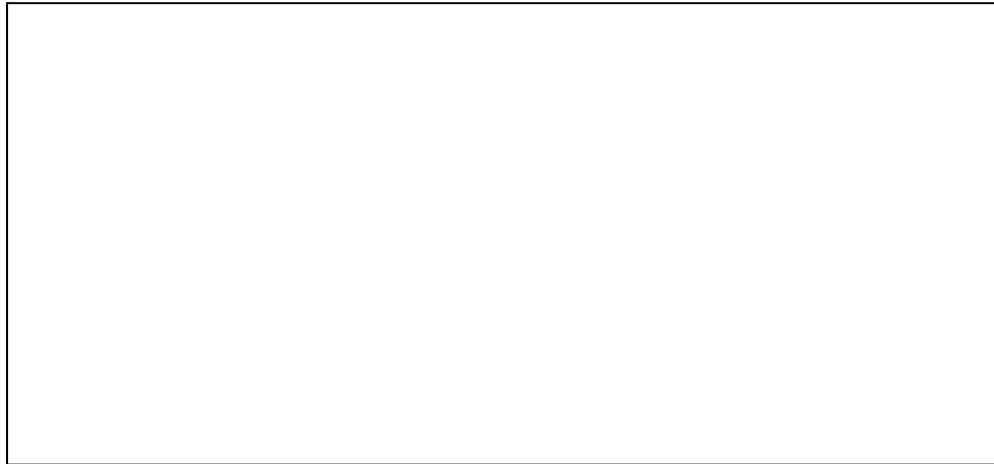
CONTRACT HGDM 813/HGDM/2023

Clients Name :

Name of Project: :

Capacity of abstraction works :**ML**

Value of works : **R****excl. VAT**



CLIENTS OFFICIAL STAMP

.....
SIGNATURE(S) OF CLIENTS REPRESENTATIVE

Signatures of the respective client to be added on this form for each project. Where there is more than one project, this form should be duplicated for the respective number of projects used.

FORM F: Amendments, Qualifications and Alternatives

(This is not an invitation for amendments, deviations or alternatives but should the Tenderer desire to make any departures from the provisions of this contract he shall set out his proposals clearly hereunder. The Employer will not consider any amendment, alternative offers or discounts unless forms (a), (b) and (c) have been completed to the satisfaction of the Employer).

I / We herewith propose the amendments, alternatives and discounts as set out in the tables below:

(a) AMENDMENTS

PAGE, CLAUSE OR ITEM NO	PROPOSED AMENDMENT

Notes:

- (1) Proposals for amendments to the General and Special Conditions of Contract are not acceptable, and will be ignored;
- (2) The Tenderer must give full details of all the financial implications of the amendments and qualifications in a covering letter attached to his tender.

(b) ALTERNATIVES

PROPOSED ALTERNATIVE	DESCRIPTION OF ALTERNATIVE

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

CONTRACT HGDM 813/HGDM/2023

Notes

- (1) Individual alternative items that do not justify an alternative tender, and an alternative offer for time for completion should be listed here.
- (2) In the case of a major alternative to any part of the work, a separate Bill of Quantities, programme, etc, and a detailed statement setting out the salient features of the proposed alternatives must accompany the tender.
- (3) Alternative tenders involving technical modifications to the design of the works and methods of construction shall be treated separately from the main tender offer.

(c) DISCOUNTS

ITEM ON WHICH DISCOUNT IS OFFERED	DESCRIPTION OF DISCOUNT OFFERED

Note

The Tenderer must give full details of the discounts offered in a covering letter attached to his tender, failing which, the offer for a discount may have to be disregarded.

SIGNATURE: DATE:
(of person authorised to sign on behalf of the Tenderer)

FORM G: SARS PIN

The Tenderer is to attach valid SARS Pin on this page. In the case of a Joint Venture, valid copies of SARS Pin for all members of the Joint Venture must be attach.

FORM H: Tenderer’s Financial Standing

CREIGHTON BULK WATER SUPPLY SCHEME

CONTRACT No. HGDM 813/HGDM/2023

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

The Employer may make inquiries to obtain a bank rating from the Tenderer’s bank.

To this end, the Tenderer must provide with his tender, a bank rating, certified by his banker, to the effect that he will be able to successfully complete the contract at the tendered amount within the specified time for completion.

However, should the tenderer be unable to provide a bank rating with his tender, he shall be state the reasons thereof and in addition provide the following details of his banker and bank account details that he intends to use for the contract:

Name of Account Holder:

Name of Bank: Branch:

Account Number: Account Type:

Telephone Number: Fax N^o:

Name of Contact Person (*at bank*):

Failure to provide either the required bank details or a certified bank rating with his tender will lead to the conclusion that the Tenderer does not have the necessary financial resources at his disposal to complete the contract successfully within the specified time for completion.

The Employer undertakes to treat the information thus received as confidential, strictly for the use of evaluation of the tender submitted by the Tenderer.

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

DATE:

CERTIFIED BANK RATING

Tenderers to attach a Certified Bank Rating to this page. Failure to comply may lead to awarding of zero points for quality on this criterion.

FORM I: Form of Intent to Provide a Performance Guarantee

[The Tenderer must attach hereto a letter from the bank or institution. with whom he has made the necessary arrangements, to the effect that the said bank or institution will be prepared to provide the required performance guarantee when asked to do so].

Tenderers are to refer to Form C1.3: Form of Guarantee

FORM J : 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:

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

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

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

*insert separate page if necessary

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

CONTRACT HGDM 813/HGDM/2023

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 of state and position held	Status of service (tick appropriate column)	
		current	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 _____
 Name of Enterprise _____

FORM K: Proof of Purchase of Tender Documents

The Tenderer shall insert here proof of purchase of the tender documents in the form of an official receipt or other acceptable form of proof

FORM L: Preferential Procurement

Harry Gwala District Municipality has adopted the Preference Point System as stipulated in the Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000) and as set out in the 2022 – 2023 SCM Policy regulations.

M.1. PRINCIPLES APPLIED BY THE MUNICIPALITY

- 1.1 The Harry Gwala District Municipality has a responsibility to ensure that resources are managed in the most efficient and effective manner possible. This aim forms part of a national objective to manage the use of the resources of the nation in a thrifty, careful and economic manner and in such a way as to maximise sustained economic growth. The Municipality also has a responsibility to ensure that its activities further other overall national objectives of equity and redress, and to balance the furthering of these objectives in a manner that is fair and transparent. The Municipality is committed, therefore, to a process of cost effective, competitive procurement for goods and services that incorporates a targeted preferential methodology aimed at furthering the growth and development of persons, or categories of persons, historically disadvantaged by unfair discrimination on the basis of race, gender or disability.
- 1.2 No contract for the supply of any goods to or for any work, undertaking or service for or on behalf of the Harry Gwala District Municipality involving an estimated expenditure in excess of an amount prescribed in the Municipality's Preferential Procurement/Supply Chain Management Policy shall be entered into by the Municipality, unless public tenders have been called for in the manner prescribed.
- 1.3 Furthermore, the Harry Gwala District Municipality shall, in accordance with the framework prescribed by national legislation, give preference in awarding contracts to persons or categories of persons historically disadvantaged by unfair discrimination on the basis of race, gender or disability, and shall make the granting of such preferences public in the manner determined in the policy.

M.2 The 80/20 Preference Point System

The procedure for the evaluation of responsive tenders is **Specific goal 1, 2, 3** with the 80/20 Preference Point System. Tenderers will be scored for quality first and only those tenders that meet the specified minimum total score for quality will be considered further. These tenders will then be evaluated on the basis of the 80/20 Preference Points System.

Specific goal 1, 2, 3: Financial Offer, Quality and Preferences

(a) Quality

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

80/20 preference points system for tenders for income-generating contracts with Rand value equal to or below R50 million

The following formula must be used to calculate the points for price in respect of an invitation for tender for income-generating contracts, with a Rand value equal to or below R50 million, inclusive of all applicable taxes

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

Where-

Ps = Points scored for price of tender under consideration;

Pt = Price of tender under consideration; and

Pmax = Price of highest acceptable tender

The quality will comprise scores for the following based on criteria indicated in the respective tender returnables:

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Description	Maximum Allocated Points
Experience of Key Personnel (Contracts Manager)	12
Experience of Key Personnel (Site Agent)	10
Experience of Key Personnel (Foreman)	8
Experience of Bidder with respect to water projects	50
Financial Capacity	20
TOTAL MAXIMUM POINTS	100

Returnable Schedule	Criteria			Total Weighting %	Verification Method
Form D1	Tenderer's experience in supply and installation of High lift pumps with associated Mechanical and Electrical works and construction of abstraction work of 5ML or above.	No of Projects completed	Points	25	Appointment letters and Completion Certificates (for subcontracting attach also appointment letter of main contractor). Completed, Signed and Stamped Form D1.
		1 – 2 Projects	5		
		3 – 4 Projects	10		
		5 – 6 Projects	15		
		7 – 9 Projects	20		
More than 9 Projects	25				
Form D2	The Tenderer experience civil engineering contracts of a similar nature awarded to him for a value above R30 million. supply and installation of High lift pumps with associated Mechanical and Electrical works and construction of abstraction work.	No of Projects completed	Points	25	Appointment letters and Completion Certificates (for subcontracting attach also appointment letter of main contractor). Completed, Signed and Stamped Form D2.
		1 – 2 Projects	5		
		3 – 4 Projects	10		
		5 – 6 Projects	15		
		7 – 9 Projects	20		
More than 9 Projects	25				
Form H	Financial Resources	Undoubted for your enquiry	A = 20	20	Rating by bank where account is held (Stamped by Bank not older than 3 months)
		Good for tender amount quoted	B = 18		
		Average to good for the amount of tender enquiry, if strictly in the way of business	C = 16		
		Rating below good (D)	D-F = 14		
Form	Experience of Key Personnel (Contracts Manager)	Approved Degree/Diploma in built environment qualification and experience in the position		12	Certified Qualification certificates and Curriculum Vitae to be attached with traceable references. Experience must be on water projects
		Between 1 - 4 years' relevant experience	4		
		Between 5 - 7 years relevant experience in the position.	8		
		8 and above years' relevant experience in the position	12		
		No qualification with relevant experience in the position			
		Between 4 - 6 years' relevant experience in the position	3		
		Between 7 - 9 years' relevant experience in the position.	6		

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Returnable Schedule	Criteria			Total Weighting %	Verification Method
		10 and above years' relevant experience in the position	9		
	Experience of Key Personnel (Site Agent)	Approved Degree/Diploma in built environment qualification and experience in the position		10	Certified Qualification certificates and Curriculum Vitae to be attached with traceable references. Experience must be on water projects
		Between 1 - 4 years' relevant experience	3		
		Between 5 - 7 years relevant experience in the position.	6		
		8 and above years' relevant experience in the position	10		
		No qualification with relevant experience in the position			
		Between 4 - 6 years' relevant experience in the position	2		
		Between 7 - 9 years' relevant experience in the position.	4		
		10 and above years' relevant experience in the position	6		
	Experience of Key Personnel (Foreman)	1 - 3 years' experience in the position	2	8	Curriculum Vitae to be attached with traceable references. Experience must be only on civil engineering projects specifically water.
		4 - 6 years' experience in the position	3		
		7 - 9 years' experience in the position	4		
		10 and above years' experience in the position	5		
	Total Possible Points			100	

Tenderers that score less than 65% of the total score allowed for quality will *not* be considered further.

(b) Financial Offer

The financial offer will be scored using the following formula

Price Points: 80 Points Maximum

80/20 preference points system for tenders for income-generating contracts with Rand value equal to or below R50 million

The following formula must be used to calculate the points for price in respect of an invitation for tender for income-generating contracts, with a Rand value equal to or below R50 million, inclusive of all applicable taxes

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

Where-

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Ps = Points scored for price of tender under consideration;
 Pt = Price of tender under consideration; and
 Pmax = Price of highest acceptable tender.

(c) Preferences

Up to **20** points (for financial values up to R50 000 000) or **10** points (for financial values over R50 000 000) will be awarded to tenderers who are found to be eligible for the preference claimed.

Points will be awarded to Tenderers for attaining the Specific Goal of contribution as per the preferential procurement policy framework act, 2000: preferential procurement regulations, 2022 as detailed below.

	80/20	Verification Method
≥ 51 % owned by black people	12	ID Copies of directors, Company registration, CSD and shareholder certificates
Less than 51 % owned by black people	10	ID Copies of directors, Company registration, CSD and shareholder certificates
Locality (Enterprise that is located within the Harry District Municipality, Location to be determined by the address registered on the CSD)	8	CSD Certificate
Locality (Enterprise that is not located within the Harry District Municipality, Location to be determined by the address registered on the CSD)	6	CSD Certificate
TOTAL	20	

M.3 Bidder Submission Requirements

All bidders must provide the following information and certificates with their bids and may not consider any quotation or bid submitted by a service provider who fails to submit the following information:

- All potential or actual conflicts of interests
- The name of the entity or person
- Whether the owner is or has been in the service of the state in the previous 12 months
- If the provider is not a natural person, whether any of its directors, managers, principle shareholders or stakeholders is in the service of the state or has been in the previous 12 months
- Whether a spouse, child or parent of the provider or of a director, manager shareholder or stakeholder is in the service of the state or has been in the previous 12 months
- Tax reference numbers, including Tax, PAYE, UIF and SDL and VAT, if applicable
- Identification or company registration numbers
- A valid Tax clearance certificate issued by SARS
- Registration with relevant bodies or controlling authorities if such registrations are mandatory
- Employment Equity Registration Numbers from the Department of Labour, if applicable
- Proof of registration and a letter of good standing from the Compensation Commissioner in compliance with COID Act.
- Proof that municipal rates, taxes and service charges accounts are in order

M.4 Adjudication Criteria

Adjudications will be conducted in accordance with the prescribed formulae as indicated in the Preferential Procurement Policy Framework Act and the Broad-Based Black Economic Empowerment Act and scorecards. Adjudication criteria will be clearly stated in the bid documents.

The award must be made to the bidder scoring the highest number of points unless objective criteria indicate that the award should be made to another bidder. The reasons for deviating from the prescribed norms and standards must be documented by the bid adjudication committee and reported immediately to the Accounting Officer. The Accounting Officer may at any stage, refer any recommendations made by either the bid evaluation or bid adjudication committees back to those committees for reconsideration.

M.5 Rejection / Disqualification Criteria

The Municipality may disqualify any offer or bid submitted for the following reasons:

- (i) The bidder failed to comply with all submission requirements as stated in the tender document.
- (ii) The entity or one of its directors is listed on National Treasury's data base as a person prohibited from doing business with the public sector
- (iii) There are levies for water & sanitation service charges from any Municipality by the entity or any of its directors that are in arrears for longer than 3 months unless credit arrangements have been made in terms of council policies.
- (iv) The entity has failed to perform satisfactorily on previous contracts with any Municipality or other organ of state, after that entity was given written notice that performance was unsatisfactory
- (v) Any of the directors committed a corrupt or fraudulent act in competing for a particular contract or in the execution of a contract
- (vi) An Official or other role player committed any corrupt or fraudulent act during the bidding process or the execution of a contract that benefited that person
- (vii) The entity or any of its directors abused the supply chain management system or committed any improper conduct in relation to such system
- (viii) Any director has been convicted for fraud or corruption during the past 5 years
- (ix) Has wilfully neglected, reneged on or failed to comply with any government, municipal or other public sector contract during the last 5 years
- (x) Misrepresentation of facts or information in the tender document submitted.
- (xi) Submission of two tender documents (from the same company) unless the other tender document is an alternative offer.
- (xii) Any persons whose tax matters have not been declared as being in order by the South African Revenue Services for awards in excess of R15, 000 Inc VAT.

M.6 Payments

Payments for Small and Micro projects shall be made within 30 days after submission of an acceptable invoice which has been approved by the Municipality's Representative or as specified in the Municipality's Special Conditions of Contract.

M.7 Assignment

The Service Provider may not cede or assign this contract or any moneys due or that may become due to it, without the prior written consent of the Municipality.

M.8 Joint Ventures

The Municipality will only accept Joint Venture agreements that are formed as a new legal entity and where an acceptable and legal agreement is submitted to the municipality. Any payments due to the Joint Venture will be made to the JV bank account.

M.9 Penalties (Construction Contracts and where Necessary)

Penalties on late completion of work shall be as specified in the Contract Data.

PREFERENCE POINTS – SPECIFIC GOALS (MBD 6.1)

MBD 6.1

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

1. PURCHASES

This preference form must form part of all bids invited. It contains general information and serves as a claim form for preference points based on Specific Goals.

- The 80/20 preference point system is applicable to bids with a Rand value equal to or up to a Rand value of R50 million (all applicable taxes included); and
- The 90/10 preference point system is applicable to bids with a Rand value above R50 million (all applicable taxes included).

The value of this bid is estimated to be less than R50 000 000 (all applicable taxes included) and therefore the 80/20 system shall be applicable.

The points scored for price must be added to the points scored for specific goals to obtain the bidder's total points scored out of 100.

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

NB: BEFORE COMPLETING THIS FORM, BIDDERS MUST STUDY THE GENERAL CONDITIONS, DEFINITIONS AND DIRECTIVES APPLICABLE IN RESPECT OF PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT, 2000: PREFERENTIAL PROCUREMENT REGULATIONS, 2022.

1. GENERAL CONDITIONS

- 1.1. The following preference point systems are applicable to all bids:
 - The 80/20 preference point system is applicable to bids with a Rand value equal to or up to a Rand value of R50 million (all applicable taxes included); and
 - The 90/10 preference point system is applicable to bids with a Rand value above R50 million (all applicable taxes included).
- 1.2. The value of this bid is estimated to be less than R50 000 000 (all applicable taxes included) and therefore the 80/20 system shall be applicable.
- 1.3. The points scored for price must be added to the points scored for specific goals to obtain the bidder's total points scored out of 100.
- 1.4. The purchaser reserves the right to require of a bidder, either before a bid is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the purchaser.

2. DEFINITIONS

- 2.1 "all applicable taxes" includes value-added tax, pay as you earn, income tax, unemployment insurance fund contributions and skills development levies;
- 2.2 "bid" means a written offer in a prescribed or stipulated form in response to an invitation by an organ of state for the provision of services, works or goods, through price quotations, advertised competitive

bidding processes or proposals;

- 2.3 “**comparative price**” means the price after the factors of a non-firm price and all unconditional discounts that can be utilized have been taken into consideration;
- 2.4 “**consortium or joint venture**” means an association of persons for the purpose of combining their expertise, property, capital, efforts, skill and knowledge in an activity for the execution of a contract;
- 2.5 “**contract**” means the agreement that results from the acceptance of a bid by an organ of state;
- 2.6 “**EME**” means any enterprise with an annual total revenue of R5 million or less.
- 2.7 “**Firm price**” means the price that is only subject to adjustments in accordance with the actual increase or decrease resulting from the change, imposition, or abolition of customs or excise duty and any other duty, levy, or tax, which, in terms of the law or regulation, is binding on the contractor and demonstrably has an influence on the price of any supplies, or the rendering costs of any service, for the execution of the contract;
- 2.8 “**functionality**” means the measurement according to predetermined norms, as set out in the bid documents, of a service or commodity that is designed to be practical and useful, working or operating, taking into account, among other factors, the quality, reliability, viability and durability of a service and the technical capacity and ability of a bidder;
- 2.9 “**highest acceptable tender**” means a tender that complies with all specifications and conditions of tender and that has the highest price compared to other tenders;
- 2.10 “**lowest acceptable tender**” means a tender that complies with all specifications and conditions of tender and that has lowest price compared to other tenders;
- 2.11 “**non-firm prices**” means all prices other than “firm” prices;
- 2.12 “**person**” includes a juristic person;
- 2.13 “**price**” means an amount of money tendered for goods or services, and includes all applicable taxes less all unconditional discounts;
- 2.14 “**rand value**” means the total estimated value of a contract in South African currency, calculated at the time of bid invitations, and includes all applicable taxes and excise duties;
- 2.15 “**specific goals**” means specific goals as contemplated in section 2(1)(d) of the Act which may include contracting with persons, or categories of persons, historically disadvantaged by unfair discrimination on the basis of race, gender and disability including the implementation of programmes of the Reconstruction and Development Programme as published in *Government Gazette* No. 16085 dated 23 November 1994;
- 2.16 “**sub-contract**” means the primary contractor’s assigning, leasing, making out work to, or employing, another person to support such primary contractor in the execution of part of a project in terms of the contract;
- 2.17 “**tender**” means a written offer in the form determined by an organ of state in response to an invitation to provide goods or services through price quotations, competitive tendering process or any other method envisaged in legislation;
- 2.18 “**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;

- 2.19 “**the Act**” means the Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000).
- 2.16 “**total revenue**” bears the same meaning assigned to this expression in the Codes of Good Practice on Black Economic Empowerment, issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act and promulgated in the *Government Gazette* on 9 February 2007;
- 2.17 “**trust**” means the arrangement through which the property of one person is made over or bequeathed to a trustee to administer such property for the benefit of another person; and “**trustee**” means any person, including the founder of a trust, to whom property is bequeathed in order for such property to be administered for the benefit of another person.

3. ADJUDICATION USING A POINT SYSTEM

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

4. POINTS AWARDED FOR PRICE

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

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

80/20 preference points system for tenders for income-generating contracts with Rand value equal to or below R50 million

The following formula must be used to calculate the points for price in respect of an invitation for tender for income-generating contracts, with a Rand value equal to or below R50 million, inclusive of all applicable taxes

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

Where-

P_s = Points scored for price of tender under consideration;

P_t = Price of tender under consideration; and

P_{max} = Price of highest acceptable tender.

90/10 preference point system for tenders for income-generating contracts with Rand value above R50 million

The following formula must be used to calculate the points for price in respect of a tender for income-

generating contracts, with a Rand value above R50 million, inclusive of all applicable taxes:

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

Where- Ps = Points scored for price of tender under consideration;

Pt = Price of tender under consideration; and

Pmax = Price of highest acceptable tender

5. CALCULATION OF TOTAL POINTS SCORED FOR PRICE AND SPECIFIC GOALS.

The points scored for price must be added to the points scored for specific goals to obtain the bidder's total points scored out of 100.

Calculation of total points scored for specific goals.

The basket of preference goals as contained in the relevant legislation are listed hereunder and the Municipality is at liberty to apply specific goals in any combination format depending on their preference targets.

The municipality will promote these specific goals in the procurement of goods and services which will be allocated points per individual service or goods required by the municipality:

Preference Goal 1: Ownership as specific goal

A maximum of 20 points (80/20 preference points system) or 10 (90/10) preference points system), may be allocated. Bidder may score preference points based on company ownership.

If the Municipality applies ownership as specific goal, the Municipality must advertise the tender with a specific tendering preferential procurement requirement that in order for a tenderer to claim 10 / 20 points for specific goals, bidder must have the following ownership structure:

- An EME or QSE
- an EME (exempted micro enterprise) or QSE (qualifying small business enterprise) which is at least 51% owned by black people.
- an EME (exempted micro enterprise) or QSE (qualifying small business enterprise) which is at least 51% owned by black people who are youth
- an EME (exempted micro enterprise) or QSE (qualifying small business enterprise) which is at least 51% owned by black people who are women
- an EME (exempted micro enterprise) or QSE (qualifying small business enterprise) which is at least 51% owned by black with disabilities
- a co-operative which is at least 51% owned by black people an EME (exempted micro enterprise) or QSE (qualifying small business enterprise) which is at least 51% owned by black people who are military veterans

Ownership verification may be conducted through the Companies and Intellectual Property Commission (CIPC).

Preference Goal 2: RDP Goals

The following activities may be regarded as a contribution towards achieving the goals of the RDP (published in Government Gazette No. 16085 dated 23 November 1994):

- (a) The promotion of South African owned enterprises;

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- (b) The promotion of export orientated production to create jobs;
- (c) The promotion of SMMEs;
- (d) The creation of new jobs or the intensification of labour absorption;
- (e) The promotion of enterprises located in a specific province for work to be done or services to be rendered in that province;
- (f) The promotion of enterprises located in a specific region for work to be done or services to be rendered in that region;
- (g) The promotion of enterprises located in a specific municipal area for work to be done or services to be rendered;
- (h) The promotion of enterprises located in rural areas;
- (i) The empowerment of the work force by standardising the level of skill and knowledge of workers;
- (j) The development of human resources, including by assisting in tertiary and other advanced training programmes, in line with key indicators such as percentage of wage bill spent on education and training and improvement of management skills; and
- (k) The upliftment of communities through, but not limited to, housing, transport, schools, infrastructure donations, and charity organisations

Address declared by the prospective bidder in the National Treasury Central Supplier Database (CSD) or in the Harry Gwala Municipal supplier database shall be used to determine the location of a business enterprise for the purposes of allocating preference points for (e), (f), (g) and (h) above.

Preference Goal 3: Combinations of any other Goals

The municipality may also combine any specific goals above in a manner that will help them evaluate and apply preference points to tenders

The municipality shall set appropriate Local Economic Development Targets in the form of Contract Participation Goals and or Targeted Procurement objectives which must form part of the invitation to tender, set as performance criteria within contracts.

6. PROOF OF MEETING SPECIFIC GOAL

6.1 Bidders who claim points in respect of Specific Goals must submit relevant documents as proof to demonstrate meeting of each particular criteria as prescribed on the relevant MBD Form (Form Q).

7 SUB-CONTRACTING

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

7.1.1 If yes, indicate:

- (i) what percentage of the contract will be subcontracted?
- (ii) the name of the sub-contractor?
- (iii) the Specific Goal met by the sub-contractor?
- (iv) whether the sub-contractor is an EME? YES / NO (delete which is not applicable)

8 DECLARATION WITH REGARD TO COMPANY/FIRM

8.1 Name of company/firm :

8.2 VAT registration number :

8.3 Company registration number

8.4 Type of Company/Firm

- Partnership/Joint Venture / Consortium
 - One person business/sole propriety
 - Close corporation
 - Company
 - (Pty) Limited
- [TICK APPLICABLE BOX]

8.5 Describe Principal Business Activities

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

8.6 Company Classification

- Manufacturer
 - Supplier
 - Professional service provider
 - Other service providers, e.g., transporter, etc.
- [TICK APPLICABLE BOX]

8.7 Total Number of Years the Company/Firm has been in Business?

8.8 I/we, the undersigned, who is / are duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the Specific Goal of contribution indicated in paragraph of the foregoing certificate, qualifies the company/ firm for the preference(s) shown and I / we acknowledge that:

- (i) The information furnished is true and correct;
- (ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form.
- (iii) In the event of a contract being awarded as a result of points claimed as shown in paragraph 7, the contractor may be required to furnish documentary proof to the satisfaction of the purchaser that the claims are correct;
- (iv) If the Specific Goal of contribution has been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the purchaser may, in addition to any other remedy it may have –
 - (a) disqualify the person from the bidding process;
 - (b) recover costs, losses or damages it has incurred or suffered as a result of that person's

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conduct;

- (c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;
- (d) restrict the bidder or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, from obtaining business from any organ of state for a period not exceeding 10 years, after the audi alteram partem (hear the other side) rule has been applied; and
- (e) forward the matter for criminal prosecution.

WITNESSES:

2.

.....

SIGNATURE(S) OF TENDERER(S)

2.

DATE:.....

ADDRESS:.....

.....

.....

.....

Signature: _____ Date: _____

Name: _____ Capacity: _____

Tenderer: _____

SUBCONTRACTING AS CONDITION OF TENDER

1. Subcontracting as condition of tender

(1) If feasible to subcontract for a contract, an organ of state must apply subcontracting to advance designated groups.

(2) If an organ of state applies subcontracting, the organ of state must advertise the tender with a specific tendering condition that the successful tenderer must subcontract a minimum of threshold of the value of the contract as follows:

- If a tender exceeding R5 million (VAT Incl.) is awarded to a main contractor as determined by the complexity of the project. A minimum 5% to one subcontractor being appointed.
- If a tender exceeding R10 million (VAT Incl.) is awarded to a main contractor as determined by the complexity of the project. A minimum of 10% to one subcontractor being appointed.
- If a tender exceeding R20 million (VAT Incl.) is awarded to a main contractor as determined by the complexity of the project, A minimum 15% to at least two subcontractors being appointed.
- If a tender exceeding R30 million (VAT Incl.) is awarded to a main contractor as determined by the complexity of the project, A minimum 30% to at least three subcontractors being appointed.

2. Award of contracts

A contract must be awarded to the bidder who scored the highest total number of points in terms of the preference point systems.

In exceptional circumstances a contract may, on reasonable and justifiable grounds, be awarded to a bidder that did not score the highest number of points. The reasons for such a decision must be approved and recorded for audit purposes and must be defensible in a court of law.

Contracts may be expanded or varied by not more than 20% for construction related goods, services and infrastructure projects and 15% for all other goods or services of the original value of contract. Anything the above-mentioned thresholds must be reported to council. Any expansion or variation on excess of these thresholds must be dealt with in terms of the provisions of Section 116(3) of the MFMA which would be regarded as an amendment to the contract.

3. Evaluation of bids that scored equal points

In the event that two or more bids have scored equal total points, the successful bid must be the one that scored the highest points for specific goals.

If two or more bids have equal points, including equal preference points for specific goals, the successful bid must be the one scoring the highest score for functionality, if functionality is part of the evaluation process.

In the event that two or more bids are equal in all respects, the award must be decided by the drawing of lots.

4. Cancellation and re-invitation of bids

- a) In the application of the 80/20 preference point system, if all bids received exceed R50 000 000, the bid must be cancelled. If one or more of the acceptable bid(s) received are within the R50 000 000 threshold, all bids received must be evaluated on the 80/20 preference point system.
- b) In the application of the 90/10 preference point system, if all bids received are equal to or below R50 000 000, the bid must be cancelled. If one or more of the acceptable bid(s) received are above the

R50 000 000 threshold, all bids received must be evaluated on the 90/10 preference point system.

- c) If a bid was cancelled in terms of paragraph 15.1 or 15.2, the correct preference point system must be stipulated in the bid documents of the re-invited bid.

An AO / AA may, prior to the award of a bid, cancel the bid if:

- a) Due to changed circumstances, there is no longer a need for the services, works or goods requested. [AOs / AAs must ensure that only goods, services or works that are required to fulfil the needs of the institution are procured]; or
- b) Funds are no longer available to cover the total envisaged expenditure. [AOs / AAs must ensure that the budgetary provisions exist]; or
- c) No acceptable bids are received. [If all bids received are rejected, the institution must review the reasons justifying the rejection and consider making revisions to the specific conditions of contract, design and specifications, scope of the contract, or a combination of these, before inviting new bids].

5. Remedies

(1) • If the municipality is of the view that a tenderer submitted false information regarding a specific goal, it must—

- (a) inform the tenderer accordingly; and
- (b) give the tenderer an opportunity to make representations within 14 days as to why the tender may not be disqualified or, if the tender has already been awarded to the tenderer, the contract should not be terminated in whole or in part.
- After considering the representations referred to in subparagraph (1)(b) above, the municipality may, if it concludes that such information is false—
- (a) Disqualify the tenderer or terminate the contract in whole or in part;
- (b) if applicable, claim damages from the tenderer.

(2) (a) An organ of state must-

- (i) inform the National Treasury, in writing, of any actions taken in terms of sub regulation (1);
- (ii) provide written submissions as to whether the tenderer should be restricted from conducting business with any organ of state; and
- (iii) submit written representations from the tenderer as to why that tenderer should not be restricted from conducting business with any organ of state.
- (b) The National Treasury may request an organ of state to submit further information pertaining to sub-regulation (1) within a specified period.

(3) The National Treasury must-

- (a) after considering the representations of the tenderer and any other relevant information, decide whether to restrict the tenderer from doing business with any organ of state for a period not exceeding 10 years; and
- (b) maintain and publish on its official website a list of restricted suppliers.

6. Circulars and guidelines

The National Treasury may issue-

- (a) a circular to inform organs of state of any matter pertaining to these Regulations; or
- (b) a guideline to assist organs of state with the implementation of any provision of these Regulations.

7. Repeal of Regulations and saving

(1) Subject to this regulation, the Preferential Procurement Regulations, 2011, published in Government Notice No R. 502 of 8 June 2011 (herein called “the 2011 Regulations), are hereby repealed with effect from the date referred to in regulation 17.

(2) Any sector designated, and minimum threshold determined for local production and content for purposes of regulation 9 of the 2011 Regulations and in force immediately before the repeal of the 2011 Regulations, are regarded as having been done under regulation 8(1) of these Regulations.

(3) Any tender advertised before the date referred to in regulation 17 must be dealt with in terms of the 2011 Regulations.

8. Short title and commencement

These Regulations are called the Preferential Procurement Regulations, 2017 and take effect on 1 April 2017.

FORM M: MBD4 Form

MBD 4

DECLARATION OF INTEREST

- 1. No bid will be accepted from persons in the service of the state¹.
- 2. Any person, having a kinship with persons in the service of the state, including a blood relationship, may make an offer or offers in terms of this invitation to bid. In view of possible allegations of favouritism, should the resulting bid, or part thereof, be awarded to persons connected with or related to persons in service of the state, it is required that the bidder or their authorised representative declare their position in relation to the evaluating/adjudicating authority.
- 3 In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.

3.1 Full Name of bidder or his or her representative:.....

3.2 Identity Number:

3.3 Position occupied in the Company (director, trustee, hareholder²):.....

3.4 Company Registration Number:

3.5 Tax Reference Number:.....

3.6 VAT Registration Number:

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

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

3.8.1 If yes, furnish particulars.

.....

¹MSCM Regulations: "in the service of the state" means to be –

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

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

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

3.9.1 If yes, furnish particulars.....

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

3.10.1 If yes, furnish particulars.
.....
.....

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

3.11.1 If yes, furnish particulars
.....
.....

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

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

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

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

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

3.14.1 If yes, furnish particulars:
.....
.....

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

Full Name	Identity Number	State Employee Number

.....
Signature

.....
Date

.....
Capacity
.....

.....
Name of Bidder
.....

FORM N: Company Registration Documents and Other Documents

Tenderers are to attach certified copies of the following documentation to this page:

- Company Registration Documents
- Identity Documents of Company Shareholders/members.
- Proof of Registration on Central Supplier Database

FORM O: Joint Venture Disclosure Form

EMPLOYER : Harry Gwala District Municipality

CONTRACT DESCRIPTION : CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

CONTRACT NUMBER : HGDM813/HGDM/2023

PROJECT REFERENCE NUMBER :

- Note:
- 1) This form needs not be completed for Joint Ventures which have targeted enterprise partners.
 - 2) All the information requested must be filled in the spaces provided. If additional space is required, additional sheets may be attached.
 - 3) A copy of the joint venture agreement must be attached to this form. In order to demonstrate the targeted enterprise partner’s share in the ownership, control, management responsibilities, risks and profits of the joint venture, the proposed joint venture agreement must include specific details relating to:
 - i) The contributions of capital and equipment
 - ii) Work items to be performed by the targeted enterprise partner’s own forces.
 - iii) Work items to be performed under the supervision of the targeted enterprise partner.
 - iv) The commitment of management, supervisory and operative personnel employed by the targeted enterprise partner to be dedicated to the performance of the Contract.
 - 4) Copies of all written agreements between partners concerning the contract must be attached to this form including those which relate to ownership options and to restrictions/limits regarding ownership and control.
 - 5) Targeted enterprise partners must each complete an Enterprise Declaration Affidavits.

JOINT VENTURE PARTICULARS

Name : _____

Postal address : _____

Physical address : _____

Telephone : _____ Fax _____

IDENTITY OF EACH NON-TARGETED ENTERPRISE PARTNERS

Name : _____

Postal address : _____

Physical address : _____

Telephone : _____ Fax _____

Contact Person : _____

(Continue as required for further non-targeted enterprise partners)

Name : _____

Postal address : _____

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Physical address : _____
 Telephone : _____ Fax _____
 Contact Person : _____

IDENTITY OF EACH TARGETED ENTERPRISE PARTNER

Name : _____
 Postal address : _____
 Physical address : _____
 Telephone : _____ Fax _____
 Contact Person : _____

Name : _____
 Postal address : _____
 Physical address : _____
 Telephone : _____ Fax _____
 Contact Person : _____

Name : _____
 Postal address : _____
 Physical address : _____
 Telephone : _____ Fax _____
 Contact Person : _____

DESCRIPTION OF THE ROLE OF THE TARGETED PARTNERS IN THE JOINT VENTURE

OWNERSHIP OF THE JOINT VENTURE

a) Percentage Ownership in respect of	:	Targeted Enterprises	%	Targeted Enterprises	%
b) Profit and Loss Sharing	:	Targeted Enterprises	%	Targeted Enterprises	%
c) Initial Capital Contribution	:	Targeted Enterprises	R	Targeted Enterprises	R
d) Ongoing Capital Contribution	:	Targeted Enterprises	R	Targeted Enterprises	R
e) Major Plant and Equipment Contribution	:	Targeted Enterprises		Targeted Enterprises	

RECENT CONTRACTS EXECUTED BY PARTNERS IN THEIR OWN RIGHT OR AS PARTNERS IN OTHER JOINT VENTURES

Targeted Enterprise Partners

1. : _____

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- 2. : _____
- 3. : _____
- 4. : _____
- 5. : _____

Non-Targeted Enterprise Partners

- 1. : _____
- 2. : _____
- 3. : _____
- 4. : _____
- 5. : _____

CONTROL AND PARTICIPATION IN THE JOINT VENTURE

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

Function	Targeted Enterprise Partner		Non-Targeted Enterprise	
	Enterprise	Name of Person	Enterprise	Name of Person
Cheque Signing				
Authority to enter into contracts on behalf of the Joint Venture				
Signing, co-signing and/or collateralizing of loans				
Acquisition of lines of credit				
Acquisition of performance bonds				
Negotiating and signing labour agreements				

MANAGEMENT OF CONTRACT PERFORMANCE

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

Function	Targeted Enterprise Partner		Non-Targeted Enterprise	
	Enterprise	Name of Person	Enterprise	Name of Person
Supervision of field operations				
Major purchasing				
Estimating				
Technical management				

MANAGEMENT AND CONTROL OF JOINT VENTURE

- a) Managing Partner : _____
- b) What authority does each partner have to commit or obligate the other to financial institutions, insurance companies, suppliers, subcontractors and /or other parties participating in the execution of the contemplated works?

Partner	Targeted Enterprise Status		Authority Status	
	YES	NO	YES	NO

PERSONNEL

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

TRADE/FUNCTION/	Total Qty Required	Qty supplied by Targeted Enterprise	Qty supplied by non-Targeted Enterprise

- b) Name of individual who will be responsible for hiring Joint Venture employees : _____
- c) Name of individual who will be responsible for preparation of Joint venture payrolls : _____

CONTROL AND STRUCTURE OF THE JOINT VENTURE

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

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

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

Signature : _____
Name : _____
Duly authorised to sign on behalf of : _____
Address : _____
Telephone : _____
Fax : _____
Date : _____

CREIGHTON BULK WATER SUPPLY SCHEME

CONTRACT No. HGDM 813/HGDM/2023

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

PART T2.2: RETURNABLE DOCUMENTS THAT WILL BE INCORPORATED INTO THE CONTRACT

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FORM R:	Record of Addenda to Tender Documents	RD57
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FORM Y:	Supply Chain Management Policy	RD67

FORM P: Schedule of Construction Plant & Equipment

The following are lists of major Construction Plant and Equipment that I / We presently own or Lease and will have available for this contract if my / our tender is accepted. Tenderer shall submit a certificate of ownership / title / registration document to prove ownership.

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

DESCRIPTION (<i>type, size, capacity etc</i>)	QUANTITY	YEAR OF MANUFACTURE

Attach additional pages if more space is required

(b) **Details of major Plant & Equipment that will be hired, or acquired for this contract if my / our tender is accepted**

DESCRIPTION (<i>type, size, capacity etc</i>)	QUANTITY	HOW ACQUIRED	
		HIRE/BUY	SOURCE

Attach additional pages if more space is required

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

DATE:

FORM Q: Schedule of Proposed Sub-Contractors

I/We hereby notify you that it is my/our intention to employ the following Sub-Contractors for work in this contract.

NAMES AND ADDRESSES OF PROPOSED SUBCONTRACTORS	NATURE AND EXTENT OF WORK TO BE SUBCONTRACTED	PREVIOUS EXPERIENCE WITH SUBCONTRACTOR OR RECENT WORK EXECUTED BY THE SUB-CONTRACTOR

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

DATE:

FORM R: Record of Addenda to Tender Documents

We confirm that the following communications received from the Engineer 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		
9		
10		

Attach additional pages if more space is required.

Signed: Date:

Name: Position:

SIGNATURE: DATE:
(of person authorised to sign on behalf of the Tenderer)

FORM S: Key Personnel

Tenderers shall provide details of the Site Agent(s) and General Foreman’s experience in work of a similar nature to that for which their tender is submitted.

Failure to complete this schedule may result in the tender not being considered.

a. Contracts Manager

CONTRACTS MANAGER	NAME:.....			
CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	VALUE OF WORK	YEAR COMPLETED

b. Site Agent

SITE AGENT	NAME:.....			
CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	VALUE OF WORK	YEAR COMPLETED

c. Foreman

GENERAL FOREMAN	NAME:.....			
CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	VALUE OF WORK	YEAR COMPLETED

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

DATE:

Tenderers to attach CV of the following proposed site staff:

- 1. Site Agent**
- 2. Foreman**
- 3. Contracts Manager**

FORM T: Rates for Special Materials

Each material dealt with as a special material in terms of Clause 4 of the Contract Price Adjustment Schedule of the Conditions of Contract is stated in the list below. The rates and prices for the special materials shall be furnished by the Tenderer, which rates and prices shall not include VAT but shall include all other obligatory taxes and levies.

SPECIAL MATERIAL	UNIT*	Rate or Price for the Base Month

Indicate whether the material will be delivered in bulk or in containers.

Notes to Tenderer:

When called upon to do so, the tenderer shall substantiate the above rates or prices with acceptable documentary evidence.

Signed: Date:

Name: Position:

SIGNATURE: **DATE:**
(of person authorised to sign on behalf of the Tenderer)

FORM U: Contractor's Health and Safety Declaration

In terms of Clause 4(4) of the OHS Act 1993 Construction Regulations 2003 (referred to as "the Regulations" hereafter), a Contractor may only be appointed to perform construction work if the Employer is satisfied that the Contractor has the necessary competencies and resources to carry out the work safely in accordance with the Occupational Health and Safety Act No 85 of 1993 and the OHS Act 1993 Construction Regulations 2003.

To that effect a person duly authorised by the tenderer must complete and sign the declaration hereafter in detail.

Declaration by Tenderer

1. I the undersigned hereby declare and confirm that I am fully conversant with the Occupational Health and Safety Act No 85 of 1993 (as amended by the Occupational Health and Safety Amendment Act No 181 of 1993), and the OHS Act 1993 Construction Regulations 2003.
2. I hereby declare that my company / enterprise has the competence and the necessary resources to safely carry out the construction work under this contract in compliance with the Construction Regulations and the Employer's Health and Safety Specifications.
3. I hereby undertake, if my tender is accepted, to provide a sufficiently documented Health and Safety Plan in accordance with Regulation 5(1) of the Construction Regulations, approved by the Employer or his representative, before I will be allowed to commence with construction work under the contract. I hereby agree that my company/enterprise will not have a claim for compensation for delay or extension of time because of my failure to obtain the necessary approval for the said safety plan.
4. I confirm that copies of my company's approved Health and Safety Plan, the Employer's Safety Specifications as well as the OHS Act 1993 Construction Regulations 2003 will be provided on site and will at all times be available for inspection by the Contractor's personnel, the Employer's personnel, the Engineer, visitors, and officials and inspectors of the Department of Labour.
5. I hereby confirm that adequate provision has been made in my tendered rates and prices in the bill of quantities to cover the cost of all resources, actions, training and all health and safety measures envisaged in the OHS Act 1993 Construction Regulations 2003, including the cost for specific items that may be scheduled in the bill of quantities.
6. I hereby confirm that I will be liable for any penalties that may be applied by the Employer in terms of the said Regulations for failure on my part to comply with the provisions of the Act and the Regulations as set out in Regulation 30 of the Regulations.
7. I agree that my failure to complete and execute this declaration to the satisfaction of the Employer will mean that I am unable to comply with the requirements of the OHS Act 1993 Construction Regulations 2003, and accept that my tender will be prejudiced and may be rejected at the discretion of the Employer.
8. I am aware of the fact that, should I be awarded the contract, I must submit the notification required in terms of Regulation 3 of the OHS Act 1993 Construction Regulations 2003 (*example attached hereafter*) before I will be allowed to proceed with any work under the contract.

SIGNATURE: DATE:
(of person authorised to sign on behalf of the Tenderer)

PRO FORMA NOTIFICATION FORM IN TERMS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT 1993 , CONSTRUCTION REGULATIONS 2003

[In terms of Regulation 3 of the Construction Regulations 2003, the successful Tenderer must complete and forward this form prior to commencement of work to the office of the Department of Labour.]

1. (a) Name and postal address of Contractor:
- (b) Name of Contractor's contact person:
Telephone number:
2. Contractor's compensation registration number:
3. (a) Name and postal address of client:
- (b) Name of client's contact person or agent:
Telephone number
4. (a) Name and postal address of designer(s) for the project:
- (b) Name of designer's contact person:
Telephone number
5. Name of Contractor's construction supervisor on site appointed in terms of Regulation 6(1):
Telephone number:
6. Name/s of Contractor's sub-ordinate supervisors on site appointed in terms of regulation 6(2).
.....
7. Exact physical address of the construction site or site office:
8. Nature of the construction work:
9. Expected commencement date:
10. Expected completion date:
11. Estimated maximum number of persons on the construction site:
12. Planned number of subcontractors on the construction site accountable to Contractor:
13. Name(s) of subcontractors already chosen:

SIGNED BY:

CONTRACTOR:..... DATE:.....

CLIENT:..... DATE:.....

HARRY GWALA DISTRICT MUNICIPALITY

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

CONTRACT HGDM 813/HGDM/2023

FORM V: UIF Registration Certificate

Tenderers to attach copy of UIF Registration Certificate

FORM W: Certificate of Municipal Services

Information required in terms of the Harry Gwala District Municipality’s Supply Chain Management Policy. Latest municipal services account statement must be attached.

Tender Number: HGDM813/HGDM/2023
Name of the Tenderer: _____

FURTHER DETAILS OF THE BIDDER/S: Proprietor / Director(s) / Partners, etc:

Physical Business address of the Bidder	Municipal Account Number(s)

If there is not enough space for all the names, please attach the additional details to the Tender document.

Name of Director / Member / Partner	Identity Number	Physical residential address of Director / Member / Partner	Municipal Account number(s)

I, _____, **the undersigned,**
(full name in block letters)

certify that the information furnished on this declaration form is correct and that I/we have no undisputed commitments for municipal services towards a municipality or other service provider in respect of which payment is overdue for more than 30 days.

 Signature

THUS DONE AND SIGNED for and on behalf of the Bidder / Contractor

at _____ on the _____ day of _____ 2023

HARRY GWALA DISTRICT MUNICIPALITY

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Please note:

Even if the requested information is not applicable to the Bidder, the table above should be endorsed **NOT APPLICABLE** and **THIS DECLARATION MUST STILL BE SIGNED**.

MUNICIPAL SERVICES STATEMENT

Tenderers are to attach the latest statement (not more than 3 months old) from the municipality where the Tenderer receives municipal services

FORM X: Quality Management System (Quality Assurance Plan & Control Procedures)

Tenderer must submit proof of quality management system that they use in the conduct of their business . and construction processes.

Certified Quality Management System

Please attach ISO 9001 certificate by a certifying body e.g., South African National Standards or other recognised certifying bodies.

OR

Internal / Own Quality Management System

Attach an abridged version / summary version of own quality document.

Signed: Date:

Name: Position:

SIGNATURE: DATE:
(of person authorised to sign on behalf of the Tenderer)

FORM Y: Supply Chain Management Policy

56. SUBCONTRACTING AS CONDITION OF TENDER

- 9.(1) If feasible to subcontract for a contract above R30 million, an organ of state must apply subcontracting to advance designated groups.
- (2) If an organ of state applies subcontracting as contemplated in sub regulation (1), the organ of state must advertise the tender with a specific tendering condition that the successful tenderer must subcontract a minimum of threshold of the value of the contract as follows:
- If a tender exceeding R5 million(VAT Incl.) is awarded to a big contractor as determined by the complexity of the project, 10% would be allocated to local black emerging contractors with preference being given to entities which are 51% owned by youth, women, people living with disabilities or co-operatives. A minimum of one subcontractor being appointed.
 - If a tender exceeding R10 million(VAT Incl.) is awarded to a big contractor as determined by the complexity of the project, 15% would be allocated to local black emerging contractors with preference being given to entities which are 51% owned by youth, women, people living with disabilities or co-operatives. A minimum of one subcontractor being appointed.
 - If a tender exceeding R20 million(VAT Incl.) is awarded to a big contractor as determined by the complexity of the project, 20% would be allocated to local black emerging contractors with preference being given to entities which are 51% owned by youth, women, people living with disabilities or co-operatives. A minimum of two subcontractors being appointed.
 - If a tender exceeding R30 million(VAT Incl.) is awarded to a big contractor as determined by the complexity of the project, 30% would be allocated to local black emerging contractors which is 51% owned by youth, women, people living with disabilities or co-operatives. A minimum of three subcontractors being appointed.

The subcontracting will only cater for local businesses who will be appointed by the Main contractor on a rotational basis from a roster to be maintained by the municipality per local area.

57. APPROVAL AND IMPLEMENTATION OF POLICY

This policy shall be implemented as approved by council and effective from 01 July.

CREIGHTON BULK WATER SUPPLY SCHEME

CONTRACT HGDM 813/HGDM/2023

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

PART C1: AGREEMENTS AND CONTRACT DATA

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PART C1: AGREEMENTS AND CONTRACT DATA

C1.1 Form of Offer and Acceptance A: Offer

The Employer, identified in the Acceptance signature block, has solicited offers to enter into a Contract for the procurement of:

CONTRACT HGDM 813/HGDM/2023

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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 apart 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 PRICE INCLUSIVE OF VALUE ADDED TAX (VAT) 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:

Name: (*in capitals*).....

Capacity:

Name of Tenderer (organisation):

Address:
.....
.....

Tel: **Fax:**

Witness:

Signature: **Name:**

Date: **CIDB Registration N°:**.....

B: 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 C1 to C4 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 fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this agreement.

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

Signature:

Name: (*in capitals*).....

Capacity:

Name of Employer (*organisation*):

Address:
.....

Witness:

Signature: **Name:**

Date:

C: 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.

Subject _____
Details _____

Subject _____
Details _____

Subject _____
Details _____

Subject _____
Details _____

Subject _____
Details _____

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

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

FOR THE TENDERER:

Signature:

Name:

Capacity:

Tenderer: *(Name and address of organisation)*.....

.....

Witness :

Signature:

Name:

Date:

FOR THE EMPLOYER

Signature:

Name:

Capacity:

Employer: *(Name and address of organisation)*.....

.....

Witness :

Signature:

Name:

Date:

D: Confirmation of Receipt

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

The(day)

of(month)

20.....(year)

at(place)

For the Contractor:

.....
Signature

.....
Name

.....
Capacity

Signature and Name of Witness:

.....
Signature

.....
Name

PART C1.2 CONTRACT DATA

C1.2.1 General Conditions of Contract

The General Conditions of Contract for Construction Works (3RD Edition 2015) published by the South African Institution of Civil Engineering, Private Bag X200, Halfway House, 1685 is applicable to this contract.

Copies of these conditions of contract may be obtained from the South African Institution of Civil Engineering (Tel 011- 805 5947, Fax: 011 – 805 5971).

The Contract Data referred to in the General Conditions of Contract follow, with the Data to be completed Employer furnished. The Tenderer is to provide his details in the spaces provided.

C1.2.2 Contract Data Provided by Employer

	GCC 2015 Clause	
Defects Liability Period	1.1.1.13	12 months
Name of Employer	1.1.1.15	Harry Gwala District Municipality
Address of Employer	1.2.1.2	40 main Street, Ixopo, 3276 Harry Gwala District Municipality P O Box X501 IXOPO 3276 Email address: BiyaseNk@harrygwalam.gov.za Tel N°: +27 39 834 8700 Fax N°: +27 39 834 2259
Name of Engineer	1.1.1.16	Zimile Consulting Engineers
Address of the Engineer	1.2.1.2	Zimile Consulting Engineers 76 Hope Street Kokstad 4700 Email : innocent@zimile.co.za Tel : 039 940 6729
Pricing Strategy	1.1.1.26	Re-measurement Contract
Subcontracting	4.4.7	Add the following new Clause: The contractor will be required to subcontract up to a maximum of 30% of the work to local subcontractors. The work to be subcontracted will be agreed upon with the Employer
Documentation Required Before Commencement of Construction Works	5.3.1	Health and Safety File (Refer to Clause 4.3) Initial Programme (Refer to Clause 5.6) Security (Refer to Clause 6.2) Insurances (Refer to Clause 8.6)
Time to Submit the Documentation Before Commencement with the Works	5.3.2	14 days after the commencement date
Non-working Days	5.8.1	Sundays
Special Non-working days	5.8.1	1. Public Holidays

	GCC 2015 Clause	
		2. The year-end break commencing on the first day, working day, after 15 December and ending on the first Tuesday after 5 January of the next year
Penalty for Failing to Complete the Works	5.13.1	(0.0005 x contract value) per calendar day
The Latent Defect Period	5.16.3	10 years
Contract Price Adjustment Schedule	6.8.2	x = 0,15 a = 0,20 b = 0,20 c = 0,50 d = 0,10 'L' shall be the "Weighted Average" index, P0141, Table A 'F' shall be the "Fuel (Diesel)" index given in P0142.1 Table 12 for KwaZulu Natal
Area for Producer Price Index		Pietermaritzburg
Base Month		Month before closing date of Tenders
Price Adjustments for Special Materials	6.8.3	Price adjustments for variations in the costs special materials are allowed
The Percentage Advance on Materials not yet Built into the Permanent Works	6.10.1.5	80% (subject to provision of Indemnity for Materials on Site)
Limit of Retention Money	6.10.3	10% of Contract Sum
Value of Plant and Material Supplied by Employer to be included in the insurance sum	8.6.1.1.2	Nil
Amount to cover professional fees for repairing damage and loss	8.6.1.1.3	14% of cost required to reinstate damaged Works
Limit of Indemnity for Liability Insurance	8.6.1.3	R10, 000, 000.00 for each and every claim
Dispute Resolution	10.5.1	Standing Adjudication Board
Number of Adjudication Board Members to be Appointed	10.5.3	One
Dispute Determination	10.7.1	Dispute Determination shall be by Arbitration

SIGNATURE OF TENDERER:

DATE:

C1.2.3 Data Provided by the Contractor

	GCC 2015 Clause																			
Name of Contractor	1.1.1.9																		
Address of Contractor (Physical and Postal)	1.2.1.2																		
Tel:																			
Fax:																			
Email:																			
Time for Achieving Practical Completion:	1.1.1.14 Weeks																		
Security to be Provided by Contractor	6.2.1	Refer to Table Below																		
<table border="1"> <thead> <tr> <th>Type of Security</th> <th>Contractor's Choice (Indicate "YES" or "NO")</th> </tr> </thead> <tbody> <tr> <td><i>Is Value Added Tax included in the Contract Sum and value of Works for calculating percentages?</i></td> <td></td> </tr> <tr> <td>Cash deposit of% of the Contract Sum</td> <td></td> </tr> <tr> <td>Performance Guarantee of% of the Contract Sum</td> <td></td> </tr> <tr> <td>Retention of% of the value of Works</td> <td></td> </tr> <tr> <td>Cash Deposit of% of the Contract Sum plus Retention of% of the value of Works</td> <td></td> </tr> <tr> <td>Performance Guarantee of% of the Contract Sum plus Retention of% of the value of Works</td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table>			Type of Security	Contractor's Choice (Indicate "YES" or "NO")	<i>Is Value Added Tax included in the Contract Sum and value of Works for calculating percentages?</i>		Cash deposit of% of the Contract Sum		Performance Guarantee of% of the Contract Sum		Retention of% of the value of Works		Cash Deposit of% of the Contract Sum plus Retention of% of the value of Works		Performance Guarantee of% of the Contract Sum plus Retention of% of the value of Works					
Type of Security	Contractor's Choice (Indicate "YES" or "NO")																			
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Retention of% of the value of Works																				
Cash Deposit of% of the Contract Sum plus Retention of% of the value of Works																				
Performance Guarantee of% of the Contract Sum plus Retention of% of the value of Works																				
Price variation of special materials*	6.8.3																		

Type of Special Material	Unit	Rate or Price*
Rate or price for base month of*	6.8.2

Tenderers are to note that failure to provide a time for completion of the contract will invalidate the tender offer.

* **Delete inapplicable**

Signature:

Name of Signatory:

Date:

Name of Tenderer

C1.3: PERFORMANCE GUARANTEE

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

GUARANTOR DETAILS AND DEFINITIONS

“Guarantor“ means:

Physical Address:

“Employer” means:

“Contractor” means:

“Engineer” means:

“Works” means:

“Site” means:

“Contract” means: The agreement made in terms of the Form of Offer and Acceptance and such amendments or additions to the Contract as may be agreed in writing between the parties.

“Contract Sum” means: The accepted amount inclusive of tax of R
Amount in words:

“Expiry Date” means:

CONTRACT DETAILS

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

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 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 receipt of a first written demand from the Employer to the Guarantor at the Guarantor's physical address calling up this Performance Guarantee, such demand stating that:
 - 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 terms of 1.
7. Where the Guarantor has made payment in terms of 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 Guarantor in terms of 4 or shall be made within seven (7) calendar days upon receipt of the first written demand to the Guarantor.
9. Payment of 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 his 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 service 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. The original of this Guarantee shall be returned to 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 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 1994, 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)

C1.4: DISCLOSURE STATEMENT

(Date).....

Contract: (Name).....

Contractor: (Name).....

Employer: (Name).....

Engineer: (Name).....

Dear Sirs,

I am willing and available to serve as (ad-hoc/standing) Adjudication Board Member in the above mentioned Contract.

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

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

Should there be any deviation from the foregoing statements, details shall be given hereunder.

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

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

Name in full:

Signature:

C1.5: AGREEMENT IN TERMS OF SECTION 37(2) OF THE OCCUPATIONAL HEALTH AND SAFETY ACT No 85 OF 1993

THIS AGREEMENT is made between **HARRY GWALA DISTRICT MUNICIPALITY** (hereinafter called the EMPLOYER) of the one part, herein represented by:

.....

in his capacity as:

AND:

(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 Mandatory of the EMPLOYER in consequence of an agreement between the CONTRACTOR and the EMPLOYER in respect of

CONTRACT No: (CONTRACT TITLE)

..... 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 OHS Act 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 adhered to by the 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.

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

CONTRACT HGDM 813/HGDM/2023

- 4. The CONTRACTOR agrees that any duly authorized officials of the EMPLOYER shall be entitled, although not obliged, 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 investigation, complaint or criminal charge which may arise as a consequence of the provisions of the ACT and Regulations, pursuant to work performed in terms of this agreement, and shall, on written demand, provide full details in writing of such investigation, complaint 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.....

SIGNATURE:

NAME AND SURNAME:

CAPACITY:

WITNESSES: 1.

2.

C1.6: ADJUDICATION BOARD MEMBER AGREEMENT

This Agreement is entered into between:

Adjudication Board Member: *(Name, physical address, postal address, email address, fax number, telephone number and mobile number)*.....
.....
.....

Contractor: *(Name, physical address, postal address, email address, fax number, telephone number and mobile number)*.....
.....
.....

Employer: *(Name, physical address, postal address, email address, fax number, telephone, number and mobile number)*.....
.....
.....

The contractor and the Employer will hereinafter be collectively referred to as “the Parties”.

The Parties entered into a Contract for
(name of project) which provides that a dispute under or in connection with the General Conditions of Contract for Construction Works, Second Edition, 2010,must be referred to *(ad-hoc adjudication/ standing adjudication**)*.

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

1. The Adjudication Board Member accepts to perform his duties in accordance with the terms of the Contract, the General Conditions of Contract for Construction Works Adjudication Board Rules and this Agreement.
2. The Adjudicator undertakes to remain independent and impartial of the Contractor, Employer and Engineer for the duration of the Adjudication Board proceedings.
3. The Adjudication Board Member agrees to serve for the duration of the Adjudication Board proceedings.
4. The Parties may at any time, without cause and with immediate effect, jointly terminate this Agreement.

5. Unless the Parties agree, the Adjudication Board Member shall not act as arbitrator or representative of either Party in any subsequent proceedings between the Parties under the Contract. No Party may call the Adjudication Board Member as a witness in any such subsequent proceedings.
6. The standing Adjudication Board’s duties shall end upon the Adjudication Board Member(s) receiving notice from the Parties of their joint decision to disband the Adjudication Board.
7. The Adjudication Board Member shall be paid in respect of time spent upon or in connection with the adjudication including time spent travelling:
 - a. A monthly retainer of R.....(*amount*) for(*number*) of months, and /or
 - b. A daily fee of R.....(*amount*) based on a(*number*) hour day, and /or
 - c. A hourly fee of R.....(*amount*), and /or
 - d. A non- recurrent appointment fee of R.....(*amount*) which shall be accounted for in the final sums payable.
8. The Adjudication Board Member’s expenses incurred in adjudication work shall be reimbursed at cost.

Upon submission of an invoice for fees and expenses to the Parties, the (*Contractor/ Employer***) shall pay the full amount within 28 days of receipt of the invoice and he shall be reimbursed by the other party by half the amount so that the fees and expenses are borne equally by the Parties. Late payment of such invoice shall attract the interest at prime plus 3% points compounded monthly at the prime rate changed by the Adjudication Board Member’s bank.

This Agreement is entered into by:

Contractor's Signature :

Contractor's name :

Place :

Date :

Employer's signature :

Employer's name :

Place :

Date :

Adjudication Board Member's signature :

Adjudication Board Member's name :

Place :

Date :

CREIGHTON BULK WATER SUPPLY SCHEME

CONTRACT No. HGDM 813/HGDM/2023

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

PART C2: PRICING DATA

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PART C2: PRICING DATA

C2.1 Pricing Instructions

- 1 The Conditions of Contract, the Contract Data, the Specifications (including the Project Specifications) and the Drawings shall be read in conjunction with the Bill of Quantities.
- 2 The Bill comprises items covering the Contractor's profit and costs of general liabilities and of the construction of Temporary and Permanent Works.

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

- 3 Descriptions in the Bill of Quantities are abbreviated and may differ from those in the Standardized and Project Specifications. No consideration will be given to any claim by the Contractor submitted on such a basis. The Bill has been drawn up generally in accordance with the latest issue of Civil Engineering Quantities. Should any requirement of the measurement and payment clause of the appropriate Standardized or Project Specification(s) be contrary to the terms of the Bill or, when relevant, to the Civil Engineering Quantities, the requirement of the appropriate Standardized, Project, or Particular Specification as the case may be, shall prevail
- 4 Unless stated to the contrary, items are measured net in accordance with the Drawings without any allowance having been made for waste.
- 5 The amounts and rates to be inserted in the Bill of Quantities shall be the full inclusive amounts to the Employer for the work described under the several items. Such amounts shall cover all the costs and expenses that may be required in and for the construction of the work described, and shall cover the costs of all general risks, profits, taxes (but excluding value-added tax), liabilities and obligations set forth or implied in the documents on which the Tender is based.
- 6 An amount or rate shall be entered against each item in the Bill of Quantities, whether or not quantities are stated. An item against which no amount or rate is entered will be considered to be covered by the other amounts or rates in the Bill.

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

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

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

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

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

8 PROVISIONAL SUM

Where Provisional sums or Prime Cost sums are provided for items in the Bill of Quantities, payments for the Work done under such items will be made accordance with Clause 6.6 of **GCC 2015 (3rd Edition) of the General Condition of Contract**. The Employer reserves the right, during the execution of the works, to adjust the stated amounts upwards or downwards according to the work actually done under the item, or the item may be omitted altogether, without affecting the validity of the Contract, such approval shall be granted by the Executive Director Infrastructure Services as delegated by the Accounting Officer.

The Tenderer shall not under any circumstances whatsoever delete or amend any of the sums inserted in the "Amount" column of the Bill of Quantities and in the Summary of the Bill of Quantities unless ordered or authorized in writing by the Employer before closure of tenders. Unauthorized changes made by the Tenderer to provisional items in the Bill of Quantities, or to the stated provisional percentages and sums in the Summary of the Bill of Quantities, will not be permissible.

9 CONTINGENCY

The sum provided under contingency in the Bill of Quantities is under the sole control of the Employer and may be deducted in whole or in part and shall only be expended by order of the Employer as Variation Order. The use of contingency shall be upon approval by the Executive Director Infrastructure Services as delegated by the Accounting Officer.

Director Infrastructure Services as delegated by the Accounting Officer.

10 PAYMENT FOR THE LABOUR-INTENSIVE COMPONENT OF THE WORKS

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

Where minimum labour intensity is specified in the design, the contractor is expected to use their initiative to identify additional activities that can be done labour-intensively in order to comply with the set minimum labour intensity targets.

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

11. Linkage of Payment for Labour-Intensive Component of Works to Submission of Project Data

The Contractor's payment invoices shall be accompanied by labour information for the corresponding period in a format specified by the employer. If the contractor chooses to delay submitting payment invoices, labour returns shall still be submitted as per frequency and timeframes stipulated by the Employer. The contractor's invoices shall not be paid until all pending labour information has been submitted. The client may institute a penalty relating to outstanding labour information.

The following information shall be maintained on site and submitted in electronic/hard copy formats:

- Certified ID copies of all locally employed labour
- Signed Contracts between the employer and the EPWP Participants
- Attendance Registers for the EPWP Participants
- Proof of Payment of EPWP Employees
- Monthly Reporting Template as per EPWP requirements

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

mm	=	millimetre
m	=	metre
km	=	kilometre
km-pass	=	kilometre-pass
m ²	=	square metre
m ² -pass	=	square metre-pass
ha	=	hectare
m ³	=	cubic metre
m ³ -km	=	cubic metre-kilometre
kW	=	kilowatt
kN	=	kilonewton
kg	=	kilogram
t	=	ton (1 000 kg)
%	=	per cent
MN	=	meganewton
MN-m	=	meganewton-metre
PC Sum	=	Prime Cost Sum
Prov Sum	=	Provisional Sum
No.	=	number

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

Unit : The unit of measurement for each item of work as defined in the Standardized, Project or Particular Specifications

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

HARRY GWALA DISTRICT MUNICIPALITY

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

CONTRACT No. HGDM 813/HGDM/2023

C2.2 Schedule of Quantities

HARRY GWALA DISTRICT MUNICIPALITY
 CREIGHTON BULK WATER SUPPLY SCHEME

CONTRACT NUMBER: HGDM HGDM 813/HGDM/2023

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND
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SCHEDULE OF QUANTITIES

SUMMARY OF BILL OF QUANTITIES		
SECTION	DESCRIPTION	AMOUNT
1.1	Schedule 1.1: General.....	
1.2	Schedule 1.2: Provisional Sum and Dayworks.....	
2	Pipelines.....	
2.1	Schedule 2.1 - Site Clearance.....	
2.2	Schedule 2.2 - Earthworks (Pipe Trenches).....	
2.3	Schedule 2.3 - Bedding (Pipes).....	
2.4	Schedule 2.4 - Pipelines.....	
3	River Intake and Pump House	
3.1	Schedule 3.1 -River Intake Chamber.....	
3.2	Schedule 3.1 - River Intake Sump.....	
3.3	Schedule 3.1 - Pump House.....	
4.0	Abstraction and Pumpstation M&E	
4.1	Schedule 4.1: Abstraction Works M&E.....	
4.2	Schedule 4.2: Raw Water HL Pumps M&E.....	
4.3	Schedule 4.3: Raw Water HL Pumps M&E Centerton.....	
5.0	Micellaneous	
6	SUB TOTAL	
7	ADD 10% CONTINGENCIES OF SUB TOTAL	
8	TOTAL CONSTRUCTION COST	
9	VALUE ADDED TAX AT 15%	
10	BID PRICE CARRIED FORWARD TO FORM OF OFFER AND ACCEPTANCE	

HARRY GWALA DISTRICT MUNICIPALITY
 CREIGHTON BULK WATER SUPPLY SCHEME

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SCHEDULE OF QUANTITIES

SECTION 1.1: GENERAL

ITEM NO	LI	PAYMENT REFERS	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SANS	SCHEDULE 1.1: GENERAL				
			SCHEDULED FIXED-CHARGE AND VALUE-RELATED ITEMS				
1,1 - 1			Contractual Requirements	Sum	1		
			Establishment of Facilities on the Site:				
			Facilities for Employer's Agent:				
1,1 - 2			(a) Furnished Offices	Sum	1		
1,1 - 3			(b) Provision of cellular phone (Iphone 14)	Sum	2		
1,1 - 4			(c) Provision of name boards	No	2		
1,1 - 5			(d) Provision of survey equipment	Sum	1		
1,1 - 6			(e) Provision of a digital camera	Sum	1		
1,1 - 7			(f) Provision of i7 laptop complete with printer, modem with 4G connection	Sum	2		
			Facilities for Contractor:				
1,1 - 8		8.3.2.2 (a)	(a) Offices and storage sheds.	Sum	1		
1,1 - 9		8.3.2.2 (b)	(b) Workshops.	Sum	1		
1,1 - 10		8.3.2.2 (c)	(c) Laboratories.	Sum	1		
1,1 - 11		8.3.2.2 (e)	(e) Ablution and latrine facilities.	Sum	1		
1,1 - 12		8.3.2.2 (f)	(f) Tools and equipment.	Sum	1		
1,1 - 13		PSA 8.3.2.2 (g)	(g) Water supplies, electric power and communication.	Sum	1		
1,1 - 14		8.3.2.2 (h)	(h) Dealing with water as per clause 5.5	Sum	1		
1,1 - 15		8.3.2.2 (i)	(i) Access as per clause 5.8	Sum	1		
1,1 - 16		8.3.2.2 (j)	(j) Plant.	Sum	1		
1,1 - 17		8.3.3	Other fixed-charge obligations. (To be specified)	Sum	1		
1,1 - 18		PSA 8.3.3.1	Issuing of notices to consumers	Sum	1		
1,1 - 19			i) General Safety obligations (incl. provision of personal protective equipment)	Sum	1		
1,1 - 20			ii) Health and Safety plan/file including health and safety training.	Sum	1		
1,1 - 21			iii) Fulfill legislated and/or specified requirements for blasting (incl. submission of plans).	Sum	1		
1,1 - 22		PSA 8.3.5.3	Environmental Management Plan Obligations	Sum	1		
1,1 - 23		8.3.4	Remove Contractor's Site Establishment.	Sum	1		
		8.4	SCHEDULED TIME-RELATED ITEMS				
1,1 - 24		8.4.1	Contractual Requirements.	Month	12		
1,1 - 25		PSA 8.4.2	Operate and maintain facilities on the site, for duration of construction, except where otherwise stated	Month	12		
SUB - TOTAL CARRIED FORWARD							

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SCHEDULE OF QUANTITIES

SECTION 1.1: GENERAL

SUB - TOTAL BROUGHT FORWARD						
	PSA 8.4.2.1	Facilities for the Employer's Agent:				
1,1 - 26	PSA 8.4.2.1 (a)	(a) Furnished Offices with covered carport	Month	12		
1,1 - 27	PSA 8.4.2.1 (b)	(b) Provision of cellular phone	Sum	12	R 1 000.00	R 12 000.00
1,1 - 28	PSA 8.4.2.1 (c)	(c) Provision of name board	Month	12		
1,1 - 29	PSA 8.4.2.1 (d)	(d) Provision of survey equipment	Month	12		
1,1 - 30	PSA 8.4.2.1 (e)	(e) Provision of camera	Month	12		
1,1 - 31	PSA 8.4.2.1 (f)	(f) Provision of laptop complete with printer, modem with 4G connection	Sum	12	R 1 200.00	R 14 400.00
	8.4.2.2	Facilities for Contractor:				
1,1 - 32	8.4.2.2 (a)	(a) Office and storage sheds.	Month	12		
1,1 - 33	8.4.2.2 (b)	(b) Workshops.	Month	12		
1,1 - 34	8.4.2.2 (c)	(c) Laboratories.	Month	12		
1,1 - 35	8.4.2.2 (e)	(e) Ablution and latrine facilities.	Month	12		
1,1 - 36	8.4.2.2 (f)	(f) Tools and equipment.	Month	12		
1,1 - 37	PSA 8.4.2.2 (g)	(g) Water supplies, electric power and communication.	Month	12		
1,1 - 38	8.4.2.2 (h)	(h) Dealing with water (Sub-clause 5.5)	Month	12		
1,1 - 39	8.4.2.2 (i)	(i) Access(Sub-clause 5.8)	Month	12		
1,1 - 40	8.4.2.2 (j)	(j) Plant.	Month	12		
1,1 - 41	8.4.3	Contractor's supervision for duration of construction.	Month	12		
1,1 - 42	8.4.4	Company and Head Office overhead costs for the duration of construction.	Month	12		
1,1 - 43	8.4.5	Other time related obligations.	Month	12		
	PSA 8.4.6.1	OHS Act Obligations				
1,1 - 44		i) General Safety obligations	Month	12		
1,1 - 45		ii) Health and Safety plan/file	Month	12		
1,1 - 46		(iii) Safety Officer	Month	12		
1,1 - 47	PSA 8.4.6.2	Security Services	Month	12		
1,1 - 48	PSA 8.4.6.4	Environmental Management Plan Compliance	Month	12		
1,1 - 49		Allow Provisional Sum for the procurement of Tools and Equipment as required by the Employer	Provisional Sum	1	R 80 000.00	R 80 000.00
TOTAL CARRIED FORWARD TO FINAL SUMMARY						

HARRY GWALA DISTRICT MUNICIPALITY

CREIGHTON BULK WATER SUPPLY SCHEME

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SCHEDULE OF QUANTITIES

SECTION 1.2: GENERAL

ITEM NO	LI	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SANS	<u>SCHEDULE 1.2: PROVISIONAL SUMS AND DAYWORKS</u>				
			SUMS STATED PROVISIONALLY BY THE EMPLOYERS AGENT				
1.2 - 1			Employment of a Community Liaison Officer (CLO)	Prov Sum	1	R 96 000.00	R 96 000.00
1.2 - 2			Percentage allowance on cost on item No. 1.2 - 1 for Contractor's cost and profit.	%	5%	R 4 800.00	R 4 800.00
1.2 - 3			Control tests by independent laboratory. Additional tests that may be required by the Engineer over and above normal quality control tests performed by the Contractor.	Prov Sum	1	R 100 000.00	R 100 000.00
1.2 - 4			Relocation of existing services (water mains, sewer pipes , electricity cables/poles, etc.) by Services utility	Prov Sum	1	R 50 000.00	R 50 000.00
1.2 - 5			Percentage allowance on cost on item No. 1.2 - 4 for Contractor's cost and profit.	%	5%	R 2 500.00	R 2 500.00
1.2 - 6			Additional surveys and underground service detection by nominated specialist as ordered by Engineer	Prov Sum	1	R 50 000.00	R 50 000.00
1.2 - 7	PSA 8.5.4 (b)		Percentage allowance on cost on item No. 1.2 - 6 for Contractor's cost and profit.	%	5%	R 2 500.00	R 2 500.00
1.2 - 8	PSA 8.5.5 (a)		Provide Training for targeted labour.	Prov Sum	1	R 150 000.00	R 150 000.00
1.2 - 9	PSA 8.5.5 (b)		Percentage allowance on cost on item No. 1.2 - 8 for Contractor's cost and profit.	%	5%	R 7 500.00	R 7 500.00
1.2 - 10			Allowance for the purchase of master locks (invoices to be supplied)	Prov Sum	1	R15 000.00	R 15 000.00
1.2 - 11	PSA 8.5.6 (b)		Allowance for the provision, installation and continuous operation of adequate pumping units, including piping, power, temporary platforms and any other suitable equipment necessary to ensure that areas of excavations and foundations are dewatered as required for construction purposes	Prov Sum	1	R150 000.00	R 150 000.00
1.2 - 12	PSA 8.5.6 (c)		Percentage allowance on cost on item No. 1.2 - 11 for Contractor's cost and profit.	%	5%	R 7 500.00	R 7 500.00
1.2 - 13	PSA 8.5.8 (a)		Safeguarding of excavations as required by the Engineer	Prov Sum	1	R100 000	R 100 000.00
1.2 - 14	PSA 8.5.8 (b)		Overheads, charges and profit on item 1.2 - 13 above	%	5%	R 5 000.00	R 5 000.00
1.2 - 15			Allow for geotechnical design of earthworks by a professionally registered geotechnical engineer with the engineering council of South Africa. The earth works design must include soil retention design, methodology, dewatering methodology, construction methodology including detailed construction drawings to be approved by the employers agent on the project .	Prov Sum	1	R 200 000.00	R 200 000.00
1.2 - 16			Overheads, charges and profit on item 1.2 - 14 above	%	5%	R 10 000.00	R 10 000.00
			DAY WORKS: LABOUR RATES				
1.2 - 17			(a) Semi-skilled	hr	50		
1.2 - 18			(b) Unskilled	hr	50		
1.2 - 19			(c) Construction Hand and Operator	hr	50		
1.2 - 20			(d) Carpenter	hr	50		
SUB - TOTAL BROUGHT FORWARD TO NEXT PAGE							

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SCHEDULE OF QUANTITIES

SECTION 1.2: GENERAL

SUB - TOTAL BROUGHT FORWARD FROM PREVIOUS PAGE					
1.2 - 21		(e) Clerk	hr	100	
1.2 - 22		(f) Artisans	hr	50	
1.2 - 23		(g) Foreman	hr	50	
1.2 - 24		(h) Gangers and Section Leaders	hr	50	
1.2 - 25		(i) Steel fixer	hr	50	
1.2 - 26		(j) Bricklayer or Plasterer	hr	50	
1.2 - 27		(k) Welder	hr	50	
		PLANTHIRE (WORK RATES ON SITE)			
1.2 - 28		a) Excavator 20 ton	hr	24	
1.2 - 29		b) Loader 12 ton	hr	24	
1.2 - 30		c) Tipper truck 10 m ³	hr	50	
1.2 - 31		d) Water tanker	hr	50	
1.2 - 32		e) TLB	hr	50	
1.2 - 33		f) Rollers	hr	50	
1.2 - 34		g) Generator	hr	150	
1.2 - 35		h) Up to 6KVA Generator	Daywk	1	Rate Only
		i) 5 - 10 T Crane truck c/w 10-20T mobile crane	hours	1	Rate Only
		TRANSPORT COST (TO AND FROM SITE)			
		<u>Note:</u>			
		Distance shall be measured one way only (tender rates shall include for transport in both directions to and from site)			
		<u>Low bed</u>			
1.2 - 36		a) Low-bed (suitable for the largest piece of equipment above)	km	50	
		<u>Tipper truck</u>			
1.2 - 37		(a) Small	km	50	
1.2 - 38		(b) Medium	km	50	
		<u>Flatbed truck</u>			
1.2 - 39		(a) Small	km	50	
1.2 - 40		(b) Medium	km	50	
		<u>Water tanker</u>			
1.2 - 41		(a) Small	km	50	
1.2 - 42		(b) Medium	km	50	
1.2 - 43		(c) Large	km	50	
		MATERIALS FOR DAYWORKS			
1.2 - 44		(a) Materials used in the execution of dayworks	Prov Sum	1	R80 000.00
1.2 - 45		(b) Overheads, charges and profit on above	%	5%	R 4 000.00
		8.8 TEMPORARY WORKS			
1.2 - 46	8.8.2	Dealing with traffic (or accomodation of traffic) during construction	Sum	1	60 000.00
1.2 - 47	PSA 8.8.4 (c)	Excavate and backfill by hand in soft material to expose existing services - only on approval of Employer's Agent.	m ³	50	
1.2 - 48	PSA 8.8.4 (d)	Temporary Protection of existing services	Sum	1	
1.2 - 49	8.8.5	Detail setting out of the Works from survey beacons by a registered surveyor and all other survey related work.	Sum	1	
1.2 - 50	PSA 8.8.7	Provision of records/as-built drawings	Sum	1	80 000.00
SUB - TOTAL CARRIED FORWARD TO FINAL SUMMARY					

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SCHEDULE OF QUANTITIES

SECTION 2.1: SITE CLEARANCE

ITEM NO	LI	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SANS	<u>SCHEDULE 2.1: SITE CLEARANCE</u>				
			SCHEDULED ITEMS				
2,1 - 1			Clear and grub (site servitude 12 m width)	m	1 000		
			Remove and grub large trees and tree stumps of girth:				
2,1 - 2			a) over 1 m and up to and including 2 m	No	10		
2,1 - 3			b) over 2 m and up to and including 3 m	No	10		
2,1 - 4			c) over 3 m and up to and including 4 m	No	10		
2,1 - 5			Take down existing fences	m	50		
2,1 - 6			Reinstate fences to original condition on completion of the scheduled work	m	200		
SUB - TOTAL CARRIED FORWARD TO FINAL SUMMARY							

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SCHEDULE OF QUANTITIES

SECTION 2.2: EARTHWORKS (PIPE TRENCHES)

ITEM NO	LI	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SANS 1200 DB	SCHEUDLE 2.2: EARTHWORKS (PIPE TRENCHES)				
			SCHEDULED ITEMS				
			Excavation				
2.2 - 1			a) (i) Excavation in all materials for trenches	m ³	312		
2.2 - 2			(ii) Backfill and compaction to trenches to 90% Mod AASHTO density	m ³	312		
			b) Extra over item 8.3.2 above for:				
2.2 - 3			2) Hard rock excavation	m ³	94		
2.2 - 4			c) Excavate and dispose of unsuitable material from trench bottom	m ³	94		
			Excavation Ancillaries				
			Make up deficiency in backfill material				
2.2 - 5			c) by importation from commercial or off-site sources selected by the Contractor	m ³	94		
		8.3.3.4	Overhaul within 30 km radius				
2.2 - 6			a) Limited overhaul	m ²	94		
2.2 - 7			b) Long overhaul, more than 30 km radius	m ² .km	94		
		8.3.4	Particular Items				
2.2 - 8			a) Shore trench opposite structure or service	m	80		
2.2 - 9		PSDB 8.3.4.1	Remove and store block or brick paving at the site office until working area is ready for reinstatement	m ²	120		
		8.3.5	Existing services that intersect or adjoin a pipe trench				
2.2 - 10			a) Services that intersect a trench	No	2		
2.2 - 11			b) Services that adjoin a trench	m	10		
		8.3.6	Finishing				
2.2 - 12		PSDB 8.3.6.1	Reinstate paving with stored paving blocks	m ²	120		
SUB - TOTAL CARRIED FORWARD TO FINAL SUMMARY							

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SCHEDULE OF QUANTITIES

SECTION 2.3: BEDDING (PIPES)

ITEM NO	LI	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SANS	<u>SCHEDULE 2.3: BEDDING (PIPES)</u>				
			SCHEDULED ITEMS				
			PROVISION OF BEDDING FROM TRENCH EXCAVATION				
2.3 - 1			(a) Selected Granular material	m³	60		
2.3 - 2			(b) Selected fill material	m³	60		
			SUPPLY ONLY BEDDING BY IMPORTATION				
			<u>From other necessary excavations (provisional)</u>				
2.3 - 3			(a) Selected granular material	m³	36		
2.3 - 4			(b) Selected fill material	m³	36		
		8.2.2.3	<u>Bedding from commercial sources (provisional)</u>				
2.3 - 5			(a) Selected granular material	m³	24		
2.3 - 6			(b) Selected fill material	m³	24		
SUB - TOTAL CARRIED FORWARD TO FINAL SUMMARY							

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SCHEDULE OF QUANTITIES

SECTION 2.4: MEDIUM PRESSURE PIPELINES

ITEM NO	LI	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SANS	<u>SCHEUDLE 2.4: MEDIUM PRESSURE PIPELINES</u>				
			Note: The tendered price for pipes, valves and specials is to include for the cost of all necessary couplings sockets or joining materials as necessary				
			DN350 Inlet Low Lift pipe PN16				
2.4 - 1			i) 350mm PN16 flanged GMS pipes cut to suit, with all specials required, assembled as	No	5		
			ii) 350mm Isolation Valve PN16	No	1		
2.4 - 3			iii) 250mm GMS pipe PN16 , flanged both ends 4300mm long with 2X Connecting reducing tees to DN200mm as per drawing	No	1		
2.4 - 4			iv) 350mm GMS flanged 90 degree bend PN16 (1 short and 1 medium long bend)	No	2		
2.4 - 5			v) 200mm GMS pipe PN16 , flanged all ends 3400mm long	No	2		
2.4 - 7			vi) 200mm flanged Isolation valve PN16	No	2		
2.4 - 8			vi) 200mm flanged non-return valve PN16	No	2		
			Pipe Support straps and bolts for fixing				
			Provide all necessary mechanisms as approved by engineer to support, fix and strap pipe onto immovable permanent supports to ensure pipe does not change alignment during floods, erosion etc. To include all bolts and specials.	Sum	1		
2.4 - 9							
SUB - TOTAL CARRIED FORWARD TO FINAL SUMMARY							

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SCHEDULE OF QUANTITIES

SECTION 3.1 : BULK EARTH WORKS -RIVER INTAKE CHAMBER

ITEM NO	LI	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SANS	<u>SCHEDULE: EARTHWORKS-RIVER INTAKE CHAMBER</u>				
			SCHEDULED ITEMS				
			PILING				
3.1 - 1			Piling (H = Min 7m, W = 12m, L = 8m) and Dewatering, for duration of intake chamber with all hazard and risks mitigation measures construction, complying	Sum	1.00	150 000.00	R 150 000.00
			Excavation				
			Excavate in soft material for structures and stockpile onsite for re-use				
3.1 - 2			a) 0 to 2 m deep	m ³	18		
3.1 - 3			b) 0 to 3 m deep	m ³	150		
3.1 - 5			c) 0 to 4 m deep	m ³	150		
3.1 - 6			d) 0 to 5 m deep	m ³	150		
3.1 - 7			e) 0 to 6 m deep	m ³	288		
			Excavate in soft material for structures, to spoil, freehaul 2 km				
3.1 - 8			a) 0 to 2 m deep	m ³	20		
3.1 - 9			b) 0 to 3 m deep	m ³	20		
3.1 - 10			c) 0 to 4 m deep	m ³	20		
3.1 - 11			d) 0 to 5 m deep	m ³	20		
3.1 - 12			e) 0 to 6 m deep	m ³	72		
3.1 - 13			Extra over 3.1 & 3.2 to excavate in intermediate material	m ³	70.00		
3.1 - 14			Extra over 3.1 & 3.2 to excavate in hard (rock) material	m ³	120.00		
3.1 - 15			Import G7 material for terraces and compact in 150 mm layers to 93 mod AASTHO density	m ³	20.00		
			Restricted excavation for foundations and structures after completion of earth blanket or terraces				
3.1 - 16			a) River Bed Intake Chamber	m ³	20.00		
3.1 - 17			b) Low Lift Pipeline and Drainage Main	m ³	110.25		
3.1 - 18			Extra over 2.2.6 for hard excavation in restricted areas	m ³	10.00		
3.1 - 19			Backfill around Intake Chamber (20MPa Mass Concrete)	m ³	120.00		
SUB - TOTAL BROUGHT FORWARD TO NEXT PAGE							

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS

SCHEDULE OF QUANTITIES

SECTION 3.1 : BULK EARTH WORKS -RIVER INTAKE CHAMBER

SUB - TOTAL BROUGHT FORWARD FROM PREVIOUS PAGE				
		EARTHWORKS: PIPE TRENCHES		
		EXCAVATIONS		
		Excavate in all materials for trenches, backfill and compact including disposal of material specified: freehaul 2.0 km for pipes (including bedding) with cover as surplus/unsuitable		
		Low Lift pipe, scours from Sump and Pump station		
3.1 - 20		a) 0 to 4 m deep For 300-350 mm Ø pipes	m ³	220.50
		EARTHWORKS ROADS (SUBGRADE)		
3.1 - 23		Excavate in road prism and spoil	m ³	97.30
3.1 - 24		Roadbed preparation	m ²	217.00
3.1 - 25		Roadbed preparation AASTHO density		
		b) Import G5 material and compact to 95% MOD AASTHO density	m ³	32.60
		INSITU MASS CONCRETE		
		20 Mpa/13 mm concrete in:		
3.1 - 26			m ³	10.00
		Blinking 75 mm thick under Intake Chamber floor & foundations		
3.1 - 27		Mass concrete in pockets as instructed by the Engineer (provisional)	m ³	15.00
		STRUCTURAL CONCRETE		
		30 Mpa/19 mm concrete in: Intake Chamber		
3.1 - 28		a) Floor	m ³	40.00
3.1 - 29		b) Walls	m ³	100.00
3.1 - 30		c) Valves Access Slab and MCC Floor	m ³	20.00
3.1 - 31		d) Roof	m ³	10.00
3.1 - 32		e) Straircase	m ³	10.00
		20 Mpa/19 mm concrete in:		
3.1 - 33		a) Benching in Intake Chamber Floor	m ³	5.00
3.1 - 34		b) Anchor block for pump line	m ³	5.00
		30 Mpa/9.7 mm Grout for grouting in of pipes		
3.1 - 35		1:3 Cement:Sand slush for opening walls	m ³	5.00
3.1 - 36		Grout for grouting in of pipes	m ³	5.00
		FINISHES TO UNFORMED CONCRETE		
3.1 - 37		Woodfloat finish to top structure	m ²	48.00
3.1 - 38		Steel trowel finish, horizontal surfaces (including roofs)	m ²	120.00
3.1 - 39		Steel trowel finish, sloping surfaces	m ²	140.00
3.1 - 40		Steel trowel finish to top of walls , a) 200 to 300 mm wide	m ²	15.00
SUB - TOTAL BROUGHT FORWARD TO NEXT PAGE				

HARRY GWALA DISTRICT MUNICIPALITY

CREIGHTON BULK WATER SUPPLY SCHEME

CONTRACT NUMBER: HGDM HGDM 813/HGDM/2023

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS

SCHEDULE OF QUANTITIES

SECTION 3.1 : BULK EARTH WORKS -RIVER INTAKE CHAMBER

SUB - TOTAL BROUGHT FORWARD FROM PREVIOUS PAGE				
		FORMWORK		
3.1 - 41		1) Formwork to produce a class 3 finish (rough) Sides of footings and slabs up and to 400 mm wide a) Straight	m ²	15.00
3.1 - 42		Outside of walls below final terrace levels a) Straight	m ²	20.00
3.1 - 43		Forming openings in walls to grout in pipes a) 400 x 400 mm holes in 300 mm thick walls	no	1.00
3.1 - 44		b) 350 x 350 mm holes in 300 mm thick walls	no	2.00
3.1 - 45		c) 300 x 300 mm holes in 250 mm thick walls	no	2.00
		2) Formwork, including small, angle fillets, not exceeding 20 x 20 mm etc., to produce a finish as from a new steel shutter, including rubbing smooth after stripping and finishing off		
3.1 - 46		Straight: Vertical	m ²	260.00
3.1 - 47		Straight: Narrow widths to edges of soffits, etc. not exceeding 200 mm wide	m	30.00
3.1 - 48		Straight: Narrow widths to edges of soffits, etc.exceeding 200 mm up to 600 mm wide	m	35.00
3.1 - 49		Straight: Horizontal	m ²	80.00
		REINFORCEMENT		
3.1 - 50		High tensile steel deformed bars 8mm - 25mm	t	29.50
3.1 - 51		PC amount for joints & joint filler	sum	1.00
		SECTION 5: STEELWORK		
3.1 - 52		Chamber Access Cover W = 1000, H = 2030	no	1.00
3.1 - 53		Access Ladder H = Min 5m; Manufacture and supply hot dipped galvanised mild steel access ladder - length to suit as per Drawings	no	1.00
		Ball and frame stanchion handrail work, painted yellow		
3.1 - 54		a) Staircase	m	6.00
3.1 - 55		b) Intake Chamber MCC Level outside building	m	15.00
3.1 - 56		c) Intake Chamber Valve Access Slab	m	3.00
		Crawl beam		
3.1 - 57		I 254 x 146 x 31	m	13.00
3.1 - 58		End plates attached	no	2.00
3.1 - 59		Stop cleats	no	2.00
3.1 - 60		Brackets	no	6.00
3.1 - 61		M20 threaded rod	no	12.00
3.1 - 62		Mechanical block and chain hoist - 2.5 t	no	1.00
3.1 - 63		DN800mm sluice valves gate valve fitted by Specialist for full watertight, with 6m high handwheel	no	3.00
3.1 - 64		40 X 40 Fine Screen fitted onto sluice gate inlet opening	no	3.00
3.1 - 65		Mentis Grating Recragrid RS40 Type Flooring access walkway outside Chamber	m ²	21.00
SUB - TOTAL BROUGHT FORWARD TO NEXT PAGE				

SCHEDULE OF QUANTITIES

SECTION 3.1 : BULK EARTH WORKS -RIVER INTAKE CHAMBER

SUB - TOTAL BROUGHT FORWARD FROM PREVIOUS PAGE						
3.1 - 66		D.V. steel door frame and double transformer steel door, 1950W x 3270 H fully louvered Type M, complete with suitable 3 lever lockset built into walls with galvanised vermin proof mesh on the inside (as shown on drawings)	No	1		
3.1 - 67		Supply and build in Industrial windows type BLU, 2100 x 600mm with pressed steel louvres and galvanised vermin proof mesh on the inside	No	1		
3.1 - 68		Hot dipped galvanised roof ventilators	No	3		
ROADS: PAVEMENT LAYERS AND BUILDING WORK						
SUB-BASE						
3.1 - 69		Import G5 material and construct the 150 mm sub-base layer and compact to 97% MOD AASTHO density	m ³	33.00		
3.1 - 70		Process layer for stabilization with 3% cement	m ³	33.00		
3.1 - 71		Stabilizing agent Portland blastfurnace cement	t	5.00		
SUB - TOTAL CARRIED FORWARD TO FINAL SUMMARY						

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS

SCHEDULE OF QUANTITIES

SECTION 3.2: RIVER INTAKE SUMP

ITEM NO	LI	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SANS	<u>SCHEDULE: EARTHWORKS-RIVER INTAKE SUMP</u>				
3.2 - 1			Restricted Excavation a) Restricted excavation for foundations, footings, pipes and underdrain trenches under the reservoir in all materials and use for backfill or embankments or dispose	m ³	48		
3.2 - 2			b) Restricted excavations for pipe chambers, headwall and sumps in all materials and use for backfill or embankments or dispose	m ³	20		
3.2 - 3			c) Extra-over 3.2.1.1 and 3.2.1.2 above for intermediate excavation	m ³	12		
3.2 - 4			d) Extra-over 4.2.1.1 and 4.2.1.2 above for hard rock excavation	m ³	5		
3.2 - 5			e) Extra-over 4.2.1.1 and 4.2.1.2 above for boulder excavation class A	m ³	5		
3.2 - 6			Pier Foundation Allowance for deep pier foundation, inclusive of restricted excavation, concrete works and finishes in line with Geotechnical engineer, Structural engineer, depth up to 4m below ground	Prov Sum	1	R 150 000.00	R 150 000.00
			EARTHWORKS (PIPE TRENCHES)				
3.2 - 7			Excavate in all materials for trenches, backfill, compact and dispose of surplus material for depths Over and up to 0.0 to 1 m	m ³	10		
3.2 - 8			1 to 2 m	m ³	30		
3.2 - 9			Extra-over items 4.6.1.1 and 4.6.1.2 for excavation in hard rock	m ³	10		
		SABS 1200 G	CONCRETE (STRUCTURAL)				
3.2 - 10	8.2	8.2.1	Formwork a) Rough vertical plane to walls, footings, headwall and slabs in reservoir below ground	m ²	400		
3.2 - 11			b) Rough vertical plane to walls and footings in pipe chambers and sumps below ground	m ²	5		
3.2 - 12			c) Rough vertical plane for mass concrete thrust blocks	m ²	15		
3.2 - 13	8.3	8.3.1	Reinforcement Steel Bars a) Mild Steel bars	t	5		
3.2 - 14			b) High Tensile Steel bars	t	10		
3.2 - 15		8.3.2	c) High-tensile welded mesh ref 617	m ²	25		
3.2 - 16	8.4	8.4.1	Concrete 85 mm No-Fines drainage layer, 10 Mpa/19 mm	m ³	10		
3.2 - 17		8.4.3	Strength Concrete a) Grade 15 Mpa/19 mm mass concrete to pipe surrounds at inlet/outlet and overflow area	m ³	5		
SUB - TOTAL BROUGHT FORWARD TO NEXT PAGE							

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS

SCHEDULE OF QUANTITIES

SECTION 3.2: RIVER INTAKE SUMP

SUB - TOTAL BROUGHT FORWARD FROM PREVIOUS PAGE						
3.2 - 18		50 mm concrete blinding layer to reservoir floor and footings	m ²	32		
3.2 - 19		b) Grade 20MPa/19 concrete in floors, walls and roof slabs to chambers	m ³	2		
3.2 - 20		c) Grade 30 Mpa/19 mm in reservoir: l) To Sump Support 3m High	m ³	220.50		
	PSG 8.4.7	Pipes and conduits embedded in concrete				
3.2 - 21		a) 500mm outlet pipe in reservoir floor	No	1		
	8.8	350KL TANK SUPPLY				
3.2 - 22		Supply and install onto 3.5m High support concrete a 380KL Galvanised mild steel Tank with the following items: a) Access Top with Cover Frame b) Hot dipped galvanised roof ventilators c) External ladder to reservoir installed complete as detailed on the drawings d) Internal ladder to reservoir installed complete as detailed on the drawings e) 500mm Diameter outlet, 350mm Diameter top side inlet, 350mm Diameter top side overflow pipe and DN350mm bottom scour pipe	No	1		
3.2 - 23	PSG 8.9	Testing for watertightness (Payment for successful test only)	Sum	1		
3.2 - 24	PSG 8.10	Cleansing and disinfection	Sum	1		
		Level Indicator				
3.2 - 25		Supply and install level indicator as approved by the client	Prov Sum	1	R 25 000.00	R 25 000.00
3.2 - 26		Contractor's markup to item above	%		0.10	R 2 500.00
SUB - TOTAL CARRIED FORWARD TO FINAL SUMMARY						

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS

SCHEDULE OF QUANTITIES

SECTION 3.3: PUMP HOUSE

ITEM NO	LI	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		SANS	<u>SCHEDULE: EARTHWORKS-PUMP HOUSE</u>				
			Restricted excavation in all material for: Excavate in all materials and use for embankment or backfill or dispose, up to 2 m deep, as ordered:				
3.3 - 1			a) Pumphouse footings and plinths	m ³	440		
3.3 - 2			b) Excavation for chambers, thrust blocks and other minor structures	m ³	32		
	8.3.3		Extra-over items 6.1.1 & 6.1.2 for excavation in hard rock		188.8		
			Importing of material: Sand filling compacted to 100% of modified AASHTO density: Under false floor surface beds (between channel brick walls, plinths, etc. in confined spaces)	m ³	25		
3.3 - 3							
3.3 - 4			In cable trenches (after installation of cables)	m ³	13		
			Backfill with suitable material from excavations to 90% mod AASHTO				
3.3 - 5			a) To foundations	m ³	10		
3.3 - 6			b) Under surface beds	m ²	220		
3.3 - 7			Soil poisoning by the use of Chlorodane or Aldrin type termite soil insecticide	m ²	220		
3.3 - 8			Provision for additional tests as ordered by the engineer	Sum	1	25000	R 25 000.00
		SABS 1200 G 8.2	CONCRETE Scheduled formwork items:				
			Rough: Plane vertical to:				
3.3 - 9			Slab support shattering including roof and first floor level	m ²	260		
			Smooth				
3.3 - 10	8.2.2		Smooth formwork to walls	m ²	561		
3.3 - 11	8.2.2		Smooth formwork for pump plinths and floor slab	m ²	31.5		
3.3 - 12			Smooth formwork for drains	m ²	15		
3.3 - 13			Narrow widths (up to 300 mm wide):	m	70		
			Box out holes/form voids:				
3.3 - 14			Square - 300 - 500 mm in 300 mm thick concrete	No	6		
3.3 - 15			Circular - 250mm diameter in 300mm thick concrete	No	3		
	8.3		Reinforcement				
3.3 - 16	8.3.2		High tensile welded mesh ref 193 reinforcement	m ²	180		
3.3 - 17	8.3.1		High tensile steel reinforcement of all diameters between 10mm and 25mm	t	60		
SUB - TOTAL BROUGHT FORWARD TO NEXT PAGE							

SCHEDULE OF QUANTITIES

SECTION 3.3: PUMP HOUSE

SUB - TOTAL BROUGHT FORWARD FROM PREVIOUS PAGE					
	8.4	Scheduled concrete items:			
3.3 - 18	8.4.2	50mm to 100 mm Blinding Layer Class 15/19 Concrete Grade 30/19 concrete to thrust blocks, pumphouse	m ²	220	
3.3 - 19	8.4.3	footings, aprons, columns and walls as ordered by the Engineer	m ³	120	
3.3 - 20	8.4.3	Grade 30/19 concrete in floor slabs and plinths	m ³	90	
3.3 - 21	8.4.3	Grade 25/19 concrete to channel	m ³	2	
3.3 - 22	8.4.3	Grade 25/19 concrete in roof slab and beam	m ³	50	
	8.4.4	Unformed surface finishes			
3.3 - 23	8.4.4 b)	Steel float finish to concrete pump bases.	m ²	10	
3.3 - 24	8.4.4 b)	Steel float finish to concrete channel.	m	12	
3.3 - 25	8.4.4 c)	Power float finish to pump house floor slab	m ²	112	
3.3 - 26	8.4.4 b)	Steel float to wall narrow widths	m	131	
3.3 - 27	8.4.4 a)	Wood float to concrete apron and verandah area	m ²	62	
3.3 - 28	8.4.4 a)	Wood float to concrete roof slab	m ²	148	
3.3 - 29	8.4.4 a)	Wood float finish to concrete piers	m ²	13	
	8.5	JOINTS			
3.3 - 30		Two parts grey polysulphide sealant in floor/plinth joint 10mm x 10mm including 13mm bituminous impregnated softboard up to 200mm deep	m	32	
3.3 - 31		Construction joint to include 10mm thick jointex with 10x 10mm tear off strip and 10 x 10mm approved sealant with polyethelene bond break backing tape, along concrete apron & verandah.	m	85	
3.3 - 32		Saw cut joint 3mm X 35mm cleaned out with compressed air and filled with backing chord & 6mm x6mm polysulphide sealer	m	80	
3.3 - 33		Slip joint between wall and roof slab, two layers tempered hardboard smooth faces together and graphite greased	m	55	
		Casting items in concrete:			
3.3 - 34		Up to 300 mm nominal bore in up to 300 mm thick concrete	No	5	
3.3 - 35		Over 300 mm up to 600 mm nominal bore in up to 300mm thick concrete	No	2	
3.3 - 36		a) 230mm thick engineering brick with a 110mm thick 25/19 Mesh Ref. 888 concrete infill walls (Inclusive)	m ³	73.6	
3.3 - 37		50 mm thick on waterproofing 19-25mm stone to roof	m ²	185	
SUB - TOTAL BROUGHT FORWARD TO NEXT PAGE					

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS

SCHEDULE OF QUANTITIES

SECTION 3.3: PUMP HOUSE

SUB - TOTAL BROUGHT FORWARD FROM PREVIOUS PAGE						
	PB 12	METALWORK				
3.3 - 38		D.V. steel door frame and double transformer steel door, 2040W x 3065 H fully louvred Type M, complete with suitable 3 lever lockset built into walls with galvanised vermin proof mesh on the inside (as shown on drawings)	No	3		
3.3 - 39		Extra over for purpose made opening 300 x 150mm to permit removal of pumps by use of gantry, including locking device as shown on the drawings	No	1		
3.3 - 40		Supply and build in Industrial windows type BLU, 2100 x 600mm with pressed steel louvres and galvanised vermin proof mesh on the inside	No	24		
3.3 - 41		Supply 3m high clearview-fence protection to Generator room wall opening. Specification to clearview fence. Rate to be inclusive of all accessories	m	12		
3.3 - 42		Hot dipped galvanised roof ventilators	No	8		
3.3 - 43		Galvanised Staircase purpose made to suit length and height; MCC Level to Pump Well	m	3.2		
3.3 - 44		Ball and frame stanchion handrail work, painted yellow a) Staircase	m	6.00		
3.3 - 45		b) MCC Level	m	15.00		
3.3 - 46		Cable tray hot dipped galvanised steel as per M&E Contractor	m	50.00		
3.3 - 47		Access Ladder H = Min 5m; Manufacture and supply hot dipped galvanised mild steel access ladder - length to suit as per Drawings	no	1.00		
		CRAWL BEAM AND HOIST				
3.3 - 48		Supply and fix in place hot dipped galvanised crawl beam including the supply and casting in of all fixings as detailed on relevant drawing	t	5		
3.3 - 49		Supply and fix hot dipped galvanised crawl beam support column complete as detailed, including the supply and casting in of all fixing bolts	t	5		
3.3 - 50		Supply install 4.0 tonne push/pull beam crawl to suit crawl beam, complete with hand chain block.	No	1		
3.3 - 51		Stormwater sump detail within pumpstation as per relevant drawing	Sum	1	3000	R 3 000.00
		EPOXY MORTAR ON FLOORS				
3.3 - 52	PEF - 4.19	Surface preparation, screeding and curing of floors	m ²	182		
SUB - TOTAL CARRIED FORWARD TO FINAL SUMMARY						

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS

SCHEDULE OF QUANTITIES

SECTION 4.1: SUBMERSIBLE: M&E

ITEM NO	LI	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
			<u>SCHEDULE: SUBMERSIBLE: M&E</u>				
			GENERAL				
			Power supplies: Co-ordinate the installation of the power supply and provide attendance as necessary at:-				
4.1 - 1			Pump Station	Item	1		
4.1 - 2			Guarantee and defects liability period	Item	1		
4.1 - 3			Maintenance and servicing during the defects liability period.	Item	1		
			<u>PUMP INSTALLATIONS</u>				
			Intake Chamber Pump Station Supply equipment, ex manufacturing works at contractor's premises, including tests in factory <u>Assembled pump set, complete with pump, motor, coupling, baseframe and coupling guard.</u> Each Pump to deliver 324.00 m ³ /h at a h of 19 m and ± 82,7% efficiency as specified	No.	2		
			<u>Deliver equipment and materials to site and store, protect, install and paint.</u>				
4.1 - 5			Deliver materials to site, including protection and storage on site	Item	1		
			Install Class 16 or higher rated pump sets, pipe systems, valves and mechanical equipment, including sundry installation materials including but not limited to items below:				
4.1 - 6			a) DN200 steel spool pipe welded onto pump inlet reducer Length to suit (Minimum L = 3.7m)	No	2		
4.1 - 7			b) DN200 steel 90 degree bends	No	2		
4.1 - 8			c) Item L1: DN200 Isolation Valve with Handwheel	No	2		
4.1 - 9			d) Item L2: DN200 Check Valve	No	2		
4.1 - 10			e) DN200 Reducing Tees (DN350xDN200) fixed against any movement, using any approved restraint method	No	2		
4.1 - 11			f) DN200 steel Spool pipe connected both Tees.	No	1		
4.1 - 12			g) Pressure Gauges fixed onto DN200	No	2		
4.1 - 13			h) Pipework and associated fittings, 2 No of 90 Degree Long Bends, 1 No of 90 Degree Short Bend connecting HL Sump to Intake Chamber. Length to suit (Minimum L = 40m)	m	40		
4.1 - 14			i) DN350 Isolation Valve with Handwheel (Above ground)	No	1		
4.1 - 15			j) DN350 Water Meter and associated Strainer (Above ground)	No	1		
4.1 - 16			Paint equipments as specified	Item	1		
4.1 - 17			Test, commission and hand over, including Certificate of Compliance and attendance to test pipe lines.	Item	1		
SUB - TOTAL BROUGHT FORWARD TO NEXT PAGE							

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS

SCHEDULE OF QUANTITIES

SECTION 4.1: SUBMERSIBLE: M&E

SUB - TOTAL BROUGHT FORWARD FROM PREVIOUS PAGE						
		<u>Preparation and submission of documentation:</u>				
4.1 - 18		Pump layout and workshop drawings for approval prior to manufacture	Item	1		
4.1 - 19		Complete as-built records, including Operating and Maintenance manuals, drawings, test certificates and commissioning records.	Item	1		
		<u>Low Voltage Installation</u>				
4.1 - 20		Transformer Kiosk: Outdoor on stand, as per SLD	No.	1		
4.1 - 21		New Motor Control Centre As Per Specification And SLD	No.	1		
4.1 - 22		2m x 2m Earth Mat At Transformer Kiosk Incl. Excavations	Sum	1		
4.1 - 23		Concrete Plinth for Transformer Kiosk	Sum	1		
		<u>Low Voltage Cable</u>				
4.1 - 24		185mm ² x4c 600/1000V PVC SWA PVC PVC (2x8m)	m	16		
4.1 - 25		70mm ² BCEW (2x8m)	m	16		
4.1 - 26		150mm ² x4c 600/1000V PVC SWA PVC PVC	m	60		
4.1 - 27		70mm ² BCEW	m	60		
4.1 - 28		150mm ² x4c 600/1000V PVC SWA PVC PVC	m	30		
4.1 - 29		70mm ² BCEW	m	30		
4.1 - 30		16mm ² x4c 600/1000V PVC SWA PVC PVC	m	15		
4.1 - 31		16mm ² x4c 600/1000V PVC SWA PVC PVC	m	15		
4.1 - 32		16mm ² x4c 600/1000V PVC SWA PVC PVC	m	15		
4.1 - 33		1.5mm ² x3c 600/1000V PVC SWA PVC PVC (3x15m)	m	45		
4.1 - 34		1.5mm ² x3c 600/1000V PVC SWA PVC PVC (3x15m)	m	45		
4.1 - 35		1.5mm ² x4c 600/1000V PVC SWA PVC PVC (3x15m)	m	45.00		
4.1 - 36		1mm ² x2pr	m	20.00		
4.1 - 37		1.5mm ² x3c 600/1000V PVC SWA PVC PVC	m	20.00		
4.1 - 38		1mm ² x2pr	m	20.00		
4.1 - 39		1mm ² x2pr	m	30.00		
4.1 - 40		1.5mm ² x3c 600/1000V PVC SWA PVC PVC (3x15m)	m	45		
4.1 - 41		1mm ² x2pr	m	50		
4.1 - 42		4 Core single mode fibre optic cable	m	500		
4.1 - 43		Fibre optic sleeve placed in pipe trench similar to Kableflex	m	500		
4.1 - 44		Fibre Optic Sleeve Manholes	No	5		
4.1 - 45		Fibre Optic Sleeve Draw Wire	m	500		
		<u>Low Voltage Terminations</u>				
4.1 - 46		Reconnect the existing cable from Existing RWPS to the New Transformer DB	sum	1		
4.1 - 47		185mm ² x4c 600/1000V PVC SWA PVC PVC	No	4		
4.1 - 48		150mm ² x4c 600/1000V PVC SWA PVC PVC	No	4		
4.1 - 49		16mm ² x4c 600/1000V PVC SWA PVC PVC	No	6		
4.1 - 50		1.5mm ² x4c 600/1000V PVC SWA PVC PVC	No	6		
4.1 - 51		1.5mm ² x3c 600/1000V PVC SWA PVC PVC	No	20		
4.1 - 52		1mm ² x2pr	No	8.00		
4.1 - 53		70mm ² BCEW	No	8.00		
4.1 - 54		4 Core single mode fibre optic cable	No	2.00		
SUB - TOTAL BROUGHT FORWARD TO NEXT PAGE						

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS

SCHEDULE OF QUANTITIES

SECTION 4.1: SUBMERSIBLE: M&E

SUB - TOTAL BROUGHT FORWARD FROM PREVIOUS PAGE			
		Cable Support	
4.1 - 55		25mm Galvanised Conduit	m 10
4.1 - 55		25mm Galvanised Saddles	m 20
4.1 - 56		Motor Cable Stands (Galv)	No 20
4.1 - 57		Utility Box & 4 Terminals	No 4
		Field Equipment & Instrumentation	
4.1 - 58		Emergency Stop & Pedestal	No 2
4.1 - 59		Pressure Transmitter: Delivery, max:16 Bar	No 1
4.1 - 60		Calorific Flow Switch	No 2
4.1 - 61		Loop powered ultrasonic level unit with transmitter and bracket	No 1
		Earthing (trench earth around Pump Station)	
4.1 - 62		70mm ² BCEW	m 50
4.1 - 63		1.2m Copper Coated Earth Rods	No 4
4.1 - 64		Exothermic Welds (Cad welds)	No 4
		Lightning Protection	
4.1 - 65		Pump Station Roof	No 1
		Safety Equipment	
4.1 - 66		Safety Signs (5-in-1 & no entry)	No 1
4.1 - 67		Fire Extinguisher	No 1
		LV Excavation, including Backfilling and Compaction	
4.1 - 68		Trenching (Pickable Soil)	m ³ 60
4.1 - 69		Extra over for hard material	m ³ 1
4.1 - 70		Extra over for rock	m ³ 1
4.1 - 71		Cable warning tape	m 180
		Small Power & Lighting	
4.1 - 72		Vapour proof 2x58W Fluorescent light fittings	No 8
4.1 - 73		Bulkhead 70W HPS light fittings	No 4
4.1 - 74		Light points	No 12
4.1 - 75		Switch Points & Switch	No 2
4.1 - 76		Welding Socket point	No 1
4.1 - 77		16A Switch Socket points	No 1
4.1 - 78		32A 5 pin welding socket & Plug	No 1
4.1 - 79		16A Switched Socket Outlet	No 1
4.1 - 80		Photocell	No 1
		PLC	
4.1 - 81		PLC Hardware	Sum 1
4.1 - 82		HMI 10"	Sum 1
4.1 - 83		PLC & HMI Programming	Sum 1
4.1 - 84		PLC & HMI Commissioning	Sum 1
4.1 - 85		UPS with 15min backup	No 1
4.1 - 86		Ethernet Switch: 8 Port + 1 Port Fibre Optic	No 1
		Generator	
4.1 - 87		Generator sized by M&E Contractor to suit 1 day supply during power cuts, supply to Submersible and HL Pumps	No 1
SUB - TOTAL CARRIED FORWARD TO FINAL SUMMARY			

HARRY GWALA DISTRICT MUNICIPALITY
 CREIGHTON BULK WATER SUPPLY SCHEME

CONTRACT NUMBER: HGDM HGDM 813/HGDM/2023

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS

SCHEDULE OF QUANTITIES

SECTION 3: RAW WATER HIGH LIFT PUMPS M&E

ITEM NO	LI	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		D1 & D2	SCHEUDLE: RAW WATER HIGH LIFT PUMPS M&E				
			GENERAL				
			C3, Section D1.1, par. D1.1.2				
			<u>Power supplies: Co-ordinate the installation of the power supply and provide attendance as necessary at:-</u>				
4.2 - 1			Pump Station	Item	1		
			C3, Part D2.1, par 19:				
4.2 - 2			Guarantee and defects liability period	Item	1		
			C3, Part D2.1, par 20:				
4.2 - 3			Maintenance and servicing during the defects liability period.	Item	1		
			PUMP INSTALLATIONS				
			Raw Water High Lift Pump Station				
			<u>Supply equipment, ex manufacturing works</u>				
4.2 - 4			at contractor's premises, including tests in factory Assembled pump set, complete with pump, motor, coupling, baseframe and coupling guard	No.	3		
			Fabricate and install CL16 DN500 Suction piping system and CL20 DN350 delivery manifold and including gaskets, nuts, bolts, support brackets, concrete supports and sundry materials, but excluding				
			items measured below				
4.2 - 5			a) Item 1 DN500 Spool, Bend, Outlet.	No	1		
4.2 - 6			b) Item 2 DN500 Flange Adapter	No	1		
4.2 - 7			c) Item 3 DN500 Gate Valve with Bypass and handwheel	No	1		
4.2 - 8			d) Item 4 DN500 Confluence piece with DN350 welds	No	1		
4.2 - 9			e) Item 5 DN500 Dismantling Joint	No	2		
4.2 - 10			f) Item 6 DN350 Flange Adapter	No	3		
4.2 - 11			g) Item 7 DN350 Gate Valve	No	3		
4.2 - 12			h) Item 8 Concentric Reducer DN350-200 to fit Pump Inlet	No	3		
4.2 - 13			i) Item 9 Pressure Gauge	No	1		
4.2 - 14			j) Item 10 DN500 Confluence piece with DN350 welds	No	1		
4.2 - 15			k) Item 11 DN500-350 Reducing 45 Degree bend with spool	No	1		
4.2 - 16			L) Item 12 DN200 Short-radius bend	No	3		
4.2 - 17			m) Item 13 DN200 Non return valve	No	3		
4.2 - 18			n) Item 14 DN200 Gate Valve with handwheel	No	3		
4.2 - 19			o) Item 15 DN350 Confluence piece with two spool welds	No	1		
4.2 - 20			p) Item 16 DN350 Confluence piece with one spool welds	No	1		
4.2 - 21			q) Item 17 DN350 Spool piece with Pressure Gauge	No	1		
4.2 - 22			r) Item 18 Air valve assembled as shown	No	1		
4.2 - 23			s) Item 19 DN350 Ultrasonic Flow Meter	No	1		
4.2 - 24			t) Item 20 DN350 Two x 45 Degree Bends welded spool	No	1		
4.2 - 25			u) Item 21 Surge Ancipation and relief mechanism	No	1		
			Valve Chamber Pipework DN350 Class 20:				
4.2 - 26			a) Item 22 DN350 Flange Adapter	No	1		
4.2 - 27			b) DN350 Gate Valve with handwheel	No	1		
4.2 - 28			c) DN350 Spool piece	No	1		
4.2 - 29			d) Item 25 DN350 Tilting Disc Non-Return Valve	No	1		
4.2 - 30			e) Item 26 DN350 Spool piece with pressure gauge	No	1		
4.2 - 31			f) Item 27 DN350 Scouring Tee and DN200 Gate Valve	No	1		
4.2 - 32			g) Item 28 DN350 Spool piece	No	1		
4.2 - 33			h) Item 29 DN50 Air Valve assembly fitted onto spool piece I	No	1		
4.2 - 34			i) Item 29A DN350 Steel-PVC Adapter	No	1		
SUB - TOTAL BROUGHT FORWARD TO NEXT PAGE							

SCHEDULE OF QUANTITIES

SECTION 3: RAW WATER HIGH LIFT PUMPS M&E

SUB - TOTAL BROUGHT FORWARD FROM PREVIOUS PAGE						
4.2 - 35	Drainage pipe system	Item	1	7500	R	7 500.00
	<u>Deliver equipment and materials to site and store, protect, install and paint.</u>					
4.2 - 36	Deliver materials to site, including protection and storage on site	Item	1			
4.2 - 37	Install pump sets, pipe systems, valves and mechanical equipment, including sundry installation materials	Item	1			
4.2 - 38	Paint equipments as specified	Item	1			
4.2 - 39	Test, commission and hand over, including Certificate of Compliance and attendance to test pipe lines.	Item	1			
	<u>Preparation and submission of documentation:</u>					
4.2 - 40	Pump layout and workshop drawings for approval prior to manufacture	Item	1			
4.2 - 41	Complete as-built records, including Operating and Maintenance manuals, drawings, test certificates and commissioning records.	Item	1			
	<u>Medium Voltage Installation</u>					
4.2 - 42	2m x 2m Earth Mat At MiniSub Incl. Excavations	Sum	1			
4.2 - 43	100kVA Minisub Type B 22/42kV - ONAN	Sum	1			
4.2 - 44	Plinth For MiniSub	Sum	1			
	<u>Medium Voltage Cable</u>					
4.2 - 45	70mm ² x3c XLPE SWA 12.7/22Kv	m	50			
4.2 - 46	70mm ² BCEW	m	15			
4.2 - 47	100mm Galv. Cable Protection Pipe	m	3			
	<u>Medium Voltage Terminations</u>					
4.2 - 48	70mm ² x3c XLPE SWA 22/6.35Kv	No	2			
4.2 - 49	70mm ² BCEW	No	2			
	<u>Low Voltage Installation</u>					
4.2 - 50	New Motor Control Centre As Per Specification And SLD	No.	1			
	<u>Low Voltage Cable</u>					
4.2 - 51	185mm ² x4c 600/1000V PVC SWA PVC PVC (4x50m)	m	100			
4.2 - 52	70mm ² BCEW (4x50m)	m	100.00			
4.2 - 53	70mm ² x4c 600/1000V PVC SWA PVC PVC (2x30m)	m	30.00			
4.2 - 54	70mm ² x4c 600/1000V PVC SWA PVC PVC (2x30m)	m	30.00			
4.2 - 55	70mm ² x4c 600/1000V PVC SWA PVC PVC (2x30m)	m	30.00			
4.2 - 56	70mm ² x4c 600/1000V PVC SWA PVC PVC (2x30m)	m	30.00			
4.2 - 57	70mm ² x4c 600/1000V PVC SWA PVC PVC (2x30m)	m	30			
4.2 - 58	1.5mm ² x3c 600/1000V PVC SWA PVC PVC (5x30)	m	75			
4.2 - 59	1mm ² x8Pr (5x30)	m	75			
4.2 - 60	1.5mm ² x7c 600/1000V PVC SWA PVC PVC (4x15)	m	75			
4.2 - 61	1mm ² x2pr	m	30			
4.2 - 62	1.5mm ² x3c 600/1000V PVC SWA PVC PVC	m	40			
4.2 - 63	1mm ² x2pr	m	40			
4.2 - 64	1.5mm ² x3c 600/1000V PVC SWA PVC PVC (5x30)	m	75			
SUB - TOTAL BROUGHT FORWARD TO NEXT PAGE						

HARRY GWALA DISTRICT MUNICIPALITY
 CREIGHTON BULK WATER SUPPLY SCHEME

CONTRACT NUMBER: HGDM HGDM 813/HGDM/2023

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS

SCHEDULE OF QUANTITIES

SECTION 3: RAW WATER HIGH LIFT PUMPS M&E

SUB - TOTAL BROUGHT FORWARD FROM PREVIOUS PAGE				
4.2 - 65	1mm ² x2pr	m	50	
4.2 - 66	4 Core single mode fibre optic cable	m	2000	
4.2 - 67	Fibre optic sleeve placed in pipe trench similar to Kableflex 5	m	2000	
4.2 - 68	Fibre Optic Sleeve Manholes	No	40	
4.2 - 69	Fibre Optic Sleeve Draw Wire	m	2000	
<u>Low Voltage Terminations</u>				
4.2 - 70	1.5mm ² x3c 600/1000V PVC SWA PVC PVC	No	22	
4.2 - 71	1.5mm ² x7c 600/1000V PVC SWA PVC PVC	No	8.00	
4.2 - 72	70mm ² x4c 600/1000V PVC SWA PVC PVC	No	20.00	
4.2 - 73	185mm ² x4c 600/1000V PVC SWA PVC PVC	No	8.00	
4.2 - 74	1mm ² x2pr	No	6	
4.2 - 75	1mm ² x8Pr	No	10	
4.2 - 76	70mm ² BCEW	No	8	
4.2 - 77	4 Core single mode fibre optic cable	No	2	
<u>Cable Support</u>				
4.2 - 78	25mm Galvanised Conduit	m	60	
4.2 - 79	25mm Galvanised Saddles	m	60	
4.2 - 80	Motor Cable Stands (Galv)	No	15	
4.2 - 81	Utility Box & 4 Terminals	No	10	
4.2 - 82	P2000 Unistrut	m	30	
<u>Field Equipment & Instrumentation</u>				
4.2 - 83	Emergency Stop & Pedestal	No	2	
4.2 - 84	Pressure Transmitter: max:10 Bar	No	1	
4.2 - 85	Calorific Flow Switch	No	2	
4.2 - 86	Loop powered Hydrostatic level unit with transmitter 6m	No	1	
<u>Earthing (trench earth around Pump Station)</u>				
4.2 - 87	70mm ² BCEW	m	100	
4.2 - 88	1.2m Copper Coated Earth Rods	No	6	
4.2 - 89	Exothermic Welds (Cad welds)	No	6	
<u>Lightning Protection</u>				
4.2 - 90	Pump Station Roof	No	1	
<u>Safety Equipment</u>				
4.2 - 91	Safety Signs (5-in-1 & no entry)	No	1	
4.2 - 92	Fire Extinguisher	No	5	
<u>Excavation, including Backfilling and Compaction</u>				
4.2 - 93	Trenching (Pickable Soil)	m ³	150	
4.2 - 94	Extra over for hard material	m ³	1	
4.2 - 95	Extra over for rock	m ³	1	
4.2 - 96	Cable warning tape	m	150	
<u>Small Power & Lighting</u>				
4.2 - 97	Vapour proof 2x58W Fluorescent light fittings	No	12	
4.2 - 98	Bulkhead 70W HPS light fittings	No	4	
4.2 - 99	Light points	No	16	
4.2 - 100	Switch Points & Switch	No	2	
4.2 - 101	Welding Socket point	No	1	
4.2 - 102	16A Switch Socket points	No	2	
4.2 - 103	32A 5 pin welding socket & Plug	No	1	
4.2 - 104	16A Switched Socket Outlet	No	2	
4.2 - 105	Photocell	No	1	
SUB - TOTAL BROUGHT FORWARD TO NEXT PAGE				

HARRY GWALA DISTRICT MUNICIPALITY
 CREIGHTON BULK WATER SUPPLY SCHEME

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CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS

SCHEDULE OF QUANTITIES

SECTION 3: RAW WATER HIGH LIFT PUMPS M&E

SUB - TOTAL BROUGHT FORWARD FROM PREVIOUS PAGE						
		<u>PLC</u>				
4.2 - 106		PLC Hardware	Sum	1		
4.2 - 107		HMI 10"	Sum	1		
4.2 - 108		PLC & HMI Programming	Sum	1		
4.2 - 109		PLC & HMI Commissioning	Sum	1		
4.2 - 110		UPS with 15min backup	No	1		
4.2 - 111		Ethernet Switch: 8 Port + 1 Port Fibre Optic	No	1		
		<u>Provisional Sums</u>				
4.2 - 112		Telemetry Manufacture, supply, install, connect, calibrate, test, commission, SCADA	PC Sum	1	250000	R 250 000.00
4.2 - 113		Computerised System in order to ensure remote water supply scheme operation coordinated from LL Pumps, Abstraction Works up to Water Treatment Works	PC Sum	1	350000	R 350 000.00
SUB - TOTAL CARRIED FORWARD TO FINAL SUMMARY						

HARRY GWALA DISTRICT MUNICIPALITY
 CREIGHTON BULK WATER SUPPLY SCHEME

CONTRACT NUMBER: HGDM HGDM 813/HGDM/2023

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS

SCHEDULE OF QUANTITIES

SECTION 4.3: RAW WATER HIGH LIFT PUMPS M&E-CENTOCOW

ITEM NO	LI	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
		D1 & D2	SCHEUDLE: RAW WATER HIGH LIFT PUMPS M&E				
			GENERAL				
			C3, Section D1.1, par. D1.1.2				
			Power supplies: Co-ordinate the installation of the power supply and provide attendance as necessary at:-				
4.3 - 1			Pump Station	Item	1		
			C3, Part D2.1, par 19:				
4.3 - 2			Guarantee and defects liability period	Item	1		
			C3, Part D2.1, par 20:				
4.3 - 3			Maintenance and servicing during the defects liability period.	Item	1		
			PUMP INSTALLATIONS				
			Creighton Town Pumps				
			Supply equipment, ex manufacturing works at contractor's premises, including tests in factory Assembled pump set, complete with pump, motor, coupling, baseframe and coupling guard	No.	3		
4.3 - 4							
			Fabricate and install CL16 DN500 Suction piping system and CL20 DN350 delivery manifold and including gaskets, nuts, bolts, support brackets, concrete supports and sundry materials, but excluding				
			items measured below				
4.3 - 5			A - DN300 Spool piece with puddle flange	No.	1		
4.3 - 6			B - DN300 Ultrasonic Flow Meter	No.	1		
4.3 - 7			B1 - DN300 Confluence piece; DN250 future outlet	No.	1		
4.3 - 8			C - DN300 Confluence piece; DN250 outlet welds	No.	2		
4.3 - 9			D - DN250 Flange Adapter	No.	3		
4.3 - 10			C2 - DN250 Gate Valve with handwheel	No.	3		
4.3 - 11			C3 - DN250 Spool piece	No.	3		
4.3 - 12			C4 - Concentric Reducer DN250 - DN150 to Pump Inlet	No.	3		
4.3 - 13			C5 - DN200 Short Bend with Concentric DN150-200 Reducer	No.	3		
4.3 - 14			C6 - DN200 Non return valve	No.	3		
4.3 - 15			C7 - DN200 Gate Valve with handwheel	No.	3		
4.3 - 16			C8 - Reducing Tee DN200-DN300	No.	3		
4.3 - 17			C9 - DN300 Spool piece connecting to Flange Adapter	No.	1		
4.3 - 18			C10 - DN300 Flange Adapter	No.	2		
4.3 - 19			C11 - DN300 Spool piece connecting to Flange Adapter	No.	1		
4.3 - 20			D - Pressure Gauge	No.	2		
4.3 - 21			E - Reducing 45 Degree Bend DN300-DN250	No.	1		
4.3 - 22			E1 - DN300 Spool piece connecting to Flange Adapter	No.	1		
4.3 - 23			E2 - DN300 Ultrasonic Flow Meter onto spool piece	No.	1		
4.3 - 24			E3 - Air valve assembled as shown	No.	1		
4.3 - 25			E4 - DN300 90 Degree Long Radius bends	No.	1		
4.3 - 26			E5 - DN300 Steel - PVC Adapter	No.	1		
			Valve Chamber Pipework DN350 Class 20:				
			Valve Chamber Pipework DN350 Class 20:				
4.3 - 27			a) Item 30 DN300 Spool piece	No.	1		
4.3 - 28			b) Item 31 DN300 Gate Valve with handwheel	No.	1		
4.3 - 29			c) Item 32 DN300 Scouring Tee and DN200 Gate Valve	No.	1		
4.3 - 30			d) Item 33 DN300 Flange Adapter	No.	1		
4.3 - 31			e) Item 34 DN300 Spool piece with puddle flange and gauge	No.	1		
4.3 - 32			f) Item 35 DN50 Air Valve assembly fitted to Item 34	No.	1		
4.3 - 33			g) Item 35A DN300 Steel-PVC Adapter	No.	1		
SUB - TOTAL BROUGHT FORWARD TO NEXT PAGE							

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS

SCHEDULE OF QUANTITIES

SECTION 4.3: RAW WATER HIGH LIFT PUMPS M&E-CENTOCOW

SUB - TOTAL BROUGHT FORWARD FROM PREVIOUS PAGE						
4.3 - 34		Drainage pipe system	Item	1	R	7 500.00
		<u>Deliver equipment and materials to site and store, protect, install and paint.</u>				
4.3 - 35		Deliver materials to site, including protection and storage on site	Item	1		
4.3 - 36		Install pump sets, pipe systems, valves and mechanical equipment, including sundry installation materials	Item	1		
4.3 - 37		Paint equipments as specified	Item	1		
4.3 - 38		Test, commission and hand over, including Certificate of Compliance and attendance to test pipe lines.	Item	1		
		<u>Preparation and submission of documentation:</u>				
4.3 - 39		Pump layout and workshop drawings for approval prior to manufacture	Item	1		
4.3 - 40		Complete as-built records, including Operating and Maintenance manuals, drawings, test certificates and commissioning records.	Item	1		
		<u>Medium Voltage Installation</u>				
4.3 - 41		2m x 2m Earth Mat At MiniSub Incl. Excavations	Sum	1		
4.3 - 42		1000kVA Minisub Type B 22/42kV - ONAN	Sum	1		
4.3 - 43		Plinth For MiniSub	Sum	1		
		<u>Medium Voltage Cable</u>				
4.3 - 44		70mm ² x3c XLPE SWA 12.7/22Kv	m	50		
4.3 - 45		70mm ² BCEW	m	15		
4.3 - 46		100mm Galv. Cable Protection Pipe	m	3		
		<u>Medium Voltage Terminations</u>				
4.3 - 47		70mm ² x3c XLPE SWA 22/6.35Kv	No	2		
4.3 - 48		70mm ² BCEW	No	2		
		<u>Low Voltage Installation</u>				
4.3 - 49		New Motor Control Centre As Per Specification And SLD	No.	1		
		<u>Low Voltage Cable</u>				
4.3 - 50		185mm ² x4c 600/1000V PVC SWA PVC PVC (4x50m)	m	100		
4.3 - 51		70mm ² BCEW (4x50m)	m	100.00		
4.3 - 52		70mm ² x4c 600/1000V PVC SWA PVC PVC (2x30m)	m	30.00		
4.3 - 53		70mm ² x4c 600/1000V PVC SWA PVC PVC (2x30m)	m	30.00		
4.3 - 54		70mm ² x4c 600/1000V PVC SWA PVC PVC (2x30m)	m	30.00		
4.3 - 55		70mm ² x4c 600/1000V PVC SWA PVC PVC (2x30m)	m	30.00		
4.3 - 56		70mm ² x4c 600/1000V PVC SWA PVC PVC (2x30m)	m	30		
4.3 - 57		1.5mm ² x3c 600/1000V PVC SWA PVC PVC (5x30)	m	75		
4.3 - 58		1mm ² x8Pr (5x30)	m	75		
4.3 - 59		1.5mm ² x7c 600/1000V PVC SWA PVC PVC (4x15)	m	75		
4.3 - 60		1mm ² x2pr	m	30		
4.3 - 61		1.5mm ² x3c 600/1000V PVC SWA PVC PVC	m	40		
4.3 - 62		1mm ² x2pr	m	40		
4.3 - 63		1.5mm ² x3c 600/1000V PVC SWA PVC PVC (5x30)	m	75		
SUB - TOTAL BROUGHT FORWARD TO NEXT PAGE						

SCHEDULE OF QUANTITIES

SECTION 4.3: RAW WATER HIGH LIFT PUMPS M&E-CENTOCOW

SUB - TOTAL BROUGHT FORWARD FROM PREVIOUS PAGE					
4.3 - 64	1mm ² x2pr	m	50		
4.3 - 65	4 Core single mode fibre optic cable	m	2000		
4.3 - 66	Fibre optic sleeve placed in pipe trench similar to Kableflex 5	m	2000		
4.3 - 67	Fibre Optic Sleeve Manholes	No	40		
4.3 - 68	Fibre Optic Sleeve Draw Wire	m	2000		
<u>Low Voltage Terminations</u>					
4.3 - 69	1.5mm ² x3c 600/1000V PVC SWA PVC PVC	No	22		
4.3 - 70	1.5mm ² x7c 600/1000V PVC SWA PVC PVC	No	8.00		
4.3 - 71	70mm ² x4c 600/1000V PVC SWA PVC PVC	No	20.00		
4.3 - 72	185mm ² x4c 600/1000V PVC SWA PVC PVC	No	8.00		
4.3 - 73	1mm ² x2pr	No	6		
4.3 - 74	1mm ² x8Pr	No	10		
4.3 - 75	70mm ² BCEW	No	8		
4.3 - 76	4 Core single mode fibre optic cable	No	2		
<u>Cable Support</u>					
4.3 - 77	25mm Galvanised Conduit	m	60		
4.3 - 78	25mm Galvanised Saddles	m	60		
4.3 - 79	Motor Cable Stands (Galv)	No	15		
4.3 - 80	Utility Box & 4 Terminals	No	10		
4.3 - 81	P2000 Unistrut	m	30		
<u>Field Equipment & Instrumentation</u>					
4.3 - 82	Emergency Stop & Pedestal	No	3		
4.3 - 83	Pressure Transmitter: max:10 Bar	No	1		
4.3 - 84	Calorific Flow Switch	No	3		
4.3 - 85	Loop powered Hydrostatic level unit with transmitter 6m	No	1		
<u>Earthing (trench earth around Pump Station)</u>					
4.3 - 86	70mm ² BCEW	m	100		
4.3 - 87	1.2m Copper Coated Earth Rods	No	6		
4.3 - 88	Exothermic Welds (Cad welds)	No	6		
<u>Lightning Protection</u>					
4.3 - 89	Pump Station Roof	No	1		
<u>Safety Equipment</u>					
4.3 - 90	Safety Signs (5-in-1 & no entry)	No	1		
4.3 - 91	Fire Extinguisher	No	5		
<u>Excavation, including Backfilling and Compaction</u>					
4.3 - 92	Trenching (Pickable Soil)	m ³	150		
4.3 - 93	Extra over for hard material	m ³	1		
4.3 - 94	Extra over for rock	m ³	1		
4.3 - 95	Cable warning tape	m	150		
<u>Small Power & Lighting</u>					
4.3 - 96	Vapour proof 2x58W Fluorescent light fittings	No	12		
4.3 - 97	Bulkhead 70W HPS light fittings	No	4		
4.3 - 98	Light points	No	16		
4.3 - 99	Switch Points & Switch	No	2		
4.3 - 100	Welding Socket point	No	1		
4.3 - 101	16A Switch Socket points	No	2		
4.3 - 102	32A 5 pin welding socket & Plug	No	1		
4.3 - 103	16A Switched Socket Outlet	No	2		
4.3 - 104	Photocell	No	1		
SUB - TOTAL BROUGHT FORWARD TO NEXT PAGE					

HARRY GWALA DISTRICT MUNICIPALITY
 CREIGHTON BULK WATER SUPPLY SCHEME

CONTRACT NUMBER: HGDM HGDM 813/HGDM/2023

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS

SCHEDULE OF QUANTITIES

SECTION 4.3: RAW WATER HIGH LIFT PUMPS M&E-CENTOCOW

SUB - TOTAL BROUGHT FORWARD FROM PREVIOUS PAGE						
		PLC				
4.3 - 105		PLC Hardware	Sum	1		
4.3 - 106		HMI 10"	Sum	1		
4.3 - 107		PLC & HMI Programming	Sum	1		
4.3 - 108		PLC & HMI Commissioning	Sum	1		
4.3 - 109		UPS with 15min backup	No	1		
4.3 - 110		Ethernet Switch: 8 Port + 1 Port Fibre Optic	No	1		
		Provisional Sums				
		Manufacture, supply, install, connect, calibrate, test, commission, SCADA				
		Computerised System in order to ensure remote water supply scheme operation coordinated from LL				
4.3 - 111		Pumps, Abstraction Works up to Water Treatment Works	PC Sum	1	R 350 000.00	R 350 000.00
SUB - TOTAL CARRIED FORWARD TO FINAL SUMMARY						

HARRY GWALA DISTRICT MUNICIPALITY

CREIGHTON BULK WATER SUPPLY SCHEME

CONTRACT NUMBER: HGDM HGDM 813/HGDM/2023

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS

SCHEDULE OF QUANTITIES

SECTION 5: MISCELLANEOUS

ITEM NO	LI	PAYMENT REFERENCE	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
			SECTION 5: MISCELLANEOUS				
			Access Road & Parking (3m W, 390m L)				
5 - 1			i) Clear and grub (for road construction)	m ²	1170		
			EARTHWORKS (ROADS, SUBGRADE)				
			EARTHWORKS				
5 - 2			(a) Remove topsoil, 150mm thick, to stockpile and maintain, only to supply sufficient quantity for slopes	m ³	176		
			TREATMENT OF ROAD-BED				
			Road-bed preparation and compaction of material				
5 - 3			Compact 150mm in-situ to 93% mod. AASHTO maximum density	m ³	176		
			Borrow to fill				
5 - 4			(a) (i) Compact to 90% mod. AASHTO maximum density	m ³	176		
			Cut to fill				
5 - 5			(a) (i) Compact to 90% mod. AASHTO maximum density	m ³	585		
		8.3.6	Extra Over Items 4 for:				
5 - 6			(a) Excavation in Intermediate Material	m ³	29		
5 - 7			(b) Excavation in Hard Material	m ³	30		
5 - 8		8.3.7	(a) Cut to spoil : Soft	m ³	15		
5 - 9			(b) Cut to spoil : Intermediate	m ³	15		
5 - 10			(c) Cut to spoil : Hard	m ³	15		
		8.3.12	SURFACE FINISHES				
5 - 11		PSDM 3	Backfill to verges	m ³	59		
5 - 12		MF 8.3.2	Construct gravel base with material from borrowpit or commercial source	m ³	176		
5 - 13		D 8.3.10	Topsoiling from stockpile (100mm thk)	m ³	44		
		SABS 1200					
		LB	BEDDING				
		8.2.1	Provision of Bedding from Trench Excavation				
5 - 14			a) Selected granular material	m ³	5		
5 - 15			b) Selected fill material	m ³	1		
		LE	STORMWATER DRAINAGE				
			Supply, handle, lay, bed Class 50D concrete pipe culvert.				
		8.2.1	Type ogee with rubber collars				
5 - 16			a) 450 mm diameter	m	5		
5 - 17		PSLE2	Open Mitre Drains	m	70		
SUB - TOTAL BROUGHT FORWARD TO NEXT PAGE							

HARRY GWALA DISTRICT MUNICIPALITY

CREIGHTON BULK WATER SUPPLY SCHEME

CONTRACT NUMBER: HGDM HGDM 813/HGDM/2023

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS

SCHEDULE OF QUANTITIES

SECTION 5: MISCELLANEOUS

SUB - TOTAL BROUGHT FORWARD FROM PREVIOUS PAGE						
5 - 18	PSLE3	Standard Drop Inlet a) 450mm diameter pipe	No.	1		
5 - 19	PSLE4	Standard headwalls a) 450mm diameter pipe	No.	1		
	SABS 1200 DK					
		GABIONS AND PITCHING				
5 - 20	8.2.1	Surface preparation for bedding of gabions	m ²	64		
5 - 21	8.2.2	GABIONS a) Foundation mattresses of depth 0.3m with diaphragms providing 2m x 1m	m ²	30		
5 - 22	8.2.4	b) Geotextile (U 24 or similar) placed where ground water seepage occurs	m ²	60		
		FENCE & GATE				
5 - 23		Supply and install (Rates all inclusive) 2.03m H x 2.5m W coated, high tensile panels of Clearview fence; with 76x12mm Arpeture, spikes, associated square poles including all materials for stabilising, concrete support, etc. Supply steel gates (stainless steel or hot dipped galvanised steel):	m	200		
5 - 24		a) 1.5m wide pedestrian gates	No	1		
5 - 25		b) 5.0m wide vehicular gates	No	1		
		HIGH MAST LIGHTS				
5 - 26		20m High Mast Light - according to Department of Energy (DOE) minimum standard, founded on concrete stand or foundation. To be LED High Mast light with an automatic on/off control mechanism	No	1		
		GUARD HOUSE				
5 - 27		Construct brick guard house as specified on the drawing, to be located 1m away from the main gate.	Sum	1		
5 - 28		Ramp Access and Parking to Pump House, Generator Room and Diesel Storage Room as directed by Engineer 1.5m	m ²	80		
5 - 29		Relocation and reconnection of existing pipes and other infrastructure associated to ensure continuous water abstraction by existing system	Prov Sum	1	R 50 000.00	R 50 000.00
5 - 30		Full Installation of CCTV Camera system including monitors, off-site monitoring mechanism to monitor river intake and abstraction works site. Sum to include training of HGDM Operators.	Sum	1	R 85 000.00	R 85 000.00
5 - 31		Design, Installation and Testing of Fire Fighting Equipment, Fuel Spillage Removal and First Aid Kit throughout	Prov Sum	1	R 50 000.00	R 50 000.00
SUB - TOTAL CARRIED FORWARD TO FINAL SUMMARY						

CREIGHTON BULK WATER SUPPLY SCHEME

CONTRACT No. HGDM 813/HGDM/2023

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

PART C3: SCOPE OF WORK

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PART 1: CIVIL SCOPE OF WORKS

C3.1 STANDARDISED SPECIFICATIONS

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

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

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

The following SANS specifications are also referred to in this document and the Contractor is advised to obtain them from Standards South Africa (a division of SABS) in Pretoria.

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

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

C3.2 PROJECT SPECIFICATIONS

The project specification is covered in the following sections:

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

STATUS

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

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

Part B contains variations, amendments and additions to the Standardized Specifications and, if applicable, the Particular Specifications.

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

Part 1: Project Specifications

PS 1 General Description

The Creighton Bulk Water Supply Scheme’s Creighton is located on P8-3, Connected to the main road R612 via P122 at Mabedlana area. The turn-off at Mabedlana is located approximately 45-minutes South-West from Pietermaritzburg or, 15 minutes West of Ixopo.

Co-ordinates: 30°01’53.5” S; 29o48’44.7” E [Creighton Town Reservoir]
 30° 1’2.96”S; 29°43’22.99”E [Centocow Water Treatment Plant]
 30°00’41.4” S; 29°43’47.5” E [Abstraction Works]

Creighton is a multi-year bulk water supply project whose main purpose is to supply Creighton Town, a small town with an already on-going recorded agri-industrial growth potential whose water demands have rendered current existing infrastructure insufficient. Project capacity has been augmented to also supply areas near Centocow.

Creighton BWSS has a water requirement of 3Mℓ/d based on 2040 projections, inclusive of proposed developments. Client proposed and re-scoped the project to accommodate additional 2Mℓ/d for Centocow, with the proposed abstraction works relocated from downstream to existing Centocow site that needs to be upgraded. This brings total water requirement to 5Mℓ/d.

Phasing	Contract Name
Phase A	Construction Of Centocow – Umzimkhulu River Abstraction Works: Intake Chamber, Galvanised Steel Tank Sump, High-Lift Pump Station and Installation of Associated Mechanical and Electrical Works
Phase B1	Construction Of 1.4km Long 350mm Diameter Raw Water Pipeline And 1.4km long 300mm Diameter Clear Water Rising Main between Centocow Abstraction and WTW
Phase B2	Construction Of 10km Long 300mm Diameter Rising Main from WTW To Creighton Town Reservoir
Phase C	Upgrade Of Centocow Water Treatment of Works TO 5ML/D
Phase D	Construction Of 3ML Creighton Town Reservoir
Phase E	Construction Of Creighton Town Reticulation and AC Pipeline Replacement Within Creighton Town Reticulation

Under this Contract, Harry Gwala District Municipality intends to implement the, Phase A: Construction Of Centocow – Umzimkhulu River Abstraction Works: Intake Chamber, Galvanised Steel Tank Sump, High-Lift Pump Station And Installation Of Associated Mechanical And Electrical Works

PS 2 Details of Contract: Phase A

PS2.1.2 Civil, Mechanical, Electrical:-

This contract comprises:

- The manufacture, supply, delivery to site, installation and commissioning of the following equipment:
 - 2 x Raw Water Low Lift pumping units with associated motors each with a delivery capacity of **324.00 m³/h @ 19.00 m**
 - 3 x Raw Water High Lift pumping units with associated motors each with a delivery capacity of **324.00 m³/h @ 113 m**
 - 3 x Clear Water High Lift pumping units with associated motors each with a delivery capacity of **188 m³/h @ 60.1m**
- **Construction of Umzimkhulu River-Centocow Reinforced Concrete Intake Chamber:**
 - Cofferdam and dewatering Umzimkhulu River to construct Deep Foundation and Concrete works.
 - 2 x Raw Water Low Lift Pumps and Associated M&E Works
 - 3x Sluice Gates fitted with Fine Screens
 - Supply and installation of cables from existing supply points to a proposed Motor Control Centre (MCC) inside the pump station building.
 - Design, supply and installation of a complete MCC to ultimately control 2 x 30 kW motors, associated PLC/SCADA.
 - Cable Racking where needed
 - Supply and installation of relevant Eskom Transformer
 - Design and supply of “as built drawings and operation manuals” and training of operators and staff.
 - Crawl Beam and Hoist
- **Design, supply and installation of 380KL Galvanised Steel Tank Sump complete to testing and operation, including:**
 - Associated, inlet, outlet, overflow, scour, valves and pipework ranging from DN350 to DN500 CL16
 - Foundation stable to withstand 1:100 year floods
 - Level Indicator
 - Testing for water tightness
 - Internal and External ladders to sump

• **Construction of Umzimkhulu River-Centocow Reinforced Concrete Abstraction**

Works:

- Pump House with Deep Foundations, Concrete works and Brickwork.
 - 3 x Raw Water High Lift Pumps and Associated M&E Works
 - 3 x Clear Water High Lift Pumps and Associated M&E Works
 - Supply and installation of cables from existing supply points to a proposed Motor Control Centre (MCC) inside the pump station building.
 - Design, supply and installation of a complete MCC to ultimately control 3 x 160 kW motors for RW HL Pumps, associated PLC/SCADA.
 - Design, supply and installation of a complete MCC to ultimately control 3 x 55kW motors for CW HL Pumps, associated PLC/SCADA
 - Cable Racking where needed
 - Pump Well Drainage
 - Supply and installation of relevant Eskom Transformer
 - Generator, Generator room with appropriate ventilation and Diesel Storage room.
 - DN200-500 Suction and delivery side pipework, associated valves and anchor blocks.
 - Design and supply of “as built drawings and operation manuals” and training of operators and staff.
- Protection of existing Centocow Scheme including mandatory relocation of existing infrastructure (subject to HGDM permission).

PS2.1.3 Electrical:-

- Supply and installation of the low voltage cables connecting the transformers with the MCC and the MCC to the electric motors.
- The pumps are to be started by means of soft starters and timers for automatic shut-down located in the MCC.
- Supply and installation of Variable Speed Drives (VSDs) to ensure that pumps yield total 5Ml/d when the Creighton Water Supply Scheme is completed and in full operation.
- Supply and installation of control cabling to field equipment in and around the pump station such as pump control valves, water meters, no-flow switches and emergency stops etc
- Internal and external lighting and earthing according to specifications

PS2.3 Miscellaneous Scope of Works at Abstraction Works

The works includes but not limited to:

- Road & Parking Pavement Layers
- Stormwater Drainage
- Supply and install coated, high tensile panels of Clearview fence; with 76x12mm Arpeture, spikes, associated square poles including all materials for stabilising, concrete support.
- Supply and Install 20m High Mast Light - according to Department of Energy (DOE) minimum standard, founded on concrete stand or foundation. To be LED High Mast light with an automatic on/off control mechanism
- Construct brick guard house as specified on the drawing.
- Design, Installation and Testing of Fire Fighting Equipment, Fuel Spillage Removal and First Aid Kit throughout Abstraction Works.

PS 3 Location of Site and Access to the Site

The Creighton Bulk Water Supply Scheme is located Creighton is located P8-3, Connected to the main road R612 via P122 at Mabeldlana area. The turn-off at Mabeldlana is located approximately 45-minutes South-West from Pietermaritzburg or, 15 minutes West of Ixopo. The Abstraction Works is located at St Apollinaris Mission, Centocow, 15 minutes West of Creighton Town.

PS 4 Condition of Soil

The Contractor will encounter excavations in soft material and boulders. A geotechnical investigation has been done. The Contractor is to make his own assessment of conditions where this impacts on his rates at the pump station.

PS 5 Site Facilities Available

PS5.1 Water Supplies

Water for general purposes is available from the uMzimkhulu River. Drinking water may be available from the Water Treatment facility but is entirely the responsibility of the Contractor.

PS5.2 Electricity

Electricity is not available on site, and the Contractor will have to make his own arrangements to suit his requirements.

PS5.3 Locations Of Camp And Depot

The Contractor's camp and depot shall be located on site at a position to be agreed with the Engineer.

PS5.4 Accommodation

The Contractor will be required to provide his own accommodation, storage, security and ablution facilities on site.

PS 6 Site Facilities Required

There is no provision for an Engineer's office on site; however, the Contractor must ensure that a suitable meeting room is available on site for the monthly progress meetings.

PS6.1 Testing Equipment

Concrete test cubes will be called for from all concrete pours and suitable cube moulds must be provided for as well as facilities for identifying and storing test cubes. These test cubes must be crushed and reported on by an approved laboratory.

Suitable testing equipment will be required on site to test for compaction density Testing can be carried out using a "Troxlér" type nuclear probe. Any equipment used on site must have valid calibration certificates. The Engineer may call for sand replacement tests to verify the compaction results.

PS 7 Preservation of Environment

Damage to the environment and vegetation on site, in the vicinity of the works and outside of the sites, must be kept to a minimum. No hunting, fishing, disturbing, capturing or destroying of any birds or animals is allowed. All firearms are prohibited from site unless with the express permission of the employer for security purposes.

The Contractor will have to comply with the Environmental Management Plan (EMP).

PS 8 Construction Programme

The maximum construction programme for this contract is 60 weeks.

The Contractor must indicate in the Tender Document that he has sufficient staff and construction equipment to meet the above programme.

PS 9 Insurance

The contract works insurance shall be arranged by the Contractor and must include for insurance of the Works and of all materials on the Site intended for incorporation in the Works against damage or physical loss from whatsoever cause arising except the causes

set out in Clause 32.3 of the General Conditions of Contract for Construction Works (2004).

PS 10 Applicable Standardised Specifications

Specifications published by the South African Bureau of Standards (SABS/SANS), series 1200 (Standardised Specifications for Civil Engineering Construction) shall apply.

Your attention is brought to the following specifications: -

- SABS 1200 A: General
- SABS 1200 C: Site Clearance
- SABS 1200 DA: Earthworks
- SABS 1200 GA: Concrete
- SABS 1200 H: Structural Steelwork
- SABS 1200 HC: Corrosion Protection of Structural Steelwork
- SABS 1200 L: Medium Pressure Pipelines

In general, all electrical work shall comply with the relevant SANS/SABS specifications for workmanship and material. Where no SANS/SABS specification exist, the applicable BS, DIN or IEC specification shall be applicable. All Steel flanges are to comply with SANS1123 in line with specified minimum pressure/class rating requirements.

PS 11 DRAWINGS

PS 11.1 Drawings Prepared by Engineer

The drawings listed at the back of this report have been prepared and issued by the Engineer.

The drawings issued to tenderers during the tender period must be regarded as provisional and preliminary in order to enable the tenderers to generally assess the scope of work.

At the commencement of the contract, the Engineer shall deliver to the Contractor copies of the construction drawings and any instructions required for the commencement of the works. From time to time thereafter during the progress of the works, the Engineer may issue further drawings for construction purposes as may be necessary for adequate construction, completion and defects correction of the works. The work shall be carried out in accordance with the latest available revision of the drawings.

All drawings and specifications and copies thereof remain the property of the Employer, and the Contractor shall return all drawings and copies thereof to the Employer at the completion of the contract.

PS 12 CONSTRUCTION AND MANAGEMENT REQUIREMENTS

PS 12.1 General

The Contractor is referred to SANS 1200A: General for Construction and Management Requirements for Works Contracts. Certain aspects however require further attention as described hereafter.

PS 12.2 Management and disposal of water (Read with SANS 1200A sub-clause 5.5)

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.

PS 12.3 Disposal of spoil or surplus material (Read with SANS 1200A sub-clause 5.6)

The Contractor shall dispose all surplus and unsuitable material in designated spoil areas.

PS 12.4 Testing (Read with SANS 1200A clause 7)

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 must submit the results of tests carried out on materials and workmanship when submitting work for acceptance by the Engineer. The costs for these tests shall be deemed to be included in the relevant rates and no additional payment will be made for testing as required.

PS 12.5 Management of the Environment

An Environmental Management Programme (EMPr) was compiled as part of the process of obtaining environmental authorisation for this project. It is noted that the requirements of the EMPr must therefore be borne in mind when tendering and pricing for this contract. A copy of the EMPr can be made available to the Tenderers should they wish to peruse it during the tender period. The appointed Contractor will be provided with a copy of the environmental authorisation and the EMPr before the commencement of construction.

The Contractor's initial costs for complying with the EMPr as well as all costs to maintain compliance with the EMPr and the environmental authorisation for the duration of the construction period are to be included in the Sums tendered.

PS 12.6 Security

The Contractor must ensure that all his/her employees as well as the employees of his/her subcontractors are able to identify themselves as members of the construction team.

PS 13 CONSTRUCTION PROGRAMME

PS 13.1 Preliminary programme

The Tenderer shall include with his tender a preliminary programme to be completed by all Tenderers.

The programme shall be in the form of a simplified bar chart with sufficient details to show clearly how the works will be performed within the time for completion as stated in the Contract Data.

Tenderers may submit tenders for an alternative Time for Completion in addition to a tender based on the specified Time for Completion. Each such alternative tender shall include a preliminary programme similar to the programme above for the execution of the works, and shall motivate his/her proposal clearly by stating all the financial implications of the alternative completion time.

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

PS 13.2 Programme in terms of Clause 5.6 of General Conditions of Contract (2015)

It is essential that the construction programme, which shall conform in all respects to Clause 5.6 of the General Conditions of Contract (2015), be furnished within the time stated in the Contract Data. The preliminary programme to be submitted with the tender shall be used as basis for this programme. The Contractor's attention is also drawn to clause 5.7 of the General Conditions of Contract 2010.

The Contractor shall indicate on the programme all critical path activities. In this regard, the Contractor's attention is drawn to Clause 5.12.1 of the General Conditions of Contract (2015), where consideration will only be given to claims for extension of time associated with critical path activities.

Activities must be broken down into sufficient detail so that it is possible to make an accurate assessment of the actual progress of work in relation to programme at any time.

The Contractor must submit a written progress report together with a copy of the approved construction programme (Gantt Chart) marked up with the current status line for the Engineer's approval at least 48 hours in advance of each formal site meeting. Such meetings will be held at no longer than monthly intervals.

PS 14 SITE FACILITIES AVAILABLE

At the commencement of the contract, the Employer shall make a portion of land on the site available to the Contractor for the purposes of setting up his site camp and storage area.

There is no drinking water available at the site of the Works. The Contractor shall therefore make his own arrangements for the provision of drinking water for his staff. Any costs associated with this will be deemed to have been allowed for in the Contractors rates and no additional payment for the provision of drinking water on site will therefore be entertained by the Employer.

Water for construction purposes will be available from the uMzimkhulu River. Any costs associated with the transfer of the water from the uMzimkhulu River to the site of the Works shall be for the Contractor's account. No wastage of water by the Contractor will be tolerated.

There are no sanitation facilities present at the site of the Works. The Contractor is therefore to provide sufficient on-site ablution facilities for his staff and visitors to the site in the form of portable chemical latrines. The Contractor will be responsible for the maintenance and servicing of these facilities for the duration of the contract and will ensure that all latrines are maintained in a clean and sanitary working condition. The Contractor shall also be responsible for removing the latrines on completion of the Contract.

Electricity for construction purposes will not be available on site and the Contractor will therefore be required to make his own arrangements for the provision of power for construction purposes. Any costs associated with the provision of power on site for construction purposes as well as for the provision of power to any office buildings on site shall be for the Contractor's account.

PS 15 OCCUPATIONAL HEALTH AND SAFETY

PS 15.1 General Statement

It is a requirement of this contract that the Contractor shall provide a safe and healthy working environment and direct all his activities in such a manner that his employees and any other persons, who may be directly affected by his activities, are not exposed to hazards to their health and safety. To this end the Contractor shall assume full responsibility to conform to all the provisions of the Occupational Health and Safety Act No 85 of 1993 (OHS Act) and the Construction Regulations 2014 issued on 17 February 2014 as amended by the Department of Labour.

The Contractor will implement an integrated Safety Health and Environment system (SHE). The environmental management unit and staff will however function separately from the SHE staff and functional area. SHE staff will act as environmental inspectors as part of their health and safety inspections and safety representatives appointed as per the OHS act will also act as environmental representatives.

For the purpose of this contract, the Contractor is referred to **Particular Specification PA – Health and Safety**. The purpose of this Specification is to ensure that Principal Contractors entering into a contract with the Employer maintain a level of performance with regard to health and safety issues during the performance of the contract that is in complete compliance with the relevant Health and Safety Regulations. In this regard the OHS Specifications form an integral part of the Contract and the Principal Contractor shall ensure that their contractors and/or suppliers comply with the requirements of this Specification.

PS 15.2 Health and Safety Plan

The Contractor shall, on receipt of notification that he has been awarded the contract, submit his own detailed Health and Safety Plan for the execution of the work under the contract. His Health and

Safety Plan must at least cover the following:

- (i) a proper risk assessment of the works, risk items, work methods and procedures in terms of Regulations 7 to 28;
- (ii) pro-active identification of potential hazards and unsafe working conditions;
- (iii) provision of a safe working environment and equipment;
- (iv) statements of methods to ensure the health and safety of subcontractors, employees and visitors to the site, including safety training in hazards and risk areas (Regulation 5);
- (v) monitoring health and safety on the site of works on a regular basis, and keeping of records and registers as provided for in the Construction Regulations. During the monitoring, a record of any environmental matters requiring attention will also be recorded.
- (vi) details of the Construction Supervisor, the Construction Safety Officers and other competent persons he intends to appoint for the construction works in terms of Regulation 6 and other applicable regulations; and
- (vii) details of methods to ensure that his Health and Safety Plan is carried out effectively in accordance with the Construction Regulations 2014.

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

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

PS 15.3 Cost of Compliance with the OHS Construction Regulations

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

PS 16 WORKS INSPECTION REQUIREMENTS

The works will be inspected on a monthly basis by an environmental specialist (appointed by the Employer) to ensure compliance with the Environmental Management Programme. The works will also be inspected on a monthly basis by a Health and Safety specialist (appointed by the Employer) to ensure that workers and working conditions comply with the relevant safety requirements.

The works will also be inspected on a regular basis by the Engineer to ensure compliance with the standards, specifications, drawings and details, safety and security etc. all in accordance with the contract.

HARRY GWALA DISTRICT MUNICIPALITY

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

CONTRACT No. HGDM 813/HGDM/2023

Part 2: Standardised Specifications

The standardised specifications on which this contract is based are **Standards South Africa's Standardised Specifications for Civil Engineering Construction SANS 1200**.

(Note: "SABS" has been changed to "SANS", without change to the contents of the specifications).

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

SANS 1200 A	:	General
SANS 1200 AA	:	General (small works)
SANS 1200 AB	:	Engineer's office
SANS 1200 C	:	Site clearance
SANS 1200 D	:	Earthworks
SANS 1200 DA	:	Earthworks (small works)
SANS 1200 DB	:	Earthworks (pipe trenches)
SABS 1200 DE	:	Small earth dams
SANS 1200 DK	:	Gabions and pitching
SANS 1200 G	:	Concrete (structural)
SANS 1200 GA	:	Concrete (small works)
SABS 1200 HA	:	Structural steelwork (small works)
SANS 1200 L	:	Medium-pressure pipelines
SANS 1200 LB	:	Bedding (pipes)
SANS 1200 LC	:	Cable ducts
SANS 1200 LD	:	Sewers
SANS 1200 LE	:	Stormwater drainage

Part 3: Variations to Standardised Specifications

PSA GENERAL

PSA 1 SCOPE (1)

Replace sub-clause 1.1, including the notes, with the following:

"This specification covers requirements, principles and responsibilities of a general nature which are normally applicable to all civil engineering contracts as well as the requirements for the Contractor's establishment on Site."

PSA 2 INTERPRETATIONS (2)

PSA 2.1 Definitions (2.3)

(a) Measurement and payment (c)

Replace the definitions for fixed charge and time-related charge with the following:

"Fixed charge: A charge that is not subject to adjustment on account of variation in the value of the Contract amount or the Contract time of completion.

Time-related charge: A charge, the amount of which is varied in accordance with the time for completion of the work as adjusted in accordance with the provisions of the Contract."

PSA 3 MATERIALS (3)

PSA 3.1 Quality (3.1)

Add the following:

"No used or recycled material may be used in the Works unless expressly authorized by the Engineer.

Where applicable, materials are to bear the official standardisation mark.

Samples of concrete aggregates and pipe bedding material are to be delivered to an approved laboratory.

Where proprietary materials are specified it is to indicate the quality or type of materials or articles required and where the terms "or other approved" or "or similar approved" are used in connection with proprietary materials or articles, it is to be understood that the approval shall be at the sole discretion of the Engineer."

PSA 3.2 Ordering of materials (New sub-clause 3.3)

Add new sub-clause 3.3 to clause 3:

"The quantities set out in the Bill of Quantities have been determined from calculations based on data available at the time and should therefore be considered as approximate quantities only. The liability shall rest entirely and solely with the Contractor to determine before ordering, the required types and

quantities of the various materials required for the completion of the Works in accordance with the Project Specifications and the Drawings issued to the Contractor for construction purposes.

Any reliance placed by the Contractor on the estimated quantities stated in the Bill of Quantities issued for tendering purposes, or measurements made by the Contractor from the drawings issued for tendering purposes, shall be entirely at the Contractor's risk, and the Employer accepts no liability whatever in respect of materials ordered by the Contractor on the basis of Tender Documents.”

PSA 4 PLANT (4)

PSA 4.1 Silencing of Plant (4.1)

Alter the reference to the “Machinery and Occupational Safety Act, 1983 (Act 6 of 1983)” to “Occupational Health and Safety Act, 1993 (Act 85 of 1993)”.

PSA 4.2 Contractor's Office, Stores and Services (4.2)

Add the following paragraph before the existing first paragraph in sub-clause 4.2:

"The Contractor's buildings, sheds and other facilities erected or utilised on the Site for the purposes of the Contract shall be fenced off and shall contain all offices, stores, workshops, testing laboratories, toilet facilities, etc. as may be required by the Contractor. The facilities shall always be kept in a neat and orderly condition. All roadways and pathways inside the enclosed area shall be treated to make them dust free and negotiable under all weather conditions, either with crushed stone, gravel or other approved means.

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

Add the following to the first paragraph of sub-clause 4.2:

"Stores erected by the Contractor shall be suitable for storing materials for the various sub-contractors engaged on this Contract. Such stores may be combined as one store or separate as the Contractor deems necessary."

PSA 4.3 Completion of Works (New sub-clause 4.3)

Add new sub-clause 4.3 to clause 4:

"On completion of the Works, or as soon as facilities provided by the Contractor under sub-clause 4.2 are no longer required, the Contractor shall remove those facilities and clear surface indications of their presence, such that these areas are reinstated to their original condition. The Contractor is to allow for any costs associated with returning these areas to their original state within his tendered rates."

PSA 5 CONSTRUCTION (5)

PSA 5.1 Protection of Structures (5.3)

Alter the reference to the “Machinery and Occupational Safety Act, 1983 (Act 6 of 1983)” to “Occupational Health and Safety Act, 1993 (Act 85 of 1993)”.

PSA 5.2 Safety (5.7)

Re-title this sub-clause "HEALTH AND SAFETY" and replace the contents of this sub-clause with:

"All work under this Contract shall be carried out in terms of the Occupational, Health and Safety Act, 1993 (Act No. 85 of 1993) and shall be subject to its Construction Regulations, 2014 as well as any Health and Safety Specifications contained within the Project Specifications for this contract."

PSA 5.3 Ground and Access to Works (5.8)

Add to the sub-clause:

"On completion of operations the Contractor shall restore the ground surface, wherever it may have been disturbed, to its original condition by filling in all ruts with material similar to the material within the rut and levelling the ground and, where necessary, planting grass and shrubs as may be required."

PSA 6 MEASUREMENT AND PAYMENT (8)

PSA 6.1 Scheduled Fixed Charge and Value Related Items (8.3)

PSA 6.1.1 Contractual Requirements (8.3.1)

Add to the description:

"The Contractor's initial costs for complying with the Construction Regulations, 2014 of the Occupational, Health and Safety Act (Act 85 of 1993) shall be included in the Sum tendered."

PSA 6.1.2 Establishment of Facilities on Site (8.3.2)

PSA 6.1.2.1 Facilities for the Engineer (8.3.2.1)

Re-title the sub-clause "Office Facilities for the Engineer" and add the following:

"Office facilities to be provided for the Engineer and his assistant shall include two desks with draws, two chairs of adjustable height, two steel stationery cupboards, an A0 size plan table, two drawing racks with hangers, a photocopier/fax machine, a telephone with internet access facilities, an air conditioning unit, a refrigerator, an electric kettle, a tea set and window blinds."

PSA 6.2 Scheduled Time Related Items (8.4)

PSA 6.2.1 Contractual Requirements (8.4.1)

Add to the description:

"The Contractor's time related costs for complying with the Construction Regulations, 2014 of the Occupational, Health and Safety Act, 1993 (Act 85 of 1993) shall also be included in the Sum tendered."

PSA 6.2.2 Accredited Training

The sum tendered under this item shall allow for the Contractor's cost involved in paying for accredited off site training of local employees including transport to the training venue and accommodation of trainees and shall be paid in monthly instalments.

PSA 7 PSAB ENGINEER'S OFFICE

PSAB 1 SCOPE (1)

PSAB 1.1 Sub-clause 1.1

Replace the clause with:

“This specification covers the requirements for offices, be it prefabricated, semi prefabricated, mobile or semi-mobile and associated facilities for the Engineer’s supervisory staff on Site, including the provision of the necessary structures, services and all arrangements in connection with the land on which the facilities are to be provided.

PSAB 2 MATERIALS (3)

PSAB 2.1 Name boards (3.1)

Add the following to this clause:

“The Contractor will be required to supply 2 name boards for construction purposes under this contract. The name boards shall be erected at the commencement of construction at locations indicated by the Employer. The tendered rate shall include for the supply and erection of the nameboards at the positions indicated by the Employer, maintenance of the name boards for the duration of the construction period as well as for the removal of the name boards from site upon completion.

In addition, the Contractor is to also supply a permanent signboard for the Greater Summerfield Pumpstation as well as permanent signage to ensure compliance with the OHS Act, for erection upon completion of construction. Separate provisional sums have been included within the BOQ for these items.”

PSAB 2.2 Office Buildings (3.2)

Replace the contents of sub-clause 3.2 with:

“All buildings provided by the Contractor shall be considered as temporary by nature and may be of fully or partially prefabricated construction. The Contractor shall supply and furnish one air-conditioned “Kwikjack” or similar approved (6m x 3m) office for the use of the Engineer and his/her staff, and one air-conditioned “Kwikjack” or similar approved (9m x 3.4m) conference facility for conducting meetings with kitchen space provided.

In addition, a shelter, at least 12 m long x 5 m deep and 2.1 m high, constructed of timber frame with 80% shade cloth fixed to the top and to 3 sides, adequately sized to house four motor vehicles, shall be provided. The shade cloth at the sides shall extend to no more than 1.5 m above the finished ground level. The floor of the shelter shall be finished with a gravel layer or crushed stone.”

PSAB 2.3 Engineer's Accommodation (New clause 3.3)

"Accommodation for the Engineer and his assistant shall be required under this Contract.

Accommodation for the Engineer and his assistant shall consist of the following: An accommodation unit of two separate single bedrooms, a toilet, a shower and an open plan lounge/dining room/kitchen area. All windows to have curtaining and mosquito netting.

PSAB 3 PLANT (4)

PSAB 3.1 Telephone (4.1)

Replace the contents of the sub-clause with:

"The Contractor shall be required to provide telephone communication including Internet access at the Engineer's office. In addition, the Contractor shall provide a cellphone for sole use by the Engineer for the duration of the construction period with a minimum monthly allowance of R1000 per month."

PSAB 4 CONSTRUCTION (5)

PSAB 4.1 Survey Assistants (5.5)

Delete the first sentence and substitute the following:

"The Contractor shall make available to the Engineer two suitably trained and educated labourers for use on and about the site on survey and other work directed by the Engineer at all reasonable times."

PSAB 4.2 Survey Equipment (New sub-clause 5.6)

Add new sub-clause:

"The Contractor shall at least provide the following survey equipment on the Site from the commencement to the completion of the Works:

- One automatic levelling Engineer's level plus tripod;
- One levelling staff (4m long, 1cm gradations);
- Two tachometric staffs (5 m long, 1cm chess-board pattern);
- One spirit level (one metre long);
- One hammer (2kg);
- Two canvas carry-bags;
- One 100 m steel tape;
- One 30 m steel tape;
- One 5 m steel tape;

The survey equipment may be shared by arrangement between the Contractor and the Engineer or his representative on Site. The Contractor shall keep the equipment continuously insured against any loss, damage, or breakage and he shall indemnify the Engineer and the Employer against any claims in this regard. Upon completion of the Works, the survey equipment as listed above shall revert to the Contractor."

PSD EARTHWORKS

PSD 1 INTERPRETATIONS (2)

PSD 1.1 Definitions (2.3)

Replace the definition "Borrow" with the following:

"Borrow material: Material, other than material obtained from excavations required for the Works, obtained from sources such as borrow pits or the authorized widening of excavations. 'Borrow' shall have a corresponding meaning."

Replace the definition "Specified density" with the following:

"Specified density: The specified dry density expressed as a percentage of modified AASHTO dry density."

Replace the definition "Stockpile" with the following:

"Stockpile (Verb): The process of selecting and, as may be necessary, loading, transporting and off-loading material in a designated area for later use and specific purpose."

Add the following definitions:

"Fill: An embankment or terrace constructed from material obtained from excavations or borrow."
Fill (material): Material used for the construction of an embankment or terrace."

PSD 2 MATERIALS (3)

PSD 2.1 Classification for Excavation Purposes (3.1)

PSD 2.1.1 Method of classifying (3.1.1)

Add the following:

"Classification of material other than 'soft excavation' shall be agreed upon before excavation may be commenced.

The Contractor shall immediately inform the Engineer when the nature of the material being excavated changes to such an extent that a new classification is warranted for further excavation. Failure on the part of the Contractor to advise the Engineer in good time shall entitle the Engineer to reclassify, at his discretion, such excavated material."

PSD 2.1.2 Classes of Excavation (3.1.2)

Delete sub-clause 3.1.2 b) as no separate classification for intermediate materials will be permitted.

PSD 3 CONSTRUCTION (5)

PSD 3.1 Safeguarding of Excavations (5.1.1.2)

Delete the first paragraph of this and replace with the following:

"a) The Contractor or his agent or representative appointed in writing by the Contractor shall be deemed to be the 'competent person' as defined in Clause 13(1) of the Construction Regulations, 2014.

PSD 3.2 Soil Erosion Measures (New sub-clause 5.1.1.4)

"Care shall be taken during construction to ensure that free flow paths are maintained in all drains, gutters and waterways. Special precautions shall be taken by the Contractor not to change existing conditions by leaving spoil in waterways. The Contractor shall be responsible throughout the duration of the Contract for the construction and maintenance of all soil erosion preventative measures necessary to protect the land utilised by the Contractor during the Contract from any adverse effects of soil erosion, settlement, scour etc., resulting from the construction activities."

PSD 3.3 Methods and Procedures (5.2)

PSD 3.3.1 Excavation (5.2.2)

Add to b):

"Where outside shuttering is ordered by the Engineer, excavation of not more than 600 mm over the outside dimensions of the structure shall be deemed necessary for the fixing of outside formwork. This extra excavation and refilling, up to 600 mm wide, where necessary is to be measured and paid for under quantities allowed for this purpose in the Bill of Quantities. Outside shuttering shall be used for the construction of all major structures unless ordered otherwise by the Engineer."

Delete the first sentence of c) and replace with:

"Each excavated surface on which or against which a permanent concrete structure will be placed shall be trimmed to ensure that there is no projection greater than 20 mm into the excavated profile."

PSD 4 MEASUREMENT AND PAYMENT (8)

PSD 4.1 Scheduled Items (8.3)

PSD 4.1.1 Bulk Excavation (8.3.2)

Remove all references to "intermediate excavation" or "intermediate material" from sub-clause b).

PSD 4.1.2 Restricted Excavation (8.3.3)

Remove all references to "intermediate excavation" or "intermediate material" from sub-clause b)

PSD 4.1.3 Grassing (8.3.11)

Delete sub-clause 8.3.11 and replace with:

"Approved grass shall be planted after topsoiling has been completed, with the tufts being spread at not more than 150 mm centres. The planted areas shall be kept neatly trimmed, fertilised and watered. The Contractor shall ensure that the planted areas are kept moist and do not dry out. Any grass that fails to grow shall be replaced by the Contractor, at his expense, with fresh grass until

satisfactory cover is obtained. The rate shall cover the cost of supplying the grass and the labour for planting and maintaining the grass in accordance with this Specification.”

PSDB EARTHWORKS (PIPE TRENCHES)

PSDB 1 MATERIALS (3)

PSDB 1.1 Backfill Material (3.5)

In the third line of a) substitute "100 mm" for "150 mm".

PSDB 1.2 Selection (3.7)

Delete the second sentence and substitute the following:

"The Contractor is not required to use selective methods of excavating but may do so at his own cost. The Contractor shall however, if so instructed by the Engineer, screen or otherwise treat excavated material in order to produce material suitable for bedding or covering or both bedding and covering for the pipeline."

PSDB 2 CONSTRUCTION (5)

PSDB 2.1 Soil Erosion Measures (New sub-clause 5.1.2.4)

"Care shall be taken during construction to ensure that free flow paths are maintained in all drains, gutters and waterways. Special precautions shall be taken by the Contractor not to change existing conditions by leaving spoil in waterways. The Contractor shall be responsible throughout the duration of the Contract for the construction and maintenance of all soil erosion preventative measures necessary to protect the pipelines and land utilised by the Contractor during the Contract from any adverse effects of soil erosion, settlement, scour etc., resulting from the construction of the pipelines."

PSDB 2.2 Barricading, Signage, Watching and Lighting (New sub-clause 5.1.5)

"While the responsibility for the efficient barricading, signage, lighting and watching of all trenches and stacks of materials shall rest upon the Contractor, he shall be required to make the following minimum provisions.

Barricading shall be done by means of at least two pieces of horizontal double sided 'red/white' chevron tape, or equivalent as approved by the Engineer. The tape shall be stretched tightly between suitable supports along both sides and ends of the excavation at approximately 0,45 m and 1,25 m above the ground. The supports shall consist of poles or steel fencing standards securely planted in solid ground so as to enclose the spoil material and the excavations and shall be at not more than 10 m centres, unless directed otherwise by the Engineer.

The Contractor shall make available on Site at all times a sufficient number of steel plates at least 2 m x 1,2 m x 8 mm thick which may be laid across open excavated trenches to provide bridges for vehicles along the route of the work as and where considered necessary by the Engineer."

PSDB 2.3 Backfilling (5.6)

PSDB 2.3.1 General (5.6.1)

Add to this sub-clause:

"Notwithstanding the requirements of sub-clauses 5.6.1 and 5.6.6 of SANS (SABS) 1200 DB, no pipe joint or pipe fitting shall be covered by either the blanket fill or the main fill prior to the successful completion of the visual inspection and the pressure testing of the relevant section of the pipeline."

PSDB 2.3.2 Disposal of Soft Excavation Material (5.6.3)

Replace the sub-clause with:

"Soft excavation material from the trench, which is unsuitable or has become surplus because of bulking, displacement by the pipe and importation, shall be disposed of along the trench servitude, at designated spoil areas or approved spoil areas furnished by the Contractor, as applicable. The requirements of SANS 1200D shall apply to overhaul and to free haul for the disposal of surplus excavated material."

PSG CONCRETE (STRUCTURAL)

PSG 1 MATERIALS (3)

PSG 1.1 Cement (3.2)

PSG 1.1.1 Applicable Specifications (3.2.1)

Unless agreed to otherwise by the Engineer, the cement used on the Works shall be CEM 1, grade 42.5 complying with the requirements of SANS (SABS EN 197-1) 50197-1:2000/EN 197-1:2000.

PSG 1.1.2 Storage of Cement (3.2.3)

Add to the sub-clause:

“Cement shall not be kept in storage for longer than three weeks without the Engineer's permission. The cement store shall be run on a first in, first out basis.”

PSG 1.2 Aggregates

PSG 1.2.1 Use of Plums (3.4.2)

The use of plums will not be permitted, unless agreed to by the Engineer.

PSG 1.3 Admixtures (3.5)

Unless approved by the Engineer, neither admixtures nor air-entraining agents shall be used in any concrete.

PSG 2 PLANT (4)

PSG 2.1 Formwork (4.5)

PSG 2.1.1 Ties (4.5.3)

Add to the sub-clause:

“The water tightness requirement of the structure shall be taken into account when deciding upon the type of tie to be used. The cover requirement will apply to ties left permanently in place.

No plugs, bolts, ties or clamps of any description used to hold the formwork will be allowed to project into or through the concrete unless expressly approved by the Engineer.

Only approved ferrules consisting of solid rods (that remain embedded in the concrete) and with removable ends shall be used to hold the formwork of the walls. The removable tie-rod ends shall facilitate removal without damage to the concrete, and no permanently embedded parts of such tie-rods shall have less than 50 mm of cover to the finished concrete surface.

The cavities left in the concrete when the tie-rod end cones are removed shall be soundly caulked with a cement mortar to which an approved non-shrink grout has been added strictly in accordance with the

manufacturer's specifications, and shall be neatly finished to a smooth surface uniform with that of the surrounding concrete.

The cost of supplying special tie-rods as well as the filling of cavities left by the tie-rod cones shall be included in the rates tendered for formwork under the appropriate payment items.

On no account shall formwork be secured to reinforcing bars.”

PSG 3 CONSTRUCTION (5)

PSG 3.1 Reinforcement (5.1)

PSG 3.1.1 Bending (5.1.1)

Add to the sub-clause:

“Reinforcement shall be cut with cropping or shearing equipment only. Cutting torches shall not be used.”

PSG 3.1.2 Fixing (5.1.2)

Add to the sub-clause:

“No welding of reinforcement will be permitted.”

PSG 3.2 Formwork (5.2)

PSG 3.2.1 Classification of Finishes (5.2.1)

Delete Clause 5.2.1(b) and replace with:

“This finish shall be obtained by the use of steel-faced forms arranged in a regular pattern to fit the appearance of the structure. After stripping, all small fins, bulges and other projections shall be removed, surface honeycombing, surface discolorations and other irregularities repaired and the surface rubbed to form a smooth finish of uniform texture and colour. The finish shall be to Degree of Accuracy 1 tolerances defined in Clause 6.2.2 and 6.2.3.”

Add to the sub-clause 5.2.1 (c):

“The quality of the formwork to the external surfaces shall fall within the "Special" category and shall be such that no after-treatment e.g. rubbing down, other than the sealing of ferrule holes (which themselves shall be placed with precision in a regular pattern) will be necessary. The formwork used shall be unblemished and erected in a regular pattern so that the joints shall be a feature of the finished surface which shall be to Degree of Accuracy 1 tolerances as defined in Clauses 6.2.2 and 6.2.3.”

PSG 3.2.1.1 Removal of Formwork (5.2.5.2)

Rephrase the first two lines to read:

“For this purpose and except as allowed in 5.2.5.3, the formwork shall remain in place, after all the concrete has been placed in the relevant lift, for the appropriate minimum period of time given in Table 2.”

PSG 3.3 Holes, Chases and Fixing Blocks (5.3)

Add to this sub-clause:

“Fixing blocks for the attachment of fixtures may be embedded in concrete if the strength or any other desirable feature (such as appearance) is not, in the opinion of the Engineer, impaired thereby.”

PSG 3.4 Chamfers (New sub-clause 5.5)

“Unless otherwise noted on the drawings, all exposed corners and arises shall be chamfered 25 x 25 mm.”

PSG 3.5 Concrete (5.5)

PSG 3.5.1 Quality (5.5.1)

PSG 3.5.1.1 Consistency (5.5.1.2 (b))

Delete the paragraph (b) and substitute the following:

(b) by the Engineer in respect of prescribed mix and strength concrete, or

PSG 3.5.1.2 Durability (5.5.1.5)

Add to the sub-clause:

“The exposure conditions at the site of the works are to be considered as being severe.”

PSG 3.5.1.3 Prescribed Mix Concrete (5.5.1.6)

Delete the fourth to tenth lines inclusive from the sub-clause and substitute the following:

“The grades of prescribed mix concrete are designated Grades 20, 15 and 10 and are composed of cement, sand and stone, as specified herein before, proportioned as listed in the accompanying table.

Grade (MPa)	Size of stone (mm)	Cement (kg)	Sand (m³)	Stone (m³)
20	19	50	0.11	0.14
15	19	50	0.13	0.16
10	37.5	50	0.16	0.22

While the proportion of cement to the combined quantity of sand and stone must remain constant for each grade of concrete, as set out in the table, the relative proportions of sand and stone are to be adjusted if required by the Engineer, so as to attain the most suitable consistency of concrete, due allowance being made for the bulking of sand due to moisture.

The addition of water shall be regulated by the use of properly calibrated containers, only sufficient water being added as will in the opinion of the Engineer, afford a workable mix.

The fine and coarse aggregate approved for use in strength concrete Grades 30 and 25 are to be used for prescribed concrete mixed Grades 20 and 15.

PSG 3.5.1.4 Strength Concrete (5.5.1.7)

Replace the contents of the sub-clause with:

“The grades of strength concrete are designated Grades 30 and 25 and are composed of cement, sand and stone, as specified herein before, proportioned as listed in the accompanying table.

Grade (MPa)	Size of stone (mm)	Cement (kg)	Sand (m ³)	Stone (m ³)
30	19	50	0.080	0.110
25	19	50	0.095	0.125

The concrete mixes for Grade 30 and 25 concrete shall be designed by the Portland Cement Institute’s laboratory nearest to the site of the Works, or another competent laboratory approved by the Engineer. At least three weeks before placing any strength concrete on the Works, the Contractor shall supply and deliver to a laboratory at his own cost, samples of the aggregates he proposes to use in the strength grade concrete. While the proportion of cement to the combined quantity of sand and stone must remain constant for each grade of concrete, as set out in the table, the relative proportions of sand and stone may be adjusted to achieve the requirements of this Specification.

PSG 3.5.2 Mixing (5.5.3)

PSG 3.5.2.1 Ready Mixed Concrete (5.5.3.2)

Delete the first sentence and substitute the following:

“Concrete produced at a central concrete production facility other than at the site of the Works shall only be accepted for use in the Works with the prior and express approval of the Engineer. When such approval has been given, the Engineer shall then decide whether or not to accept the test results obtained by the facility concerned.”

PSG 3.5.3 Placing (5.5.5)

PSG 3.5.3.1 Dropping Concrete Freely (5.5.5.5)

Replace the contents with:

“Dropping concrete freely will only be permitted if the Engineer is satisfied that this is the only practical method of placing.”

PSG 3.5.3.2 Pumping of Concrete (5.5.5.9)

Delete the sub-clause 5.5.5.9 and substitute the following:

“The placing of concrete by pumping will not be permitted.”

PSG 3.5.3.3 Blinding Layer (New sub-clause 5.5.5.10)

“Beneath all structural grades of concrete or elsewhere, if so ordered by the Engineer, or shown on drawings, the bottom of the excavation is to be covered by a blinding layer (screed) in Grade 15/19

concrete to a depth of 75 mm to prevent disturbance of the ground and to serve as an even and accurate positioned working floor for setting steel and placing foundation concrete. This blinding layer shall be laid immediately after excavations have been taken out and trimmed to the required depths and have been inspected and approved by the Engineer.”

PSG 3.5.4 Construction Joints (5.5.7)

PSG 3.5.4.1 General Preparation of Construction Joints (5.5.7.3)

Delete sub sub-clauses (a), (b), (c), and (d) and substitute the following:

- “a) All horizontal and vertical construction joints shall be cleaned of all dirt and loose particles and shall be prepared to the satisfaction of the Engineer. All intersections of construction joints with concrete surfaces which will be exposed to view, shall be made straight and level or plumb and shall be constructed to the details shown on the drawings.
- b) The Contractor shall provide a compressor on site for the whole period during which concreting is in progress, and this must be available for cleaning concrete faces prior to placing fresh concrete or pouring joints.
- c) “Blowing off” may generally be carried out on horizontal surfaces but under special circumstances approved by the Engineer, it may also be carried out on vertical surfaces. The surface concrete to be prepared shall be between 4 and 8 hours old after completion of placing and shall be blown off using a mixture of air and water under a pressure of at least 500 kPa or by using a high-pressure water jet until all dirt, laitance, etc. is removed and particles of clean coarse aggregate are exposed sufficiently to produce a rough surface. Any loose particles of coarse aggregate shall also be removed. The success of this method of preparation depends on selecting the correct time (dependent on the type of cement) so that the concrete has set to just the necessary degree of hardness. The operation may therefore have to be undertaken outside normal working hours and at night. When the surfaces are at least 12 hours old, any remaining loose fine aggregate particles shall be washed off.
- d) “Scabbling”, which refers to removal of all surface laitance plus roughening the concrete surface with pneumatic picks in order to expose the coarse aggregate in a uniform pattern, may be carried out on both horizontal and vertical surfaces. The surfaces to be prepared in this manner shall be at least 12 hours old after mixing the concrete. At least 35% of the roughened surface area shall consist of exposed coarse aggregate.
- e) All surfaces either prepared, by “blowing-off” or by “scabbling”, shall be kept continuously wet until the next lift of fresh concrete is to be placed against them; the minimum time being 12 hours.
- f) The use of approved wet-to-dry epoxy resin concrete adhesive, strictly in accordance with the manufacturer's instructions, will be permitted in the formation of concrete joints at surfaces where the concrete is older than 7 days.”

PSG 3.5.4.2 Placing Fresh Concrete at Joints (New sub-clause 5.5.7.4)

- a) Vertical construction joint surfaces shall be, as instructed by the Engineer, either smooth, clean and kept damp for at least 24 hours before placing fresh concrete against them, or scabbled, cleaned and dampened as specified above.
- b) Horizontal construction joint surfaces shall have been “scabbled” or “blown off”, cleaned and kept continuously wet as specified above before fresh concrete is placed over them. Immediately before placing the fresh concrete, the damp surface of the set concrete shall be evenly coated (by brushing or brooming) with a layer of cement mortar between 10 mm and 15 mm thick. The water/cement ratio and the cement/sand ratio of this mortar shall be the same as that of the fresh concrete to be placed and the mortar shall be produced by leaving the coarse aggregate fraction out of a batch of the fresh concrete. Coating with mortar is to be done in stages immediately before areas of set concrete are covered with fresh concrete, so that no mortar is exposed for longer than one hour after mixing, or less if the mortar has become dry or has started to set before being covered with fresh concrete. Any dried out mortar shall be removed and, after cleaning the surface, shall be replaced with fresh mortar.
- c) No fresh concrete shall be placed on the top surface of concrete, which is laterally restrained (e.g. by formwork or by in-situ earth) while the top layer of concrete is between 3 hours and 12 hours old after mixing. No fresh concrete shall be placed on top of the concrete with an unrestrained lateral surface while the top layer of concrete is between 2 and 12 hours old after mixing.”

PSG 3.5.5 Curing and Protection (5.5.8)

Add to the sub-clause:

“Notwithstanding the acceptable methods of curing itemised under (a) to (c) of the sub-clause, the walls of thin-wall reservoirs or other structures shall be subjected to continuous spray curing for a minimum period of 7 days.”

Delete from the sub-clause all references to the curing periods relating to concrete made with Portland Blast Furnace Cement since the use of the latter is not permitted in terms of the Contract.

PSG 3.5.6 Adverse Weather Conditions (5.5.9)

PSG 3.5.6.1 Hot Weather Concreting (5.5.9.2)

Add to the sub-clause:

“When concrete operations are being carried out at ambient temperatures in excess of 32°C, the Contractor shall apply the relevant recommendations for hot weather concreting set out in PCI 305 “Recommended practice for hot weather concreting.”

PSG 3.5.7 Concrete Surfaces (5.5.10)

PSG 3.5.7.1 Unformed Concrete Surfaces (5.5.10.2)

Add to the sub-clause:

"All unformed concrete surfaces shall be finished to one or more of the following classes of finishes:

a) Class 1: Screeded Finish

Immediately after being poured the concrete shall be screeded with a straight edge working between templates set accurately to line and level. No mortar shall be added to overcome surface irregularities. These shall be made good by re-screeding or by the addition of concrete.

b) Class 2: Wood Floated Finish

After screeding to line and level and when the water sheen has disappeared, the concrete surface shall be trowelled by hand with a wood float to a uniform consolidated surface free from any trowel marks and uniform in texture and appearance.

c) Class 3: Steel Trowelled Finish

Commence as for Class 2 and finish with a steel trowel. The final finish shall be done at the correct time, for example, while the concrete is still sufficiently plastic to take polish but when it has hardened sufficiently to prevent drawing water and fine materials to the surface. Any adherence of mortar to the steel trowel indicates that the correct stage has not yet been reached."

PSG 3.5.7.2 Tolerances (New sub-clause 5.5.10.4)

- "a) Surface Class 1 shall not vary by more than 6 mm measured from a 3 m straight edge placed anywhere on the surface.
- b) Surface Class 2 and 3 shall not vary by more than 3 mm measured from a 3 m straight edge placed anywhere on the surface.
- c) Special surfaces such as bearing seats shall be finished to a higher degree of accuracy, as shown on the drawings."

PSG 3.5.8 Watertight concrete (5.5.11)

Add the following:

"All water retaining structures are to be subjected to a water tightness test. No vertical or inclined construction joints of any kind will be permitted in the perimeter walls of water retaining structures unless these have been specially ordered or authorised by the Engineer.

All water retaining structures shall be subjected to a watertightness test prior to backfilling around the structures. After the structures have reached their design strength, they shall be slowly filled with clean water at a rate not exceeding 2 metres depth per 24 hours to their normal maximum water level. After allowing a further 24 hours for takeup by the concrete surfaces, the rate of leakage shall be measured by a hook-gauge to be provided by the Contractor. If the rate of leakage exceeds 2 litres per square metre of water surface area per 24 hours and there is no prospect, in the opinion of the Engineer, of the rate of leakage improving, the Contractor shall take remedial steps as specified by the Engineer. The cost of any remedial steps required will be for the Contractor's account."

PSG 3.5.8.1 Concrete for Watertight concrete (New sub-clause 5.5.11.1)

Add new sub-clause:

“Grade 35 MPa /19 mm concrete shall be used for the construction of all water retaining structures.”

PSG 3.5.8.2 Pipes and Conduits Embedded in Concrete for Watertight Retaining Structures (New sub-clause 5.5.11.2)

Add new sub-clause:

“Except with the approval of the Engineer, no pipes other than those shown on the drawings shall be embedded in the concrete.”

PSG 3.5.8.3 Disinfection of Water Retaining Structures (New sub-clause 5.5.11.3)

Add new sub-clause:

“Before filling each water retaining structure for the first time with water, it shall be swept thoroughly clean. While the structure is being filled with water, a sodium hypochlorite solution shall be dosed to achieve a theoretical total chlorine concentration of 25ppm.

Once the structure has been filled with water, it shall be left for a 24 hour period. Thereafter, total chlorine concentration shall be measured. A concentration of 20ppm total chlorine will be considered acceptable. Should such concentration not be achieved, the Contractor shall carry out, at his own cost, all steps deemed necessary by the Engineer to achieve satisfactory disinfection.

Once satisfactory disinfection is achieved, the structure shall be drained and sufficient sodium thiosulphate (typically 1 part/part of total chlorine) shall be dosed into the system to fully neutralise the chlorine before discharging.

The structure shall then be filled and after 24 hours, samples will be taken by the Engineer for analysis (the Contractor shall allow for the cost of these tests within his tendered rate). Should the following limits not be achieved, the Contractor shall carry out, at his own cost, all steps deemed necessary by the Engineer to confirm satisfactory disinfection:

PARAMETERS	COUNT
E Coli	0
Coliforms	0
Faecal Streptococci	0

PSG 3.5.9 Grouting (5.5.13)

Add to the sub-clause:

“Grouting shall be done to the instruction of the Engineer using materials of suitable consistency as follows. Unless otherwise directed, grouting mixtures shall consist of one part cement to two parts

concrete sand by volume, well mixed and with sufficient water added to obtain the required consistency. Where recesses to be filled are of appreciable dimensions, the Engineer may direct the Contractor to replace a proportion of sand with fine stone to reduce shrinkage.”

PSG 3.5.10 Liquid Grout (New sub-clause 5.5.13.1)

Add new sub-clause:

Where liquid grout is required for bolt holes etc., water shall be added in such quantity that, when the material is thoroughly mixed and stirred, it shall flow readily so as to fill all recesses and air spaces in the work to be grouted. Before grouting any section of the work with liquid grout, the surfaces to receive grout shall first be thoroughly cleaned and flushed with water. The grout shall then be introduced in such a manner as to fill effectively all recesses. When the grout has set the surface of the work shall be finished off flush and smooth with cement mortar.

PSG 3.5.11 Grouting of Pipes/Specials through Walls (New sub-clause 5.5.13.2)

“Where entry holes for pipes / specials have been left in the walls, the Contractor shall be responsible for the grouting in of such pipes / specials regardless of whether or not these have been supplied by himself.

Before commencing the positioning in holes of any pipes/specials, the Contractor shall:

- (a) Remove all shuttering and boxing remaining in the holes;
- (b) Make any alterations required to the position and shape of the holes;
- (c) Thoroughly clean the sides of the holes so as to obtain satisfactory bond surface for the new concrete; and
- (d) Free all surfaces of the pipes / specials of all coatings and thoroughly scrape and clean the pipes / specials.

After accurately positioning the pipes / specials in the respective holes, the Contractor shall fix the pipes / specials in the holes.

Immediately prior to grouting being carried out by the placing of mortar and concrete around the pipes, the surface of the existing concrete shall be saturated with water. All surplus water shall be removed and the surface covered with a layer, approximately 12 mm thick, of mortar consisting of three parts concrete sand and one part cement.

The concrete ingredients shall be mixed and placed as dry as possible to obtain a dense, waterproof concrete. Where a watertight seal is required, the concrete shall be carefully worked around the puddle flange, if any, and the pipe barrel or body of the special, shall be vibrated in layers so as to obviate any failing away from pipe / special surfaces of the concrete already placed. The whole shall, when set, form a dense, homogeneous, and waterproof mass. A spare vibrator with an independent power source shall be kept in readiness to ensure continuity of placing in the event of the breakdown of the duty vibrator.

Smooth formwork that has been suitably strengthened for use with a vibrator shall be provided for facing the concrete around each pipe / special.”

PSG 3.5.12 Dry-Packed Grout (New sub-clause 5.5.13.3)

“When dry-packed grout is specified, under base plates etc., only sufficient water shall be added to make the mixture ball when squeezed in the hand. Before any grouting is done with dry caulking, the surfaces between which the caulking is to be placed shall first be thoroughly cleaned and flushed with water. All surplus visible water shall be wiped or blown away and the dry caulking shall be forcefully rammed or hammered into place using suitable tools. Exposed surfaces shall be finished off neatly with a trowel and extensive exposed areas shall be covered with wet sacking and kept damp for at least 24 hours.

Where additives are required for grouting operations, these shall be brought onto site in the manufacturer’s unopened containers and used strictly in accordance with the manufacturer’s instructions, which the Contractor shall not fail to obtain. If necessary, the Engineer may require the Contractor to undertake preliminary tests to check the behaviour of proprietary additives under the conditions prevalent on the site.”

PSG 3.5.13 Epoxy Grout (Epoxy mortar type only) (New sub-clause 5.5.13.4)

Add new sub-clause:

“The manufacturer’s instructions shall be observed when an epoxy grout is used.”

PSG 3.5.14 Cement Mortar (New sub-clause 5.5.16)

Add new sub-clause:

“Where cement mortar is specified for filling around pipes etc. water shall be added to obtain a firm paste, which can be worked with a trowel but is not fluid. Surfaces to receive mortar shall be well wetted and excess water allowed to drain, or be removed. The mortar shall be worked into place with a trowel or tamping rod, exposed surfaces floated off, covered with wet hessian for 24 hours, and allowed to harden without disturbance.”

PSG 3.5.15 Joints (New sub-clause 5.5.16)

PSG 3.5.15.1 Fibreboard (New sub-clause 5.5.16.1)

“Fibreboard shall be provided between concrete sections wherever shown on the drawings. Fibreboard shall be impregnated and treated with a special bituminous compound to protect it from weathering, e.g. “Flexcell”, as manufactured by Expandite (Pty) Ltd or a similar approved board of comparable composition, which shall be securely fixed in position to avoid distortion or displacement while concreting operations are in progress.”

PSG 3.5.15.2 Expansion Joints (New sub-clause 5.5.16.2)

“Joint recesses to receive sealing compound are to be formed to the dimensions and shapes indicated on the drawings. These recesses are to be formed with rough sides and so shuttered that the shuttering can be removed without any timber having to be left in the recesses. Shuttering shall be

left in the joints until the joints are ready for priming and filling with sealant. After the removal of the shutters, joints shall be cleaned by mechanically operated wire brushes and shall be hacked and scabbled and all dust removed.”

PSG 3.5.15.3 Sealing Joints (New sub-clause 5.5.16.3)

“The sealing of the joints (contraction / movement) is to be carried out by the Contractor under the supervision of a representative of the specialist firm supplying the sealing compounds. The Contractor is to be responsible for supplying these approved materials, transporting them to site, storing and using them, as required, and providing all labour, tools, equipment and everything necessary to prime and fill the joints.

Before priming and pouring, the joints recesses are to be thoroughly cleaned and dried out, in which connection, the use of compressed air is stipulated, to the approval of the Engineer.

No sealing of joint recesses is to be carried out until at least 21 days after the adjacent concrete has been cast.

Every care shall be exercised by the Contractor to ensure that the work shall be carried out in accordance with the requirements of this specification and in strict conformity with any special instructions given by the manufacturers for the proper use and treatment of the sealing materials provided by them.”

PSG 3.5.16 Bituminous Coatings to Earth Faces (New sub-clause 5.5.17)

“All earth covered concrete surfaces shall receive two applications of an approved bituminous coating such as Ebsco E55 Bituminous Waterproofing Compound or similar approved.

The coatings shall be applied strictly in accordance with the manufacturer's instructions and shall be repaired to the satisfaction of the Engineer if damaged during backfill operations.”

PSG 4 TESTS (7)

PSG 4.1 Testing (7.2.)

PSG 4.1.1 Laboratory Testing (7.2.3)

Add to the sub-clause:

“The Contractor will be liable for all costs incurred in designing the concrete mixes and making structural concrete cubes and having these tested.”

PSG 5 MEASUREMENT AND PAYMENT (8)

PSG 5.1 Measurement and Rates (8.1)

PSG 5.1.1 Reinforcement (8.1.2)

Delete sub-clause 8.1.2.1 b).

Delete sub-clause 8.1.2.2 a) and replace with:

“a) Each reinforcement bar size and type will be separately scheduled. Additional splice lengths or swage type connections introduced at the Contractor's request shall not be measured and will be to the Contractor's account.”

Delete from the first line of sub-clause 8.1.2.3 a) "of nominal size 25 mm".

PSG 5.1.2 Concrete (8.1.3)

Delete sub-clause 8.1.3.1(b) and replace with:

“(b) No allowance will be made for concrete required to make up over-break in soft, intermediate or hard rock excavation. No payment will therefore be made for additional concrete or formwork, ordered in writing by the Engineer to replace over-break.”

Add to sub-clause 8.1.3.3 a):

“Any additional precautions required for adverse weather conditions shall be covered in the unit rate.”

Delete from the first line of sub-clause 8.1.3.3 (a) the words:

"the cost of the design of the mix in the case of strength concrete,"

Add the following new sub-clause after sub-clause 8.1.3.3. (d):

“(e) Separate items have been included in the Bill of Quantities for concrete complete with formwork for each particular grade of concrete or for structural units of similar size and shape, or for both. The unit rates shall cover the cost of the provision of concrete (made with ordinary Portland Cement unless otherwise so scheduled); mixing, testing, placing, compacting, the forming of stop-ends and unforeseen construction joints, striking where necessary, together with the cost of all parts of formwork in contact with the concrete and the necessary bearers, struts, and other supports, plus the layout and plant necessary to erect and strike such formwork.”

PSG 5.1.3 Scheduled Reinforcement Items (8.3)

PSG 5.1.3.1 Steel Bars (8.3.1)

Delete “Unit: t” and replace with “Unit: kg”

PSG 5.1.4 Bituminous Coating to Earth Faces (New sub-clause 8.9)

“Bituminous CoatingUnit: m²”

The unit of measurement of bituminous coating to concrete surfaces shall be the square meter of surface coated. The rate tendered shall provide for all materials, plant, tools, labour, etc., necessary for the satisfactory installation of the coating according to the manufacturers specifications.”

PSL MEDIUM-PRESSURE PIPELINES

PSL 1 INTERPRETATIONS (2)

PSL 1.1 Abbreviations (2.4)

“HDPe : High Density Polyethylene”

PSL 2 MATERIALS (3)

PSL 2.1 Steel Pipes, Fittings and Specials (3.4)

PSL 2.1.1 Pipes of nominal bore up to 150 mm (3.4.2)

Delete "shall be screwed" in the second and third lines.

Add the following to this sub-clause:

"The pipes shall be 'normalized' or seamless steel pipes and shall be used with malleable cast iron fittings complying with the requirements of SANS (SABS 509) 14:1994/ISO 49:1994."

PSL 2.2 Other Types of Pipe (3.7)

PSL 2.2.1 uPVC pipes (3.7.1)

Only Unplasticised Polyvinyl Chloride (uPVC) pipes shall be used. Unplasticised Polyvinyl Chloride (uPVC) pipes shall be in accordance with SANS (SABS) 966-1:2013. Minimum working pressure to be Class 12.

PSL 2.2.2 High Density Polyethylene Pipes (HDPe) (New sub-clause 3.7.3)

High Density Polyethylene (HDPe) pipes shall be in accordance with SANS ISO 4427 in material grade PE 80. Minimum working pressure to be PN 10, Standard Diameter Ratio (SDR) 13.6 (equivalent to material grade PE 100, PN 12.5).

PSL 2.3 Jointing material (3.8)

PSL 2.3.1 Flanges and Accessories (3.8.3)

Add to the sub-clause:

“c) Each bolt and nut set is to be supplied with two appropriately sized washers. When fitting the bolts and nuts, one washer is to be placed against each bolt and nut.”

PSL 2.3.2 Loose Flanges (3.8.4)

Add to the sub-clause:

“Bolts and nuts are to comply with SABS 136.”

PSL 2.3.3 HDPe pipe couplings (New sub-clause 3.8.8)

“All couplings to HDPe pipes up to be 16 bar rated compression fittings. Only compression fittings of the following brand names, or similar approved, will be acceptable: Philmac, Magnum, Plasson, Astore, Unidelta and Elprene.”

PSL 2.4 Corrosion protection (3.9)

PSL 2.4.1 Steel Pipes (3.9.2)

PSL 2.4.1.1 Steel Pipes of Nominal Bore up to 150 mm (3.9.2.1)

Delete the contents of this clause and substitute the following:

Corrosion protection of steel pipes of nominal bore up to 250mm shall conform to the requirements of **Particular Specification PC: Mild Steel Pipes and Fittings.**

PSL 2.4.1.2 Steel Pipes of Nominal Bore over 150 mm (3.9.2.2)

Delete the contents of this clause and substitute the following:

Corrosion protection of steel pipes of nominal bore over 250mm shall conform to the requirements of **Particular Specification PC: Mild Steel Pipes and Fittings.**

PSL 2.4.2 Protection Against Electrolytic Corrosion (3.9.3)

Delete the third line and substitute the following:

“tape or tape impregnated with a petroleum based material, or other approved insulating material, shall be applied in”

PSL 2.4.3 Flexible Couplings (3.9.4)

Delete the contents of this clause and substitute the following:

“All flexible couplings shall be thoroughly wrapped with tape impregnated with a petroleum-based material.”

PSL 2.4.4 Joints, Bolts, Nuts and Washers (3.9.5)

Delete “hot-dipped bitumen coated” and replace with “hot-dipped galvanised”.

PSL 2.4.5 Valves (3.10)

Delete the contents of this clause and substitute the following:

Valves shall comply with the requirements of **Particular Specification PB: Valves (Medium-Pressure).**

PSL 2.5 Manholes and surface boxes (3.11)

PSL 2.5.1 Bricks (3.11.1)

Delete the first sentence and substitute the following:

"Bricks shall be obtained from an approved manufacturer and shall be either engineering bricks of minimum compressive strength 7MPa that comply with the applicable requirements of SANS (SABS) 227:2007 or concrete masonry blocks (390 x 190 x 190) of minimum compressive strength 3,5 MPa that comply with the applicable requirements of SANS (SABS 0400) 10400:1990 and SANS (SABS) 1215:2008."

PSL 2.5.2 Sand (New sub-clause 3.12)

"Sand used for mortar (general purpose) and for plaster (external) shall comply with the applicable requirements of SANS (SABS) 1090:2009."

PSL 2.5.3 Cement (New sub-clause 3.13)

"The cement used on the Works shall be CEM 1, grade 42.5 complying with the requirements of SANS (SABS EN 197-1) 50197-1:2000/EN 197-1:2000."

PSL 3 CONSTRUCTION (5)

PSL 3.1 Laying (5.1)

PSL 3.1.1 Depths and cover (5.1.4)

PSL 3.1.1.1 General (5.1.4.1)

Add to this sub-clause:

"Unless otherwise directed, all uPVC and HDPE pipes to be laid with their pipe markings facing upwards for ease of pipe type, size and class identification if/when exposed in the future."

PSL 3.2 Valve and hydrant chambers (5.6)

PSL 3.2.1 General (5.6.1)

Replace "Drawing L-1" with "Typical Drawings".

PSL 3.2.2 Construction of Chambers (5.6.2)

Replace "Drawings L-1, L-2 and L-3" with "Typical Drawings".

PSL 3.3 Brickwork in Chambers and Manholes (5.8)

Delete the eleventh line and substitute the following:

"Mortar for brickwork and plasterwork shall be composed of one part of cement to four parts of sand."

Twelfth and thirteenth lines to be deleted.

Add to the sub-clause:

"Plaster is to be applied in one coat not less than 12 mm in thickness."

PSL 3.4 Flanges and Accessories (New sub-clause 5.11)

PSL 3.4.1 Bolted Connections (New sub-clause 5.11.1)

“Bolted connections shall comply with the following:

- a) All pipes larger than 150 mm in diameter, connected to equipment or fittings, or where specifically indicated, shall be flanged to SANS (SABS) 1123:2011.
- b) All flanges shall be Type 3, plate flanges for welding and blank flanges shall be Type 8. Matched flanges shall correspond in construction and dimensions to flanges on equipment. Matched flanges shall be provided with the correct bolts, nuts and packing rings. All piping shall be thoroughly cleaned before connections are made.
- c) Bolts, tie-bolts and nuts shall be galvanised to SANS (SABS 763) 10684:2011/ISO 10684:2011 and shall comply with the relevant requirements of SABS 135:1985 and SABS 136:1985.
- d) The length of each bolt shall be such that after the bolt has been tightened, the end of the bolt shall not project beyond the nut by more than two threads. Tie-bolts on restrained couplings shall be fitted with “backing nuts”.
- e) All bolt threads shall be liberally coated with “Copper slip” or similar approved prior to assembly. Upon completion, bolt heads and nuts shall be wrapped with the “Denso Mastic Blanket System” comprising of a priming solution, mastic blanket, petrolatum tape and lay-flat sheeting.
- f) Satisfactory temporary end covers shall be provided by the Contractor for protection of flanges, prepared ends of open ended pipes and fittings and screwed ends, to prevent damage to internal lining and external coating during transportation and during handling on site.”

PSL 4 TESTING (7)

PSL 4.1 Standard hydraulic pipe test (7.3)

PSL 4.1.1 Water for Testing (New sub-clause 7.3.4)

“The Contractor shall make his own arrangements for providing water for testing.”

PSL 5 MEASUREMENT AND PAYMENT (8)

PSL 5.1 Scheduled Items (8.2)

PSL 5.1.1 Anchor/Thrust Blocks and Pedestals (8.2.11)

Delete the last line and substitute the following:

"formwork, concrete, reinforcement (if any), and screeding of top surfaces".

PSLB BEDDING (PIPES)

PSLB 1 MATERIALS (3)

PSLB 1.1 Bedding (3.3)

Add to the sub-clause:

“The bedding for all flexible pipes laid under this Contract shall be as per Drawing LB-2 with joint holes (pockets) being provided in the bedding as shown on the drawing, at each pipe joint and coupling. No sharp-edged stones shall come into contact with either the pipes or the couplings (joints). No extra payment will be made for forming joint holes (pockets).”

PSLB 1.2 Selection (3.4)

PSLB 1.2.1 Suitable Material available from Trench Excavation (3.4.1)

Delete the sub-clause and substitute the following:

“The excavation of a pipe trench shall comply with the requirements of sub-clause 5.4 of SANS (SABS) 1200 DB, and the provisions of sub-clause 3.7 of SANS (SABS) 1200 DB (in terms of which, for the purposes of providing bedding materials, the Contractor is not required to use selective methods of excavating) shall apply. Nevertheless, the Contractor shall take every reasonable precaution to avoid burying or contaminating material that is suitable and is required for bedding or covering the pipeline. If, in the opinion of the Engineer, bedding material can be produced from the excavated material, the Contractor if so ordered by the Engineer, shall screen or otherwise treat the excavated material in order to produce material suitable for bedding.”

PSLB 2 PLANT (4)

PSLB 3 CONSTRUCTION (5)

PSLB 3.1 Concrete Casing to Pipes (5.4)

Add to the sub-clause:

"Where concrete casing is ordered by the Engineer it is to be of 20/19 grade concrete with a minimum thickness of 150 mm above the top of the pipe".

PSLB 4 MEASUREMENT AND PAYMENT (8)

PSLB 4.1 Principles (8.1)

PSLB 4.1.1 Volume of Bedding Materials (8.1.3)

Replace the sub-clause with:

“The volume of bedding materials will be computed from:

- a) The outside dimensions of the pipe and the side allowance determined in accordance with sub-clause 8.2.3 of SANS 1200DB and as shown on Drawing LB-2, and
- b) The depth of each bedding section as shown on Drawing LB-2. No allowance will be made for bulking of material i.e. computed volumes are **compacted** bedding volumes to the above dimensions.
- c) The volume of the pipe will be deducted from bedding volume calculations.”

PSLB 4.1.2 Disposal of displaced material (8.1.5)

Replace the contents of this sub clause with the following:

"Material displaced by the pipeline and by importation of material from sources other than trench excavation, shall be disposed of as specified in SANS 1200 DB - sub-clause 5.6.3."

Part 4: Particular Project Specifications

PA HEALTH AND SAFETY

PA 1 SCOPE

This specification covers general Health and Safety requirements specific to this project. The purpose of this specification is to assist the Contractor in preparing his Health and Safety Plan for the construction of the Works. As such, this specification must not be considered as a comprehensive Health and Safety manual covering all construction activities that could be expected to occur on the Works, but must rather be seen as a minimum requirement.

PA 2 REFERENCES

PA 2.1 Legal Requirements

The approach to Health and Safety on the Works shall be in accordance with the Occupational Health and Safety Act No. 85 of 1993, subject to the Construction Regulations 2014, hereinafter referred to as the Regulations.

These specifications shall be read in conjunction with the Supporting Specifications listed in PA 2.2 and contain revisions that will be deemed to satisfy this project.

PA 2.2 Supporting Specifications

References made to Health and Safety in the documentation that comprise the Tender and Contract documentation for this project shall be read as part of this specification.

PA 2.3 Definitions

Reference made in the Construction Regulations to the “Client” shall refer to the same representation as referred to in the project Tender or Contract documentation as the “Employer”. Reference made in the Construction Regulations to “Principal Contractor” shall refer to the same representation as referred to in the project Tender or Contract documentation as “Contractor”. Reference made in the Construction Regulations to “Contractor” shall refer to the same representation as referred to in the project Tender or Contract documentation as “Sub-Contractor”.

PA 3 CONTRACTOR

The Contractor accepted by the Employer for the construction of the Works under this contract, shall take on the responsibilities of the Principal Contractor as described above.

PA 4 SUB-CONTRACTORS

The Contractor shall take on the responsibility to ensure that the Sub-Contractors comply with the Regulations.

PA 5 CONTRACTOR'S HEALTH AND SAFETY PLAN

The Contractor shall submit his Health and Safety Plan, required in accordance with Regulation 5(1), within 14 days after receiving a written appointment from the Employer for the Contract.

PA 6 SUB-CONTRACTORS' HEALTH AND SAFETY PLANS

No Sub-Contractor will be allowed to perform any work under this Contract until the Sub-Contractor's Health and Safety Plan has been approved by the Employer.

PA 7 SUPERVISION OF CONSTRUCTION WORK

Before any work commences on site, the Contractor shall submit to the Employer the name of the person or Contractor's employee, who will be the designated Construction Supervisor, as defined under Regulation 6(1). That person may assume the role of Construction Supervisor, in terms of the Regulations, for work performed by the Contractor's sub-contractors, subject to complying with the other sub-regulations under Regulation 6.

PA 8 RISK ASSESSMENT

PA 8.1 General

It will not be required for every Contractor to perform a risk assessment as required in Regulation 7(1). Where Sub-Contractors are appointed to perform work of a similar nature, trenching and pipe laying for instance, it will be deemed sufficient if a blanket risk assessment is performed for typical activities. The Contractor shall be responsible however, to make each Sub-Contractor aware of the blanket risk assessment before the Sub-Contractor commences working on site. The Contractor remains responsible to comply with Regulation 7

PA 8.2 Health and Safety Committee/Representative

The Contractor shall actively pursue the formation of a Health and Safety Committee representing all the people to be employed on site and the Labour Desk that will be established by the Employer to facilitate the employ of local labour, shall be invited to participate in the activities of the Health and Safety Committee.

PA 9 FALL PROTECTION

The necessary fall protection plan, training, medicals, appointments and equipment shall be compiled and implemented by the Contractor if any construction activities falling under this project could pose a potential "fall risk" as defined in the Regulations.

PA 10 EXCAVATION WORK

PA 10.1 Excavation

Excavation to depths exceeding 1.5 metres are a possibility on this project. If excavations of deeper than 1.5m are required, the Contractor will be required to implement all necessary precautions such as sloping the sides of the excavation or erecting shoring / bracing, all in accordance with the requirements of the Regulations.

PA 11 WATER ENVIRONMENTS

No work is expected to be executed in water environments under this contract.

PA 12 HOUSE KEEPING AT CONSTRUCTION SITES

The Contractor shall make adequate precautions to prevent diesel spillage at the Contractor's diesel storage and dispensing points, from contaminating the surrounding area.

PA 13 CONSTRUCTION WELFARE FACILITIES

PA 13.1 General

The requirement for sanitary facilities as required under Regulation 28 throughout the project shall apply.

PA 13.2 Ergonomic Considerations

The Employer's general requirements are that the design of the project and components thereof where possible, must take into account the ergonomics of the required task.

The Works requires the installation of heavy equipment, such as valves, steel pipe specials and the like, into underground chambers that are considered as confined spaces. All chambers where access is intended should be sized so that a person of average height and size can work inside with reasonable ease. To this end, the finished floor to soffit height in all accessible chambers should be not less than 1.7 meters, while the minimum size of accessible chambers should be 1.5 x 1.5 metres.

Accesses to chambers should be placed and sized for ease of access and for ease of installing the fittings required for the chamber.

The Contractor is required to scrutinise the designs presented to him for construction, for features that compromise the Ergonomic aspects of Health and Safety and bring potential problem areas to the attention of the Employer or the Engineer at least four weeks before construction of the particular feature. The problem area will then be attended to or, if the design cannot be altered, special precaution will be required or special steps taken to circumvent the problem.

If the Contractor fails to identify and/or notify the Engineer or Employer of any aspects that could affect Health and Safety ergonomically, in the required time beforehand, delays caused in rectifying these will be the Contractor's responsibility.

PA 13.3 Confined Spaces

Workers will not be required to work in confined spaces other than that created through trench excavation, and chamber construction as per PA13.2. The Contractor shall comply with all the requirements of General Safety Regulation 5.

PA 14 GENERAL HEALTH AND SAFETY REGULATIONS

This specification contains regulations of a general nature that contribute to Health and Safety on site and are aspects of Health and Safety that the Contractor must note. The Employer or Engineer shall have the right to instruct the Contractor to comply with a Regulation, or any other Health and Safety related aspect not included in these General Regulations, if the Employer or the Engineer considers that a relevant action or situation could endanger the Health and Safety of a worker or workers.

PA 14.1 Definitions

"building work" means building work as defined in the General Administrative Regulations published under Government Notice R2206 of 5 October 1984;

"confined space" means an enclosed, restricted or limited space in which, because of its construction, location or contents, or any work activity carried on therein, a hazardous substance may accumulate or an oxygen-deficient atmosphere may occur, and includes any chamber, tunnel, pipe, pit, sewer, container, valve, pump, sump, or similar construction, equipment, machinery or object in which a dangerous liquid or a dangerous concentration of gas, vapour, dust or fumes may be present;

"fire-resistance" means the minimum period for which a building element or component will comply with the requirements for stability, integrity and insulation when tested in accordance with SANS 10177-2:2005;

"flammable liquid" means any liquid, which produces a vapour that forms an explosive mixture with air, and includes any liquid with a closed-cup flash point of less than 55°C;

"high-risk substance" means a substance listed in the Schedule to the General Administrative Regulations published under Government Notice R2206 of 5 October 1984, as amended from time to time;

"putlog scaffold" means a scaffold supported by a single row of standards and the structure in connection with which it is being used;

[Definition of "putlog scaffold" added by GN R1791 of 1988.]

"scaffold" means any temporary elevated platform and supporting structure used for supporting workers or materials or both;

[Definition of "scaffold" added by GN R1791 of 1988.]

"SANS 10177-2:2005: Part II" means the South African Bureau of Standards' code of practice entitled Fire Resistance Test for Building Elements, SANS 10177-2:2005;

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

[Definition of "suspended scaffold" added by GN R1791 of 1988.]

"trestle scaffold" means a working platform supported on trestles, stepladders, tripods and the like.

[Definition of "trestle scaffold" added by GN R1791 of 1988.]

PA 14.2 Personal Safety Equipment and Facilities

- (1) Subject to the provisions of paragraphs (f), (g), (h) and (i) of regulation 5 of the General Administrative Regulations published under Government Notice R2206 of 5 October 1984, the Contractor and user of machinery shall make an evaluation of the risk attached to any condition or situation which may arise from the activities of the Contractor or user, as the case may be, and to which persons at a workplace or in the course of their employment or in connection with the use of machinery are exposed, and he shall take such steps as may under the circumstances be necessary to make such condition or situation safe.
- (2) Where it is not practicable to safeguard the condition or situation contemplated in sub-regulation (1), the Contractor or user of machinery, as the case may be, shall take steps to reduce the risk as much as is practicable, and shall provide free of charge and maintain in a good and clean condition such safety equipment and facilities as may be necessary to ensure that any person exposed to any such condition or a situation at a workplace or in the course of his employment or on premises where machinery is used is rendered safe.
- (3) Taking into account the nature of the hazard that is to be countered, and without derogating from the general duties imposed on Contractors and users of machinery by sub-regulations (1) and (2), the safety equipment and facilities contemplated in sub-regulation (2) shall include, as may be necessary-
 - a) suitable goggles, spectacles, face shields, welding shields, visors, hard hats, protective helmets, caps, gloves, gauntlets, aprons, jackets, capes, sleeves, leggings, spats, gaiters, protective footwear, protective overalls, or any similar safety equipment or facility of a type that will effectively prevent bodily injury;
 - b) waterproof clothing, high-visibility clothing, chemical-resistant clothing, low temperature clothing, chain mail garments, waders, fire retardant or flame-proof clothing, ice-jackets, or any similar safety equipment of a type that will effectively protect the wearer thereof against harm;
 - c) belts, harnesses, nets, fall arresters, life lines, safety hooks, or any similar equipment of a type that will effectively protect persons against falls;
 - d) mats, barriers, locking-out devices, safety signs, or any similar facility that will effectively prevent slipping, unsafe entry or unsafe conditions;
 - e) protective ointments, ear-muffs, ear-plugs, respirators, breathing apparatus, masks, air lines, hoods, helmets, or any similar safety equipment or facility of a type that will effectively protect against harm;

- f) suitable insulating material underfoot where persons work on a floor made of metal, stone, concrete or other similar material; and
 - g) generally, such safety equipment or facilities as may be necessary to render the persons concerned safe.
- (4) The Contractor or the user of machinery, as the case may be, shall take steps to ensure that no safety equipment or facility provided as required by this or any other regulation is removed from a workplace or from premises where machinery is used, except for purposes of cleaning, repair, maintenance, modification, mending or replacement, and no person shall remove any such safety equipment or facility from a workplace or premises where machinery is used, except for the aforesaid purposes.
- (5) The Contractor shall instruct his employees in the proper use, maintenance and limitations of the safety equipment and facilities provided.
- (6) The Contractor shall not require or permit any employee to work unless such an employee uses the required safety equipment or facility provided in terms of this or any other regulation.
- (7) The provisions of this regulation shall not be construed as derogating from the provisions of any specific regulation prescribing specific safety equipment or facilities.

PA 14.3 First Aid, Emergency Equipment and Procedures

- (1) The Contractor shall take all reasonable steps that are necessary under the circumstances, to ensure that persons at work receive prompt first aid treatment in case of injury or emergency.
- (2) Where more than five employees are employed at a workplace, the Contractor of such employees shall provide a first aid box or boxes at or near the workplace which shall be available and accessible for the treatment of injured persons at that workplace.
- (3) Taking into account the type of injuries that are likely to occur at a workplace, the nature of the activities performed and the number of employees employed at such workplace, the Contractor shall make sure that the first aid box or boxes contemplated in sub regulation (2) contain suitable first aid equipment which include at least the equipment listed in the Annexure hereto. The Contractor shall further make sure that only articles and equipment contemplated here or other similar equipment or medicine is kept in the first aid box or boxes.
- (4) Where more than 10 employees are employed at a workplace, the Contractor of such employees shall take steps to ensure that for every group of up to 50 employees at that workplace, or in the case of a shop or an office as contemplated in the Basic Conditions of Employment Act, 1983 (Act No. 3 of 1983), for every group of up to 100 employees, at least one person is readily available during normal working hours, who is in possession of a valid certificate of competency in first aid, issued by-
- a) the SA Red Cross Society;

- b) the St John's Ambulance;
 - c) the SA First Aid League; or
 - d) a person or organisation approved by the chief inspector for this purpose.
- (5) The Contractor shall at a workplace where a high-risk substance or toxic, corrosive or similar hazardous substances are used, handled, processed or manufactured, ensure that the first aid worker contemplated in sub regulation (4) is trained in the first aid procedures that are necessary for the treatment of injuries that may result from such activities, including the acute detrimental effects of exposure to such substances, and in the emergency procedures which are necessary in the case of accidental leakage or dumping of such substances.
- (6) The Contractor shall affix a prominent notice or sign in a conspicuous place at a workplace, indicating where the first aid box or boxes are kept as well as the name of the person in charge of such first aid box or boxes.
- (7) An employee with an open wound, cut, sore or any similar injury, who works in a workplace where a substance contemplated in sub regulation 5 is used, handled, processed or manufactured, shall report such injury to his Contractor forthwith. The Contractor may not permit such employee to continue working before the injury has been cleaned with soap and water or with a diluted disinfectant.
- (8) Where any employee is exposed or can be exposed to a potential hazard of injury to the eye through contact with a biological or chemical substance, the Contractor concerned shall make sure that there is an eye-wash fountain in the immediate vicinity of the workplace of such employee and that the employee is trained in the use thereof.
- (9) Where an employee at a workplace is exposed or can be exposed to a potential hazard of injury to or absorption through the skin as a result of sudden contact with a large amount of toxic, corrosive, high risk or similar hazardous substance, the Contractor concerned shall make sure that there is a fast-reacting deluge-shower with clean water or a similar facility in the immediate vicinity of the workplace of such employee and that the employee is trained in the use thereof.

PA 14.4 Use and Storage of Flammable Liquids

- (1) The Contractor shall not require or permit any person to work in a place where the vapour of any flammable liquid is generated to such an extent that it constitutes an actual or potential fire or explosion hazard or endangers the safety of any person, unless the provisions of sub-regulation (2) to (12) of this regulation are complied with.
- (2) The Contractor shall not require or permit a flammable liquid to be used or applied other than in a room, cabinet or other enclosure specially constructed for this purpose of fire-resisting material, or in a place which, owing to its situation or construction or any other feature or circumstance, is of such a nature that-

- a) no fire or explosion hazard is, can or may be created thereat;
 - b) any vapour resulting from such use or application is efficiently dispersed and diluted into the atmosphere subject to the provisions of the Air Pollution Prevention Act, 1965 (Act No. 45 of 1965); and
 - c) no other workplace can or may be contaminated by such vapour.
- (3) The Contractor shall cause every room, cabinet or enclosure contemplated in sub-regulation (2) to be fitted with an efficient intake and exhaust ventilation system to remove any vapour there from and to prevent its re-circulation in a manner which may lead to the contamination of any other workplace or the creation of a fire or explosion hazard: Provided that, notwithstanding any other provision of this regulation, the Contractor shall provide every employee doing spraying with a respirator, mask or breathing apparatus of a type approved by the chief inspector, and that any such employee shall while spraying use such apparatus provided to him.
- (4) Where spraying is done in any room, the Contractor concerned shall ensure that the ventilation system contemplated in sub-regulation (3) complies to the following requirements:
- a) If the air supply and extraction is horizontal, the average air speed measured at a level of 1.5 metres above the floor, or at the level of the platform on which persons stand to work, shall not be less than 0.5 metres per second;
 - b) if the air supply is vertical and the extraction thereof is done through slits or a grill along the side walls at floor level, the average air speed measured at a level of 1.5 metres above the floor, or at the level of the platform on which persons stand to work, shall not be less than 0.4 metres per second; or
 - c) if the air supply is vertical and the extraction thereof is done through a grill over the whole of the floor area, the average air speed measured at a level of 1.5 metres above the floor, or at the level of the platform on which persons stand to work, shall not be less than 0.3 metres per second.
- (5) Where spraying is done into any cabinet or enclosure as contemplated in sub-regulation (2), the Contractor concerned shall ensure that the ventilation system contemplated in sub-regulation (3) complies with the following requirements:
- a) Where the area of the open face of the cabinet is not more than one square metre, the average speed of air movement through the said face shall not be less than one metre per second;
 - b) where the area of the open face is more than one square metre but less than two square metres, the average speed of air movement through the said face shall not be less than 0.75 metres per second; or
 - c) where the area of the open face is equal to or exceeds two square metres, the average speed of air movement through the said face shall not be less than 0.5 metres per second.
- (6) With regard to the ventilation system contemplated in sub-regulation (3) the Contractor shall cause-
- a) all ducts, trunks and enclosures of the system to be of fire-resistant material with a smooth interior finish and to be constructed in such a manner as to facilitate the cleaning thereof;

- b) the system to be kept in operation during working hours as well as for at least the period of time thereafter that may be necessary to clear the vapour from the atmosphere of the room, cabinet or enclosure to below 25 per cent of the lower explosive limit of that vapour; and
 - c) the work to be so organised that the flow of air towards the intake of such ventilation system is not obstructed and draws the spray or vapour of the flammable liquid away from any employee operating the equipment.
- (7) With regard to any room contemplated in sub-regulation (2), the Contractor shall cause every such room-
- a) with a floor area exceeding 20 square metres to have at least two separate entrances at opposite ends of the room, which shall be fitted with doors opening outwards that cannot be locked; and
 - b) to be fitted with an inspection window of strengthened and shatterproof glass that cannot be opened.
- (8) The Contractor shall not permit-
- a) any fire, flame or naked light or anything which may generate static electricity or any other thing which may ignite a flammable liquid or its vapour, to be used in or taken into any room, cabinet or enclosure contemplated in sub-regulation (2) in which any such flammable liquid is used, sprayed or stored, and shall affix a suitable and conspicuous sign prohibiting any such act at all the entrances to any such room, cabinet or enclosure;
 - b) any person to, and no person shall, smoke in any place in which flammable liquid is used or stored, and the Contractor shall affix a suitable and conspicuous notice prohibiting such smoking at all the entrances to any such place; and
 - c) any process capable of causing sparks or fire, or the application of any heat for the drying of sprayed or treated articles, to take place in any room, cabinet or enclosure used for spraying, before the space or atmosphere has been cleared of all vapour.
- (9) With respect to any room, cabinet, or enclosure contemplated in sub- regulation (2), the Contractor concerned shall cause-
- a) discarded cotton waste, cleaning rags or similar material to be removed daily and safely disposed of;
 - b) only that quantity of flammable liquid needed for work on one day to be taken into or kept in such room, cabinet or enclosure: Provided that partially consumed stock may be stored in a properly marked, fireproof wall cabinet inside the workplace;
 - c) all drums, cans, canisters or similar containers holding flammable liquids to be kept tightly closed when not in actual use and, after their contents have been used up, to be removed from the workplace and safely disposed of daily; and
 - d) every such room, cabinet or enclosure to be kept clean and all fans, ducts, trunks and enclosures of the ventilation system contemplated in sub-regulation (3) to be kept clean and in good working order: Provided that any cleaning, scraping or scouring shall be done with implements that cannot

cause sparking if the concentration of the vapour exceeds 25 per cent of the lower explosive limit of that vapour.

- (10) The Contractor shall cause every flammable liquid store to be-
- a) separated by means of fire-resisting material with a fire-resistance of two hours from any room, cabinet or enclosure contemplated in sub-regulation (2);
 - b) constructed of fire-resisting material with a fire-resistance of two hours;
 - c) constructed in such a way that, in case of spillage, a volume of the flammable liquid in question equal to the quantity of flammable liquid ordinarily kept in store plus 10 per cent of that quantity, can be contained;
 - d) ventilated to the open air in such a manner that vapour cannot accumulate inside the store; and
 - e) clearly marked with a sign indicating that it is such a store and also indicating the amount of flammable liquid which may be stored therein.
- (11) Taking into account the construction and location of the premises in question and the quantity and types of flammable liquids involved, the Contractor shall install an adequate amount of efficient fire-fighting equipment in suitable locations in and around every building in which such substances are used, handled or stored, or as may be recommended by the fire chief of the local authority concerned.
- (12) The provisions of this regulation shall not be construed as applying to the use of flammable liquids in the course of or in connection with building work: Provided that every Contractor engaged in building work shall ensure that, where flammable liquids are used or applied at the workplace concerned, this is done in such a manner that no fire or explosion hazard is created, and that the workplace is effectively ventilated: Provided further that where the workplace cannot be ventilated effectively the Contractor shall provide every employee involved with a respirator, mask or breathing apparatus of a type approved by the chief inspector, and shall take steps to ensure that every such employee, while using or applying flammable liquid, uses the apparatus supplied to him.

PA 14.5 Work in Confined Spaces

- (1) The Contractor or user of machinery shall take steps to ensure that a confined space is entered by an employee or other person only after the air therein has been tested and evaluated by a person who is competent to pronounce on the safety thereof, and who has certified in writing that the confined space is safe and will remain safe while any person is in the confined space, taking into account the nature and duration of the work to be performed therein.
- (2) Where the provisions of sub-regulation (1) cannot be complied with, the Contractor or user of machinery, as the case may be, shall take steps to ensure that any confined space in which there exists or is likely to exist a hazardous gas, vapour, dust or fumes, or which has or is likely to have, an oxygen content of less than 20 per cent by volume, is entered by an employee or other person only when-

- a) subject to the provisions of sub-regulation (3), the confined space is purged and ventilated to provide a safe atmosphere therein and measures necessary to maintain a safe atmosphere therein have been taken; and
 - b) the confined space has been isolated from all pipes, ducts and other communicating openings by means of effective blanking other than the shutting or locking of a valve or a cock, or, if this is not practicable, only when all valves and cocks which are a potential source of danger have been locked and securely fastened by means of chains and padlocks.
- (3) Where the provisions of sub-regulation (2) (a) cannot be complied with, the Contractor or user of machinery shall take steps to ensure that the confined space in question is entered only when the employee or person entering is using breathing apparatus of a type approved by the chief inspector and, further, that-
- a) the provisions of sub-regulation (2) (b) are complied with;
 - b) any employee or person entering the confined space is using a safety harness or other similar equipment, to which a rope is securely attached which reaches beyond the access to the confined space, and the free end of which is attended to by a person referred to in paragraph (c).
 - c) at least one other person trained in resuscitation is and remains in attendance immediately outside the entrance of the confined space in order to assist or remove any person or persons from the confined space, if necessary; and
 - d) effective apparatus for breathing and resuscitation of a type approved by the chief inspector is available immediately outside the confined space.
- (4) The Contractor or user of machinery shall take steps to ensure that all persons vacate a confined space on completion of any work therein.
- (5) Where the hazardous gas, vapour, dust or fumes contemplated in sub regulation (2) are of an explosive or flammable nature, the Contractor or user of machinery shall further take steps to ensure that such a confined space is entered only if-
- a) the concentration of the gas, vapour, dust or fumes does not exceed 25 per cent of the lower explosive limit of the gas, vapour, dust or fumes concerned where the work to be performed is of such a nature that it does not create a source of ignition; or
 - b) such concentration does not exceed 10 per cent of the lower explosive limit of the gas, vapour, dust or fumes where other work is performed.
- (6) The provisions of this regulation shall mutatis mutandis also apply, in so far as they can be so applied, to any work which is performed in any place or space on the outside of and bordering on or in the immediate vicinity of, any confined space, and in which place or space, owing to its proximity to the confined space, any hazardous article, oxygen-deficient atmosphere or dangerous concentration of gas, vapour, dust or fumes may occur or be present.

PA 14.6 Work in Elevated Positions

The Contractor shall not permit any person to work in an elevated position, and no person shall work in an elevated position, unless such work is performed safely from a ladder or scaffolding, or from a position where such person has been made as safe as if he were working from scaffolding.

PA 14.7 Working in Danger of Engulfment

- 1) The Contractor shall not require or permit any person to, and no person shall, enter any place from or into which solid or particulate material is being discharged where a danger exists of a person being engulfed by such solid or particulate material, unless-
 - a) such a person is provided with and properly uses a safety belt and rope;
 - b) at least one other person who has been properly instructed, is and remains in attendance outside such place to keep the persons therein under continuous observation in order to render assistance in case of emergency; and
 - c) the precautions prescribed by regulation 5 of these regulations are taken if dangerous gas, fumes, dust or vapour may be present in such a place.

PA 14.8 Stacking of Articles

- (1) The Contractor shall not permit the building of stacks, which consist of successive tiers, one on top of another, unless-
 - a) the stacking operation is executed by or under the personal supervision of a person with specific knowledge and experience of this type of work;
 - b) the base is level and capable of sustaining the weight exerted on it by the stack;
 - c) the articles in the lower tiers are capable of sustaining the weight exerted on them by the articles stacked above them;
 - d) all the articles which make up any single tier are consistently of the same size, shape and mass;
 - e) pallets and containers are in good condition; and
 - f) any support structure used for the stacking of articles is structurally sound and can support the articles to be stacked on it.
- (2) The Contractor shall not permit-
 - a) articles to be removed from a stack except from the topmost tier or part of that tier; and
 - b) anybody to climb onto or from a stack, except if the stack is stable and the climbing is done with the aid of a ladder or other safe facility or means.
- (3) The Contractor shall take steps to ensure that-
 - a) persons engaged in stacking operations do not come within reach of machinery which may endanger their safety;
 - b) stacks that are in danger of collapsing are dismantled immediately in a safe manner; and
 - c) the stability of stacks is not endangered by vehicles or other machinery or persons moving past them.
- (4) Unless a stack is otherwise supported, the Contractor shall take steps to ensure that tiers of stacked material consisting of sacks, cases, cartons, tins or similar containers-
 - a) are secured by laying up articles in a header and stretcher fashion and that corners are securely bonded; and

- b) are stepped back half the depth of a single container at least every fifth tier or that, alternatively, successive tiers are stepped back by a lesser amount: Provided that at least the same average angle of inclination to the vertical is achieved: Provided further that where the containers are of a regular shape and their nature and size are such that the stack will be stable, they may be stacked with the sides of the stack vertical if the total height of the stack does not exceed three times the smaller dimension of the underlying base of the stack.
- (5) Notwithstanding the provisions of sub-regulation (4), free standing stacks that are built with the aid of machinery may, with the approval of an inspector, be built to a height and in a manner permitted by the nature of the containers being stacked: Provided that-
- a) the stacks are stable and do not overhang; and
 - b) the operator of the stacking machinery is rendered safe as regards falling articles.

PA 14.9 Welding, Flame Cutting, Soldering and Similar Operations

- (1) The Contractor shall not permit welding or flame cutting operations to be undertaken unless-
- a) the person operating the equipment has been fully instructed in the safe operation and use of such equipment and in the hazards which may arise from its use;
 - b) effective protection is provided and used for the eyes and respiratory system and, where necessary, for the face, hands, feet, legs, body and clothing of persons performing such operations, as well as against heat, incandescent or flying particles or dangerous radiation;
 - c) leads and electrode holders are effectively insulated; and
 - d) the workplace is effectively partitioned off where practicable and where not practicable all other persons exposed to the hazards contemplated in paragraph (b) are warned and provided with suitable protective equipment.
- (2) The Contractor shall not permit welding or flame cutting operations to be undertaken in a confined space, unless-
- a) effective ventilation is provided and maintained; or
 - b) masks or hoods maintaining a supply of safe air for breathing are provided and used by the persons performing such operations.
- (3) The Contractor shall not permit electric welding to be undertaken in wet or damp places, inside metal vessels or in contact with large masses of metal, unless-
- a) the insulation of the electrical leads is in a sound condition;
 - b) the electrode holder is completely insulated to prevent accidental contact with current-carrying parts;
 - c) the welder is completely insulated by means of boots, gloves or rubber mats; and
 - d) at least one other person who has been properly instructed to assist the welder in case of an emergency is and remains in attendance during operations, provided that the provisions of this sub-regulation shall not apply to a welding process where the maximum voltage to earth does not exceed 50 volts.

- (4) The Contractor shall not permit welding, flame cutting, grinding, soldering or similar work to be undertaken in respect of any tube, tank, drum, vessel or similar object or container where such object or container-
- a) is completely closed, unless a rise in internal pressure cannot render it dangerous; or
 - b) contains any substance which, under the action of heat, may-
 - i. ignite or explode; or
 - ii. react to form dangerous or poisonous substances,unless a person who is competent to pronounce on the safety thereof has, after examination, certified in writing that any such danger has been removed by opening, ventilating or purging with water or steam, or by any other effective means.
- (5) Where hot work involving welding, cutting, brazing or soldering operations is carried out at places, other than workplaces which have been specifically designated and equipped for such work, the Contractor shall take steps to ensure that proper and adequate fire precautions are taken.

PA 14.10 Ladders

- (1) The Contractor shall ensure that every ladder is constructed of sound material and is suitable for the purpose for which it is used, and-
- a) is fitted with non-skid devices at the bottom ends and hooks or similar devices at the upper ends of the stiles which shall ensure the stability of the ladder during normal use; or
 - b) is so lashed, held or secured whilst being used as to ensure the stability of the ladder under all conditions and at all times.
- (2) The Contractor shall not permit a ladder to be used if it-
- a) has rungs fastened to the stiles only by means of nails, screws, spikes or in like manner; or
 - b) has rungs which have not been properly let into the stiles: Provided that in the case of welded ladders or ladders of which the rungs are bolted or riveted to the stiles, the rungs need not be let into the stiles; or
 - c) has damaged stiles, or damaged or missing rungs.
- (3) The Contractor may not permit that-
- a) a ladder which is required to be leaned against an object for support be used which is longer than 9 m; and
 - b) except with the approval of an inspector, the reach of a ladder be extended by fastening together two or more ladders: Provided that the provisions of this sub regulation shall not apply to extension or freestanding ladders.
- (4) In the case of wooden ladders the Contractor shall ensure that-
- a) the ladders are constructed of straight grained wood, free from defects, and with the grain running in the length of the stiles and rungs; and

- b) the ladders are not painted or covered in any manner, unless it has been established that there are no cracks or other inherent weaknesses: Provided that ladders may be treated with oil or covered with clear varnish or wood preservative.
- (5) When work is done from a ladder, the Contractor shall-
- a) take special precautionary measures to prevent articles from falling off; and
 - b) provide suitable sheaths or receptacles in which hand tools shall be kept when not being used.
- (6) The Contractor shall ensure that a fixed ladder which exceeds 5 m in length and is attached to a vertical structure with an inclination to the horizontal level of 75° or more-
- a) has its rungs at least 150 mm away from the structure to which the ladder is attached; and
 - b) is provided with a cage which-
 - i. extends from a point not exceeding 2,5 m from the lower level to a height of at least 900 mm above the top level served by the ladder; and
 - ii. shall afford firm support along its whole length for the back of the person climbing the ladder, and for which purpose no part of the cage shall be more than 700 mm away from the level of the rungs: Provided that the foregoing provisions of paragraph (b) shall not apply if platforms, which are spaced not more than 8 m apart and suitable for persons to rest on, are provided.

PA 14.11 Ramps

- (1) The Contractor shall ensure that every ramp-
- a) is constructed in accordance with accepted technical standards;
 - b) has a safety factor of at least two with respect to the load it is expected to carry: Provided that the design makes sufficient provision for the load on the ramp as a result of the turning, braking and acceleration of vehicles, if the ramp is used for vehicles; and
 - c) has an inclination to the horizontal level of not more than 34° or one vertical to one and one half horizontal.
- (2) The Contractor shall ensure that every ramp-
- a) the inclination of which renders additional foothold necessary, but in every case where the inclination is more than 14° or one vertical to four horizontal, is provided with stepping laths which-
 - i. are placed at suitable intervals; and
 - ii. extend the full width of the ramp: Provided that the stepping laths may be interrupted over a width not exceeding 230 mm to facilitate the movement of barrows; and
 - b) which is higher than 2 m and is provided on both sides with-
 - i. substantial guard rails which are at least 900 mm and not exceeding 1000 mm in height, and
 - ii. toe-boards that are at least 150 mm high and so affixed that no open space exists between the toe-board and the ramp.

PA 14.12 Scaffold framework

- (1) The Contractor shall ensure that-
 - a) scaffold standards are properly propped against displacement and are secured vertically on firm foundations: Provided that putlog scaffolds shall incline slightly towards the structure;
 - b) steel scaffold standards with "heavy", "medium", "light" or "very light" platform loadings which shall not exceed 320, 240, 160 and 80 kg/m², respectively, are spaced not more than 1.8 m, 2 m, 2.5 m and 3 m apart, respectively; and
 - c) wooden scaffold standards are spaced not more than 3m apart;
 - d) ledgers are spaced vertically not more than 2.1 m apart;
 - e) putlogs or transoms-
 - i. which do not support a platform, are spaced at the same distances as the distances prescribed in paragraph (b) in respect of scaffold standards;
 - ii. which support a platform, are spaced not more than 1,25 m apart if the platform is constructed of solid timber boards; and
 - f) every part of a wooden scaffold frame has a diameter of at least 75 mm or a section of similar strength.

- (2) The Contractor shall not permit a scaffold to be used unless it-
 - a) is securely and effectively braced to ensure stability in all directions;
 - b) is secured at suitable vertical and horizontal distances to the structure to which work is being done, unless it is designed to be completely free-standing;
 - c) is so constructed that it has a throughout factor of safety of at least two; and
 - d) is inspected at least once a week and every time after bad weather by a person who has adequate experience in the erection and maintenance of scaffolds, and all findings are recorded in a register or report book.

- (3) The Contractor shall not permit that-
 - a) a scaffold with a supporting wooden framework exceeds a height of 10 m; and
 - b) a scaffold is erected, altered or dismantled by or under the supervision of a person other than a person who has had the necessary training and experience of such work and who has been appointed by the Contractor in writing for this purpose.

PA 14.13 Scaffold platforms

- (1) The Contractor shall ensure that-
 - a) every plank of a solid wooden scaffold platform is at least 275 mm wide and 38 mm thick;
 - b) every plank which forms part of a scaffold platform is supported at distances not exceeding 1.25 m, and its ends are projected not less than 70 mm and not more than 200 mm beyond the last prop;
 - c) every plank of a scaffold platform is firmly secured to prevent its displacement; and
 - d) every platform is so constructed as to prevent materials and tools from falling through.

- (2) The Contractor shall ensure that every scaffold platform-

- a) with “heavy”, “medium”, “light” or “very light” platform loadings is not less than 1 125 mm and not more than 1 380 mm, not less than 1 125 mm and not more than 1 150 mm, not less than 900 mm and not more than 1 150 mm, and not less than 675 mm and not more than 1 150 mm, respectively, wide: Provided that where a platform is used only as a gangway, a platform width of 450 mm shall be sufficient;
 - b) which is more than 2m above the ground is on all sides, except the side facing the structure, provided with-
 - i. substantial guard rails of at least 900 mm and not exceeding 1 000 mm in height; and
 - ii. toe-boards which are at least 150 mm high from the level of the scaffold platform and so affixed that no open space exists between the toe-boards and the scaffold platform: Provided that if the toe-boards are constructed of timber, they shall be at least 25 mm thick;
 - c) is not more than 75 mm from the structure: Provided that where workmen must sit to work, this distance may be increased to not more than 300 mm; and
 - d) is kept free of waste, projecting nails or any other obstructions, and is kept in a non-slip state.
- (3) The Contractor shall not permit that a working platform which is higher than 600 mm be supported on a scaffold platform, and shall provide an additional guard rail of at least 900 mm and not exceeding 1 000 mm in height above every such working platform.
- (4) The Contractor shall ensure that convenient and safe access is provided to every scaffold platform, and where the access is a ladder; the ladder shall project at least 900 mm beyond the top of the platform.

PA 14.14 Suspended scaffolds

- (1) The Contractor shall ensure that the outriggers of each suspended scaffold-
- a) are constructed of steel or any other material of similar strength and have a factor of safety of at least four with respect to the load it is to carry;
 - b) have an overhang of not more than 1,8m beyond the edge of the structure and are of such length that the counteracting length can be anchored securely;
 - c) are, otherwise than by means of weights at the inner-ends, properly propped, suitably spaced and firmly anchored: Provided that an inspector may grant permission that outriggers may be anchored by means of weights; and
 - d) are provided with stop or other effective devices at the outer-ends to prevent the displacement of ropes.
- (2) The Contractor shall ensure that the working platform of every suspended scaffold is suspended by-
- a) pulley-blocks, sheaves, winches or hoists of the correct size for the ropes being used;
 - b) at least two independent steel wire ropes in the case of a working platform which is not wider than 912 mm, and at least four independent steel wire ropes in the case of a working platform which is 912 mm and wider; and

- c) steel wire ropes of which the factor of safety is at least ten with respect to the maximum load which each rope is to carry.
- (3) The Contractor shall ensure that-
- a) the hand or power-driven machinery used for the lifting or lowering of the working platform of a suspended scaffold is so constructed and maintained that an uncontrolled movement of the working platform cannot occur;
 - b) the machinery referred to in paragraph (a) is so situated that it is easily accessible for inspection;
 - c) the rope connections to the outriggers are vertically above the connections to the working platform; and
 - d) in the case of a working platform suspended by two ropes only, the connections of the ropes to the working platform are of such height above the level of the working platform as to ensure the stability of the working platform.
- (4) The Contractor shall ensure that the working platform of every suspended scaffold-
- a) is at least 456 mm and not exceeding 1.8 m in width;
 - b) is suspended as near as possible to the structure to which work is being done and, except when light work is being done, is secured at every working position to prevent horizontal movement between the working platform and the structure;
 - c) is on all sides, except the side facing the structure, provided with substantial guard rails of at least 900 mm and not exceeding 1 000 mm in height above the level of the working platform: Provided that in the case of a working platform suspended by two ropes only, the guard rails shall be on all sides; and
 - d) is on all sides provided with toe-boards which are at least 150 mm high from the level of the working platform and so affixed that no open space exists between the toe-boards and the working platform: Provided that if the toe-boards are constructed of timber, they shall be at least 25 mm thick.

PA 14.15 Trestle scaffolds

- (1) The Contractor shall not use a trestle scaffold, or permit it to be used, unless-
- a) it is soundly constructed of solid material; and
 - b) all reasonable precautionary measures have been taken to prevent the unexpected spreading of its supporting legs when it is in use.
- (2) The Contractor shall not use a trestle scaffold or permit it to be used, if it-
- a) is higher than 3 m; or
 - b) consists of more than two tiers.

PA 14.16 Minimum Contents of a First-Aid Box

- Item 1: Wound cleaner/antiseptic (100 ml).
Item 2: Swabs for cleaning wounds.

- Item 3: Cotton wool for padding (100 g).
- Item 4: Sterile gauze (minimum quantity 10).
- Item 5: 1 Pair of forceps (for splinters).
- Item 6: 1 Pair of scissors (minimum size 100 mm).
- Item 7: 1 Set of safety pins.
- Item 8: 4 Triangular bandages.
- Item 9: 4 Roller bandages (75 mm x 5 m).
- Item 10: 4 Roller bandages (100 mm x 5 m).
- Item 11: 1 Roll of elastic adhesive (25 mm x 3 m).
- Item 12: 1 Non-allergenic adhesive strip (25 mm x 3 m).
- Item 13: 1 Packet of adhesive dressing strips (minimum quantity, 10 assorted sizes).
- Item 14: 4 First aid dressings (75 mm x 100 mm).
- Item 15: 4 First aid dressings (150 mm x 200 mm).
- Item 16: 2 Straight splints.
- Item 17: 2 Pairs large and 2 pairs medium disposable latex gloves.
- Item 18: 2 CPR mouth pieces or similar devices.

PB VALVES (MEDIUM-PRESSURE)

PB 1 SCOPE

This specification covers the supply and installation of gate valves up to 600 mm diameter, air valves up to 150 mm diameter and reflux valves for use on pipelines transporting potable water.

PB 2 INTERPRETATIONS

PB 2.1 References

PB 2.1.1 *Code of Practice*

The recommendations of SANS (SABS 0120) 10120-5 L have been incorporated into this specification as far as they are applicable.

PB 3 MATERIALS

PB 3.1 General

Valves shall be of the types specified in the schedule or in the project specification and, unless otherwise required in terms of the project specification, they shall be capable of withstanding the applicable test pressures specified in Clause PB 7. All valves shall be supplied complete with coupling and jointing material.

Unless otherwise stated in the Bill of Quantities or otherwise not applicable, all valves shall be supplied with operating caps.

Satisfactory temporary end covers shall be provided to protect threads, flanges and prepared ends of valves from damage during transportation and handling on site.

Valves shall be so transported, stored and handled as to prevent damage. Valves damaged in any way shall be removed from the site.

PB 3.2 Durability of Valves

The valves shall be suitable for use on domestic water reticulation in the area in which they are used and all materials utilised in the construction of the valves shall be resistant against corrosion from the water in the area.

PB 3.3 Gate Valves

PB 3.3.1 *General*

All gate valves shall comply with the requirements of SANS (SABS) 664:2011 and shall carry the SANS (SABS) mark. The valves are to be cast iron fitted with non-rising spindles and all valves shall be of the resilient seal type except those that are fitted for scour purposes.

PB 3.3.2 *Direction of Rotation*

Unless otherwise stated in the Bill of Quantities or project specification, the direction of spindle rotation for valve closing will be clockwise when viewed from above.

PB 3.3.3 *Class of Valves*

Gate valves shall be of a class commensurate with a maximum working pressure as defined by the Engineer or as shown on the drawings.

PB 3.3.4 *Valve Trim*

The valve trim shall be Type B, gunmetal trim, to SANS (SABS) 664:2011 i.e. gunmetal seats (body and gate), bronze spindle, and gunmetal spindle nut.

PB 3.3.5 *Seat Rings*

The seating rings on valves up to and including 300 mm diameter shall be pressed into undercut recesses, machined into both the gate and valve body in such a manner that the permanent distortion of the seating ring prevents them from becoming loose.

For valves larger than 300 mm diameter, the gunmetal-seating ring shall be pinned into a rectangular recess machined in both the valve gate and body.

PB 3.3.6 *Auxiliary Fittings*

Unless otherwise stated in the Project Specification, valves of 300 mm diameter and larger shall be fitted with the following auxiliary fittings:

PB 3.3.6.1 Drain Plugs

300 mm diameter valves and larger shall be supplied with gunmetal drain plugs screwed into the lowest point of the valve and the valve body shall be suitably drilled and tapped to accept the drain plug. The plug must be in position when the test pressure is applied.

PB 3.3.6.2 Ball Bearing Thrust Collars

300 mm diameter valves and larger shall be fitted with a ball bearing race fitted on the top and bottom of the thrust collars. The ball bearing races shall be totally enclosed in a grease packed cover, which shall be sealed to prevent the egress of grease. Provision shall be included for lubricating the ball races and the lubrication arrangement shall allow for greasing while the valve is under pressure.

PB 3.3.6.3 Spur Gearing

Where considered necessary by the supplier, gate valves of 300 mm diameter and larger, shall be fitted with spur gearing and an indicator, clearly visible from above, to show the position of the valve gate. The spur gearing must be fitted with a cast iron cap. The gear ratios shall comply with the valves given in the table below.

Size of valve	Spur	gear	Size of valve	Spur	gear
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(mm)	ratio	(mm)	ratio
300	2:1	450	3:1
350	2:1	500	3:1
375	2:5:1	525	3:1
400	2:5:1	600	3:1

PB 3.3.6.4 By-Pass Unit

Valves of 300 mm diameter and larger shall be fitted with a by-pass valve, fitted either integral with the valve body or to suitable short double flanged tailpieces. All fittings used for the by-pass arrangement shall be capable of withstanding the test pressure of the main valve and shall comply with the conditions of this specification. By-pass sizes shall comply with the values given in the table below.

Size of valve (mm)	By-pass size (mm)	Size of valve (mm)	By-pass size (mm)
300	40	450	75
350	40	500	75
375	50	525	75
400	50	600	75

PB 3.4 Butterfly Valves

PB 3.4.1 General

Buttery valves shall generally comply with the requirements of SANS (SABS) 1849:2008 – Butterfly Valves for General Purposes except where a specific product is specified.

The butterfly valves required for this project shall be the AMRI-KSB ISORIA 16 series, flanged or wafer type as detailed on the drawings or as scheduled. The valves shall be provided with ductile iron bodies, 13% Cr stainless steel shafts, stainless steel discs and shall be lined with special formulation E.P.D.M. lining.

PB 3.5 Air Valves

All air valves shall be either 16, 25 or 40 bar rated 50 mm, 80 mm or 100 mm dia “Vent-O-Mat” RBX double acting anti-slam air valves as shown on the drawings.

PB 3.5.1 Isolating Valves for Air Valves

Air valves shall be provided and supplied complete with isolating valves of suitable pressure rating entirely reliable in operation for the shutting down of the air valve for its complete inspection and removal and replacement of the balls or other parts as required.

a)

he isolating valve shall either be 16, 25 or 40 bar rated 50 mm dia lever operated ball valves to SANS

(SABS) 1056-3:2012 or 16, 25 or 40 bar rated 80 or 100 mm dia AVM or similar approved lever operated butterfly valves incorporated in the inlet stem to the air valve and jointed as specified or shown on the drawings.

b)

the direction of rotation of the isolating valve, unless otherwise stated in the Project Specification or Bill of Quantities, shall be clockwise closing, when viewed from above.

PB 3.6 Flanges

Flanges shall be to the dimensions and drilled as for gate valves according to SANS (SABS) 664:2011.

PB 3.7 Reflux Valves

PB 3.7.1 General

Unless otherwise specified, reflux valves shall be flange ended and shall comply with the requirements of SABS 144, Cast Iron Single Door Reflux Valves or SABS 192 Cast Steel Single Door Reflux Valves as applicable and shall bear the SABS mark.

PB 3.7.2 Class of Valve and Body

The working pressure and class of valve shall be as stated in the Bill of Quantities or Project Specification and shall be according to the table below.

Class	Maximum working pressure	Body construction
10	1.0 Mpa	Cast iron
16	1.6 Mpa	Cast iron
25	2.5 Mpa	Cast steel
40	4.0 Mpa	Cast steel
100	10.0 Mpa	Cast steel

PB 3.7.3 Flange Drilling

Flanges shall be drilled and bolted according to the requirements of SABS 144 and SABS 192 as applicable. Precision bolts and nuts unless otherwise stated in the Project Specification are not required.

PB 3.7.4 Valve Trim

The trim of reflux valves shall be as follows:

- a) Cast iron reflux valves shall have stainless steel trims;
- b) Cast steel reflux valves shall have stainless steel seats and stainless steel hinge pins.

PB 3.7.5 *Finish*

All cast iron parts, except flange faces shall be thoroughly cleaned and an epoxy primer applied, followed by one or more coats of high-build epoxy material to give a total dry film thickness of at least 250 µm applied in conformity with the manufacturer's recommendations.

PB 3.8 **Surge Anticipation Valve**

The Surge Anticipating Valve shall open in response to the pressure drop associated with abrupt pump stoppage to dissipate the returning high pressure wave, eliminating the surge. It shall smoothly close drip tight as quickly as the relief feature allows, while preventing closing surge. The valve shall also relieve excessive system pressure.

PB 3.8.1 *Main Valve*

The main shall be a centre guided, diaphragm actuated globe valve of oblique Y –pattern design. The body shall have a replaceable, raised stainless steel seat ring. The valve shall have an unobstructed flow path, with no stem guides, bearings, or supporting ribs. The body and cover shall be cast iron and epoxy coated. The valve shall be flanged. All external bolts, nuts, and studs shall be Duplex® coated. All valve components shall be accessible and serviceable without removing the valve from the pipeline.

PB 3.8.2 *Actuator*

The actuator assembly shall be double chambered with an inherent separating partition between the lower surface of the diaphragm and the main valve. The entire actuator assembly (seal disk to top cover) shall be removable from the valve as an integral unit. The stainless steel valve shaft shall be centre guided by a bearing in the separating partition. The replaceable radial seal disk shall include a resilient seal and shall be capable of accepting a V-Port Throttling Plug by bolting.

PB 3.8.3 *Control System*

The control system shall consist of two adjustable 2-way pilots, a needle valve, a flow stem, a cock valve, and a filter. All fittings shall be forged brass or stainless steel. The assembled valve shall be hydraulically tested.

PB 3.8.4 *Quality Assurance*

The valve manufacturer shall be certified according to the ISO 9001 Quality Assurance Standard. The main valve shall be certified as a complete drinking water valve according to NSF, WRAS, and other recognised standards.

PB 3.9 **Gauges**

PB 3.9.1 *General*

Scale markings shall be radial, plain, straight, black lines on a white background and shall be spaced so that one scale division represents approximately 1% - 1,5 % of the maximum scale in values of 1,2 and 5 multiplied by any power of 10.

On circular gauges the scale shall be concentric and the maximum and minimum scale values shall be at the bottom of the gauge, with the scale symmetrically disposed about the vertical centre line of the gauge.

The tip of the pointer shall be of such length and width that the gauge may be read to a value within the accuracy of the gauge and shall preferably be of the knife edge type. The tip of the pointer shall be as close as practical to the dial. Wherever applicable, gauges shall be clearly marked in green to indicate the normal operating range and in red to indicate the maximum permissible value or non-permissible range of values.

The dial shall be clearly marked with the designation of the units of scale and the gauge shall be clearly labelled with the duty it is performing.

All pressure connections shall be provided with an isolating cock of the type, which has the handle in line with the bore of the cock when the cock is open.

Gauges shall be mounted vertically and in such a position that it can easily be read from floor level. Where this cannot be done the Engineer's requirements shall be ascertained.

PB 3.9.2 *Pressure Gauges*

Pressure gauges shall comply with BS 1780 or equivalent for Industrial Gauges shall be calibrated in kilopascals and shall be not less than 100 mm diameter. Full-scale reading shall be between 1,5 and 2 times maximum actual operating pressure except where otherwise specified.

All gauges shall be suitable for continuous operation and shall be liquid filled where fluctuations in pressure may cause damage. Where blockages of the gauge are possible, diaphragm seals with large bases and a facility for cleaning shall be provided. This shall apply in all cases where liquids bearing solids or sludge are handled.

Gauges shall not be mounted directly on equipment subject to variation.

For dry locations indoors, the casing may be plastic or epoxy coated aluminium. For damp indoor locations, particularly in any location where sewage is flowing, and for all locations outdoors, the gauges shall be weatherproof and have AISI 316 stainless steel cases.

Isolating and bleed cocks shall be provided for each pressure gauge, except on installations for hazardous fluids.

PB 4 PLANT

In the assembly and coupling up of valves, correct tools and spanners of the correct size designed for the function they are to fulfil shall be used. The indiscriminate use of pipe wrenches will not be permitted and any fittings damaged by the use of incorrect tools shall be removed from the site.

PB 5 CONSTRUCTION

The applicable clause of SANS (SABS) 1200 L: Medium Pressure Pipelines shall apply unless otherwise stated in the Project Specifications.

PB 6 TOLERANCES

The dimensional tolerances specified in the following standard specifications shall apply:

SABS 144	Cast Iron Single-Door Reflux Valves
SANS (SABS) 664:2011	Cast Iron Gate Valves for Waterworks
SABS 192	Cast Steel Single-Door Reflux Valves

PB 7 TESTING

The testing of the various valves shall be according to the relevant SANS (SABS) specifications 144, 664, 192 and 128 for the works test.

Once installed in pipelines, the valves shall be subject to the same hydraulic tests and pressures specified for the pipelines.

PB 8 MEASUREMENT AND PAYMENT

The applicable clauses of SANS (SABS) 1200 L shall apply unless otherwise stated in the Project Specification.

PC MILD STEEL PIPES AND FITTINGS

PC 1 STEEL PIPES & FITTINGS OF NOMINAL DIAMETER UP TO 250 MM

PC 1.1 Scope

This specification applies to the fabrication, welding and galvanizing of mild steel pipes and fittings of nominal diameter up to 250 mm.

PC 1.2 Fabrication

- a) All fabricated steel pipe of nominal diameter up to 250 mm to be manufactured using ASTM A106 (Standard Schedule 40) Seamless Pipes in conjunction with ASTM A234 Grade WPB butt weld fittings to ANSI B16.9 and BS1640 and welded in accordance with SANS 15614-1: 2007 and/or ISO 15614-1: 2004.
- b) The supply and installation of all steel pipe work to be in accordance with SANS 1200L.
- c) All steel pipe to have a minimum wall thickness of 4.5mm.
- d) All steel pipe work and fittings for welded assemblies/specials to be sand blasted internally and externally prior to – and after - being welded together (refer to PC 1.4 item a)).
- e) All gaskets to be full-faced "Klinger" or similar approved.
- f) Allowances have been made in pipe and fitting assembly lengths for 2mm spaces between flange faces for gaskets and 10mm spaces between the pipe end and flange face for flange adaptors.
- g) All pipe work and fittings dimensions to be checked on site and any discrepancies reported to the Engineer, prior to any installation/assembly taking place.
- h) All pipework, including puddle flanges, passing through brickwork or concrete walls or buried underground to be "Denso" wrapped, unless otherwise directed in writing.

PC 1.3 Welding

The specification and qualification of welding procedures for metallic materials, including welding procedure tests, to be in accordance with **SANS 15614-1: 2007** and/or **ISO 15614-1: 2004**.

Apart from reference to the above, the following documentation is required prior to the evaluation of an offer to tender or prior to any welding taking place:

- a) A preliminary welding procedure specification.
- b) The qualification or appropriate range of qualifications of the welder or welding operator who undertakes the welding procedure.
- c) Documentation relating to the above, including a copy of a current certificate of competence and photograph of the welder or welding operator.

After the award of the tender, but prior to installing the initial batch of pipe work, the following must be presented to the Engineer for approval:

- a) A signed and numbered radiographic report and visual copy of the x-rays of at least two butt welds carried out on the initial pipe work. (Items to be numbered).
- b) All remaining welds to be supported by documentation relating to a solvent dye penetration test of each weld. (Both document and item to be numbered accordingly).

NB: The Engineer reserves the right to call for further radiographic procedures if deemed necessary. All further batches of pipe work must be accompanied by written proof of dye penetration tests of all welds.

PC 1.4 Galvanizing

- a) All welded assemblies to be sand blasted internally and externally prior to hot dip galvanizing. NB: This is in addition to the sandblasting of steel work and fittings prior to the welding procedure (refer to PC 1.2 item d)).
- b) All welds to be inspected and approved by the Engineer prior to hot dip galvanizing, unless otherwise directed in writing.
- c) All pipe work and fittings including bolts, nuts and washers to be hot dip galvanized to **SANS 121 - ISO 1461**.
- d) All nuts to be oversized to allow for hot dip galvanizing.
- e) All damaged hot dip galvanized surfaces, or all ends of pipes cut to suit on site, to be treated with "Zincfix" or similar approved epoxy repair coating, to manufacturer's specification.

NB: Documentation relating to the above must accompany each batch of galvanized pipe work and fittings delivered to site (each item to be listed).

It is also a recommendation that the galvanizer should be a member of the Hot Dip Galvanizers Association of Southern Africa. This allows the Contractor some recourse in the case of delays or rejection of items.

PC 2 STEEL PIPES & FITTINGS OF NOMINAL DIAMETER GREATER THAN 250 MM

PC 2.1 Scope

This specification applies to the fabrication, welding and galvanizing of mild steel pipes and fittings of nominal diameter greater than 250 mm.

PC 2.2 Fabrication

- a) All fabricated steel pipe work of greater than 250 mm ND to be Grade C carbon steel in accordance with SABS 719-2011.
- b) The supply and installation of all steel pipe work to be in accordance with SANS 1200L.
- c) Steel pipe wall thickness as specified in SANS 719, depending on pipe ND to be used. Minimum pipe wall thickness to be 4.5 mm. Whereby SANS 719 specification is deemed insufficient, API5L may be used, in line with minimum thickness required to match pressure rating, as approved by Engineer.

- d) All steel pipe work and fittings for welded assemblies/specials to be sand blasted internally and externally prior to being welded together.
- e) All gaskets to be full-faced "Klinger" or similar approved.
- f) Allowances have been made in pipe and fitting assembly lengths for 3 mm spaces between flange faces for gaskets. For flange adaptors, spaces between the pipe end and flange face have been allowed in accordance with the manufacturer's specifications.
- g) All pipe work and fittings dimensions to be checked on site and any discrepancies reported to the Engineer, prior to any installation/assembly taking place.
- h) All pipework, including puddle flanges, passing through brickwork or concrete walls or buried below ground to be "Denso" wrapped, unless otherwise directed in writing.

PC 2.3 Welding

As per PC 1.3.

PC 2.4 Linings and Coatings

PC 2.4.1 *Surface Preparation*

- a) Remove all weld splatter, sharp edges and protrusions;
- b) Pipes and fittings to be in rust condition A to C of Swedish Standard SIS 05 5900. Pipes and fittings in rust condition D will be rejected.

PC 2.4.2 *Cleaning of Surface*

- a) Surfaces to be degreased with water based solvent degreaser in accordance with SANS 1244;
- b) Surfaces to be thoroughly washed with clean potable water to remove all residues and allowed to dry.

PC 2.4.3 *Blast Cleaning*

- a) Surfaces to be sand-blasted in accordance with Swedish standard SIS 05 5900 (or ISO 8501-1);
- b) The pipe surface shall not be contaminated by oil, grease or any other contaminants harmful to the lining and coatings process.

PC 2.4.4 *Pipe Lining*

- a) Pipe lining to be solvent-free epoxy in accordance with ANSI/AWWA C210-97 "Liquid-Epoxy Coating Systems for the Interior and Exterior of Steel Water pipelines";
- b) The dry film thickness to be a minimum of 400 and a maximum of 600 microns and to be free from sags and runs.

PC 2.4.5 *Pipe Coating*

- a) Pipe coating to be solvent-free polyurethane in accordance with ANSI/AWWA C222-99 "Polyurethane Coatings for the Interior and Exterior of Steel Water Pipe and Fittings";
- b) The minimum dry film thickness of coating to be 2000 microns within a tolerance of -100 microns and + 1000 microns.

PC 2.4.6 *Damage to Linings and Coatings*

Internal lining - to be repaired with two-component solvent-free polyamide cured epoxy to same thickness as existing adjacent lining.

External coating – to be repaired with solvent-free polyurethane coating to same thickness as existing adjacent coating.

PD BUILDING WORKS

PD 1 GENERAL

This is specification covers the various construction activities associated with the erection of buildings which form part of this Contract. Building work shall be carried out in accordance with the National Building Regulations, SABS 0400, the applicable clauses of the SANS Standardized Specifications and the information contained in this specification. Work appurtenant to the erection of buildings such as earthworks, concrete work, structural steelwork etc. shall be carried out as specified in the appropriate standardized specifications and will be measured and paid for under those specifications.

PD 2 BRICKWORK, PLASTERWORK AND FLOOR SCREEDS

PD 2.1 Materials

PD 2.1.1 *Bricks*

Burnt clay bricks shall comply with SABS 227 and shall be of the class scheduled or shown on the Drawings.

All brickwork below ground shall be engineering bricks (ROK), 14 MPa in class 1 mortar (10 MPa) compressive strength. Brickwork in all superstructures shall be engineering bricks (NFX), 7 MPa in class II mortar (5 MPa compressive strength) with ROAN SATIN FBX facebricks.

All load bearing bricks shall be 14 MPa bricks. Concrete bricks where approved by the Engineer, shall have a nominal compressive strength of 8 MPa. Satisfactory proof of the load-bearing capacity of the bricks offered shall be submitted before deliveries are made to the Site.

Air bricks shall be well-burnt terracotta and shall be free from cracks and blemishes and lined with copper mosquito gauze.

Three samples of each type of brick shall be submitted to the Engineer for approval. All subsequent deliveries shall be of a standard equal to or better than that of the approved samples.

PD 2.1.2 *Cement*

Cement shall comply with the requirements of SABS 471 and shall be stored under cover. The use of Portland blast-furnace cement (PBFC) which complies with the requirements of SABS 626 will only be allowed if approved by the Engineer.

PD 2.1.3 *Aggregate*

Fine aggregate shall consist of natural sand, or crushed rock or gravel, and shall be hard, clean and free from adherent coatings or other deleterious matter. Sand for plaster and mortar shall comply with the requirements of SABS 1090, whereas the aggregates for normal and granolithic floor screeds shall comply with the requirements of BS 1199 and BS 1201 respectively.

PD 2.1.4 *Water*

Water shall be clean and free from clay, silt, oil, acid, alkali, organic or other matter which would impair the required strength and durability of the mortar, plaster or floor screed.

PD 2.1.5 *Wall ties and brickwork reinforcement*

Wire ties shall be of galvanized steel of the single wire type for solid walls and either the “Butterfly” or Modified PWD type for hollow walls. Ties shall be of sufficient length to allow not less than 75 mm of each end to be built into brickwork or embedded in concrete.

Brickwork reinforcement shall be manufactured from hard drawn steel wire conforming to BS 785 and shall consist of two 2,8 mm diameter main wires with 2,5 mm diameter cross wires at 300 mm centres welded at intersections.

Brickwork reinforcement shall be lapped not less than 300 mm at end joints and for a length equal to the width of the widest reinforcement at intersections.

PD 2.1.6 *Damp-proof sheeting*

Damp-proof sheeting shall comply with SABS 248, type FV for fibre felt, or SABS 952, type B for embossed polyethylene sheeting.

PD 2.2 *Construction of Brickwork*

PD 2.2.1 *Cement mortar*

Cement mortar shall, unless otherwise specified, consist of one part Portland cement to four parts sand (1:4) by volume for foundation brickwork and one part Portland cement to six parts sand (1:6) by volume for superstructure brickwork. The ingredients for cement mortar shall be measured in proper gauge boxes on a boarded platform and thoroughly mixed. Alternatively, mixing may be by means of an approved mechanical batch mixer. Only when the dry ingredients have been thoroughly mixed and a mixture of uniform colour has been obtained may the water be added in sufficient quantity to obtain mortar with the required consistency.

Cement mortar shall be used within two hours of adding water to the mix and shall not be used after two hours or if it has begun to set. Mortar shall be turned over frequently to prevent it from setting until it is used.

PD 2.2.2 *Brickwork*

Dimensions of all the brickwork shall be set out and built as shown on the Drawings. Bricks shall be kept wet before laying and the top of brickwork shall be wetted before any further bricks are laid. Bricks shall be well buttered with mortar before being laid and all joints shall be thoroughly flushed up as the work proceeds. All joints to face brickwork shall be neatly made and key-drawn with a 6 mm key.

Brickwork shall be carried up in a uniform manner with no portion being raised more than 1 m above an adjacent portion. All perpend, quoins, etc, shall be kept strictly true and square and the whole properly bonded together.

Brickwork shall be built in stretcher bond or English bond as shown on the Drawings, and bats shall not be used except where required for the bond. All joints shall be 10 mm wide and four courses shall measure 340 mm.

All brickwork shall be constructed with galvanized brickwork reinforcement build-in at every fourth course in superstructure brickwork and every second course in foundation brickwork.

Brickwork for cavity walls and solid walls built in stretcher bond shall be tied with wall ties at 255 mm vertical and 690 mm horizontal in foundations and at 340 mm vertical and 690 mm horizontal in superstructure, and shall be staggered vertically. At openings, the ties shall be positioned not more than 300 mm apart along the periphery of the opening and 150 mm from the opening.

Face brickwork shall be kept perfectly clean and rubbing down of the brickwork shall not be allowed. Scaffold boards shall be turned back during heavy rain to avoid splashing. Soiled brickwork shall be cleaned at the Contractor's expense, and the cleaning method shall be approved by the Engineer.

PD 2.2.3 *Reinforced brickwork*

Brickwork over door and window openings shall be reinforced with steel rods, welded or expanded mesh, etc. Reinforcement shall be placed in each course of brickwork for a minimum of four (4) courses or as shown on the Drawings. Reinforced brickwork shall continue at least 300 mm on each side of the openings.

Brick lintels shall be built upon rigid temporary supports left in position for not less than seven (7) days after brick-laying. Pre-stressed concrete lintels may be used where approved by the Engineer.

PD 2.2.4 *Key for plaster*

Joints of all brickwork receiving plaster shall be raked out, or the brick surfaces shall otherwise be prepared with an acrylic slurry or any other approved bonding agent.

PD 2.2.5 *Damp-proofing*

A damp-proof course shall be laid over the full width of all the walls at a minimum height of 150 mm above the final ground level or wherever else it may be required, and it shall be lapped for at least 150 mm at angles and joints. A damp-proof course shall also be laid and stepped up under all external sills.

PD 2.2.6 *General*

Rough and fair cutting shall be performed as required, and the brickwork shall be fitted around any steel work. Face brickwork shall be carefully cut and fitted to suit fittings.

Chases shall be left or formed for edges of concrete floors, staircases, etc. Chases shall also be provided wherever they may be required for pipes, conduits, switch boxes, distribution boards, and the like. Joints shall be raked out for flashings

PD 2.3 *Plasterwork*

PD 2.3.1 *Plaster coats*

A plastered finish shall consist of a single coat, comprising one application of a 1:6 cement sand mixture with a wood or steel-float finish except where otherwise indicated.

PD 2.3.2 *Thickness*

The total thickness of the plaster finish shall be 13 mm minimum and 20 mm maximum.

PD 2.3.3 *Workmanship*

All plasterwork shall be finished smooth and ready to receive paint. Plaster shall be flush with the faces of all switch and plug boxes, the interiors of which shall be kept free from plaster. Plastered surfaces shall be plumb and jambs and reveals shall be formed square

The plasterer shall cut out and make good all cracks, blisters and other defects and leave the plasterwork, on completion, in a state which is acceptable to the Engineer

PD 2.4 *Floor Screeds*

Floor screeds shall have a mix proportion by mass consisting of one (1) part Portland cement and three (3) parts (1:3) fine aggregate. A minimum amount of water is to be used, but it shall be sufficient to allow adequate compaction.

Screeds shall be laid on clean hardened bases in panels not exceeding 14 m² and shall be steel-trowelled to a true and smooth finish. In monolithic construction, the panels shall not exceed 30 m². Joints in screeds shall coincide as nearly as possible with joints in the bases. The thickness of screeds shall be as shown on the drawings or as directed by the Engineer.

The entire screed surface shall be free from loose or raised particles of aggregate, trowel marks or any irregularities, humps or depressions exceeding 5 mm when measured from a 3 m long straight

edge. Screeds shall be cured for three (3) to seven (7) days as may be directed by the Engineer, and shall be protected from damage. No moisture-sensitive floor finish shall be laid on screeds unless a reliable moisture test shows that the screed is sufficiently dry to receive the covering.

PD 3 DOORS AND WINDOWS

PD 3.1 Materials

PD 3.1.1 *General*

All steel and iron work shall be delivered clean and free from rust, pitting or other defects. Shop primers shall be applied before delivery and shall consist of a coat of red oxide paint, or any other approved antirust paint on all surfaces.

Unless otherwise specified, all materials shall conform at least to the appropriate SABS or BS standards where such standards apply to ironmongery, or steel, cast iron and any other related materials.

PD 3.1.2 *Pressed-steel door frames*

Pressed-steel door frames shall comply with SABS 1129 and shall be manufactured from 1,6 mm thick mild-steel sheeting, pressed to the required shapes, properly mitred, welded and reinforced, with all welding neatly cleaned off.

Frames shall be of the widths required to suit the thickness of the walls into which they are built and shall be fitted with suitable tie bars and braces at the bottom. Three lugs to be built into the brickwork shall be provided on each jamb.

Rebates in frames and transoms for doors shall be of the widths required to suit the thicknesses of the doors and shall be fitted with a pair of approved steel butt hinges set flush into recesses in the frames. 4,5 mm thick reinforcing plates shall be welded to the backs of the frames at hinge positions.

Heads of frames over double doors shall be drilled where required to form keeps for bolts and shall be fitted with one rubber buffer for each leaf of the door.

Frames for single doors shall be fitted with approved chromium striking plates and an adjustable striking-plate keeper boxed in at the back of the frame by a welded-on sheet-metal box. The frames shall be fitted with a minimum of two rubber buffers.

Frames shall be protected against twisting and damage during transit and erection.

PD 3.1.3 *Pressed-steel doors*

Pressed-steel doors shall be manufactured from 1,6 mm thick steel plate. The doors shall be of standard design, pressed to shape with 40 mm reveals all round. The doors shall be strengthened

with full-length vertical V-shaped or other approved sectional strengthening ribs projecting to the outer face. Two horizontal stiffening rails shall also be welded to the inner face of the doors.

A door shall be hung on a pair of 100 mm long steel butt hinges with loose pins. The leaves of the hinges shall be welded to both the door and the door frame, and a 1,6 mm thick steel plate shall be welded to the inner face of the door to protect the lock.

One leaf of double doors shall be fitted at the top and bottom with approved 150 mm cast brass barrel bolts in an approved manner and the other leaf shall be fitted with a lock, the striking plate of which shall be fixed to the first leaf.

Where indicated on the drawings, doors shall be fitted with louvred ventilation grills of approved design, backed with insect and vermin-proof gauze screening.

PD 3.1.4 *Steel window frames*

All steel window frames shall comply with SABS 727 and shall be of the types and sizes shown on the Drawings.

Standard industrial types of steel window frame shall be constructed from rolled mild-steel industrial sections, 35 mm wide by 3 mm thick, with opening sections constructed from standard residential sections, 25 mm wide by 3 mm thick, welded at angles and properly jointed at intersections.

PD 3.1.5 *Door locks and handles*

All door locks shall comply with the requirements of SABS 4 and shall be of approved manufacture and pattern. All locks shall be supplied with two keys. Keys shall be distinctly numbered with consecutive numbers and each key shall be stamped with the same number as that of the lock which it controls. No two locks in any one building may have the same key.

External doors shall be fitted with master-keyed four-lever heavy duty mortice locks or cylinder locks as indicated.

All locks shall be properly installed and, after completion, striker plates shall be adjusted and the locks serviced.

Door handles shall be of cast zinc of approved manufacture and pattern.

PD 3.1.6 *Miscellaneous fittings*

All retaining devices for doors and windows as well as fittings such as coat hooks, retaining hooks, etc shall be of solid brass unless otherwise indicated. All fittings shall be secured by screws or set screws of the same material and finish as the fitting.

Fittings to be fixed to plastered walls, masonry or floors shall be fixed direct by means of patent plastic or fibre plugs fitted into drilled holes.

Door stops shall be provided at every door and shall be 40 mm diameter rubber stops.

Patented precast concrete window surrounds or blocks shall be as scheduled in the bill of quantities.

PD 3.2 Installation of Doors and Windows

All built-in door and window frames shall be set straight, plumb and level, and shall operate to the satisfaction of the Engineer after fixing has been completed.

Fittings shall be either removed, or wrapped and protected from damage, until all rough trades have been completed.

PD 4 CARPENTRY AND JOINERY

PD 4.1 General

PD 4.1.1 *Materials*

All timber used for structural purposes shall be of merchantable grade and shall comply with the requirements of SABS 563 and SABS 1245. Structural timber shall be carefully selected and of the best quality, free from large or dead knots, shakes, waney edges or other defects. Purlins and bracing shall comply with the requirements of SABS 653. Finger-jointed structural timber shall comply with the requirements of SABS 096 and laminated timber with the requirements of SABS 1089. Hardwoods and softwoods for joinery shall comply with SABS 1099 and SABS 1359 respectively and suitable species shall be used for the various purposes.

Unless otherwise specified, all materials shall conform to the appropriate SABS or BS Specification where such standards exist for nails, screws, bolts, adhesives, etc.

PD 4.1.2 *Preservative treatment*

All structural timber shall be given a preservative treatment suitable for the duty for which the timber is intended in accordance with SABS 05, and no untreated timber shall be used. The preservative treatment shall not impair the final finish. The timber shall be impregnated throughout. When surface coating is specified, the compounds applied on the surfaces of the timber shall form an unbroken film.

PD 4.1.3 *Priming*

The jointing surfaces of all joints exposed to the weather and built-in portions of frames shall be thickly primed except where adhesives are specified. Carpentry and joinery items which are prepared for painting by the manufacturer, shall be knotted and primed before being dispatched to the Site. Primed surfaces shall be touched up where necessary during the progress of the work or where site adjustments have been made.

PD 4.2 Carpentry Work

PD 4.2.1 ***Scope of work***

Carpentry work shall be carried out in a manner consistent with good workmanship and in compliance with the Drawings.

The carpenter shall perform all cutting away and making good in attendance upon all other trades and he shall provide and maintain temporary coverings required for the protection of any finished work that might be damaged if left unprotected during the progress of the work.

PD 4.2.2 ***Dimensions***

Unwrought timber shall be as sawn and shall be to the dimensions and within the tolerances specified in the relevant SABS Standard Specifications mentioned in subclause PD 5.1.1.

PD 4.2.3 ***Jointing***

Unless otherwise specified, all joints shall be secured by means of a suitable type and a sufficient number of approved connectors. All joints shall be carefully made in such a way that they will not impair the strength and stiffness of the beams or members.

PD 4.2.4 ***Timber roof construction***

The plates, joists, rafters, purlins, bracing and other pieces used for the construction of the roof and trusses shall be of the dimensions, spacing and construction as shown on the Drawings. All the joints in the framework shall be of the most appropriate type, accurately formed and adequately secured with fasteners as specified.

PD 4.3 **Joinery Work**

PD 4.3.1 ***Scope of work***

Joinery work shall consist of the manufacture, delivery to the Site, and fixing in the buildings, of all joinery shown on the Drawings.

Except where a special finish is specified, the Contractor shall have all stairs, landings, doors, shelves and other joinery work cleaned and scrubbed down and shall leave all his work in a good order to the satisfaction of the Engineer.

PD 4.3.2 ***Dimensions***

All wrought timber shall be sawn, planed, drilled or otherwise machined or worked to the correct sizes and shapes shown on the Drawings. Reasonable tolerances shall be provided at all connections between joinery works and the building structure to compensate adequately for any irregularities, settlements or any other movements.

PD 4.3.3 ***Manufacture***

The joiner shall perform all the necessary mortising, tenoning, grooving, matching, tonguing, housing, rebating and all the other works necessary for correct jointing. He shall also provide all metal plates, screws, nails and other fixings that may be necessary for doing the specified joinery work properly.

PD 4.3.4 *Joints*

Where joints are not specifically indicated, they shall be the recognised forms of joints for each position. The joints shall be so made as to comply with Part 2 of BS 1186.

PD 4.3.5 *Doors and frames*

Door frames, linings, panel doors, framed, ledged and braced doors, flush doors, sliding doors, etc. shall be supplied or made by the joiner and shall be installed, fitted or hung as detailed on the Drawings. All timber shall be wrought and prepared for oiling, staining, varnishing or painting.

PD 4.3.6 *Skirtings, cornices etc.*

Skirtings, cornices etc. shall not be installed until after the wall coverings have been applied, the flooring laid and ceilings installed, unless otherwise specified.

PD 4.3.7 *In-situ joinery*

In-situ joinery work shall not be executed until after all floor, wall and ceiling surfaces have been formed or constructed, unless otherwise instructed.

PD 4.3.8 *Ceilings*

Ceilings shall, unless otherwise specified or scheduled, consist of plaster board or fibre-cement panels as shown on the Drawings and shall be nailed to the branderling or suspended from the roof structure. The panels shall be separated by exposed tees and insulated with a 50 mm thick fibreglass wool blanket where shown on the Drawings.

PD 5 **ROOF SHEETING AND ACCESSORIES**

Roof sheeting and accessories shall comply with and shall be measured and paid for under SABS 1200 HB. All sheeted roofs shall be 'Kliplok' Zinalume IBR sheeting (or similar approved) in continuous lengths (colour to client. spec.).

PD 6 **PLUMBING**

PD 6.1 **Materials**

PD 6.1.1 *General*

All materials shall be of the best quality and shall be approved by the Engineer before installation. Cracked, chipped, dented or faulty items or materials shall be replaced at the Contractor's expense. Glazed ceramic sanitary ware shall comply with the requirements of SABS 497 and all other materials shall comply with the standards as specified, scheduled or shown on the Drawings.

PD 6.1.2 *Water closet (WC) suites*

WC suites shall unless otherwise specified or scheduled consist of a glazed vitreous china closet with an S or P trap and seat lugs, a 14 litre low-level matching flat-bottomed flushing cistern placed and fixed on the closet, or a suspended enamelled cast-iron cistern with the flush pipe connected to the flushing rim of the closet with rubber cone joints, and a solid heavy-duty plastic seat with cover, hinges and buffers.

PD 6.1.3 *Urinals*

Urinals shall be of the type specified or scheduled, of glazed vitreous china, wall mounted, with an automatic or a manual flushing system, and chromium-plated fittings.

PD 6.1.4 *Wash-hand basins*

Wash-hand-basins shall unless otherwise specified or scheduled be of glazed vitreous china or enamelled cast iron, wall mounted on a pair of cast-iron brackets, and fitted with chromium-plated fittings consisting of two taps, outlet and chain, and supplied with a plug and an anti-siphon trap.

PD 6.1.5 *Sinks*

Sinks shall comply with the requirements of SABS 242 and shall be complete with cabinet, chromium-plated outlet, anti-siphon trap, plug, chain and two bib taps or one mixer tap, all as detailed or as scheduled.

PD 6.1.6 *Pipes and tubing*

Cast-iron and steel pipes used in plumbing work shall comply with the requirements of SABS 746 and SABS 62 respectively. Copper tubing shall comply with the requirements of SABS 460 and malleable cast-iron fittings with SABS 509.

PD 6.2 *Construction*

Plumbing shall be carried out strictly in accordance with the Drawings and with the National Building Regulations, with specific reference to Government Notice R1875 dated 31 August 1979.

Steel pipes and their malleable cast-iron fittings shall be joined with red lead and hemp, lead pipes shall have wiped soldered joints, and cast-iron pipes shall be joined by caulking with hemp and metallic lead. Soil pipes from WC's shall have an internal diameter of at least 100 mm and shall be fitted with a pan connector and an access bend (or an access junction where a vent pipe is used), and carried through walls and into the ground for connection to the sewer. Vent pipes shall be fitted with approved balloon gratings. Waste pipes from basins and sinks shall have an internal diameter of at least 32 mm and shall discharge into gulleys. Bends for waste pipes shall incorporate cleaning eyes. Cisterns, basins and sinks shall be connected to the pipe system with 12 mm diameter copper service pipes, and chromium-plated stopcocks shall be installed for isolation and maintenance purposes.

PD 7 PAINTING

PD 7.1 General

No paint shall be applied to any surface containing traces of dust, grit, grease, oil, loose rust, millscale or corrosion products of any kind or to any surface that is not free from moisture. Where necessary, surfaces shall be thoroughly washed to remove all traces of soluble salts and/or corrosive air-borne contaminants prior to painting, and the surfaces shall be dried and painted immediately thereafter.

Welding shall be completed in so far as it is possible before painting commences, but in cases where welding can be done only at a later stage, no paint shall be applied to within 75 mm of the proposed weld position unless otherwise specified. Welds and adjacent parent metal shall be abrasive blasted and/or ground and all contaminants such as flux shall be removed prior to painting.

Surfaces of members which are to rest on concrete or other floors or which will be otherwise inaccessible after erection shall receive the full paint system prior to erection.

Damaged paint areas on metal surfaces shall be cleaned, rust spots removed where applicable and the surrounding paint which is still intact shall be feathered for a distance of 20 mm beyond the damaged area.

Spot priming and repair shall consist of all the coats previously applied and shall overlap the damaged area.

Damaged galvanised areas shall be cleaned and any rust spots and any flakes of the coating surrounding the damaged area removed. The coating shall then be restored by zinc spraying or soldering, or painting with a zinc-rich paint, as may be approved by the Engineer.

Where the shop coat is allowed to age for a few months before the final painting is done, light sanding or rubbing with steel wool or scrubbing with clean water using a bristle brush shall be carried out. Steel to be embedded in concrete shall not be painted below 50 mm from the final level of the concrete. Each priming coat and each undercoat of paint shall be inspected and approved by the Engineer before any subsequent undercoat or finishing coat is applied.

All finishing colours shall be as shown on the Drawings, or as directed by the Engineer.

PD 7.2 Materials

Paints shall comply with the requirements of the appropriate Specifications below:

PD 7.2.1 Primers

SABS 678 : For wood

SABS 679 : Zinc chromate for steel

SABS 723 : Etch-wash primer for metals

SABS 912 : Calcium plumbate for galvanized iron

SABS 926 : Zinc-rich epoxy for steel

PD 7.2.2 *Undercoats*

SABS 681 : For all undercoats

PD 7.2.3 *Finishing coats*

SABS 515 : For interior use, flat and egg-shell finish

SABS 630 : For interior and exterior use, high-gloss enamel

SABS 631 : For interior and exterior use, oil gloss paint

SABS 633 : For interior use, emulsion paint

SABS 634 : For exterior use, emulsion paint

SABS 684 : For exterior use on structural steel

SABS 801 : For interior and exterior use, epoxy-tar paint

SABS 802 : For interior and exterior use, bituminous aluminium paint

SABS 887 : For interior use, glossy and egg-shell varnish

The Contractor shall furnish the Engineer with the following information and details regarding the paints and decorative materials for the painting system he proposes to use, for written approval:

- a) The name of the manufacturer and trade name.
- b) The brand, type or grade of paint and the appropriate SABS Specification.
- c) Manufacturer's data sheets, colour references, instructions for use, including surface preparation, sealers, primers, undercoats, finishing coats, coat thicknesses and curing periods, which shall all be considered as being part of these Specifications if approved by the Engineer.
- d) Safeguards to protect the applied paint from damage until the work is accepted by the Engineer.
- e) The shelf or pot life of materials, if applicable.
- f) An undertaking that the proposed paint system is suitable for its intended use and that the various coats of paint are compatible with one another

Where proprietary brands are used, the manufacturer's priming and all subsequent coats of paint suitable for that particular brand shall be employed in accordance with the manufacturer's instructions.

No other materials of a similar nature and quality or from another manufacturer may be used instead of those approved, unless written permission to do so has been obtained from the Engineer. All materials shall be brought onto the Site in containers sealed by the manufacturer. Paints of a different quality, type, brand or colour shall not be mixed, or thinned and shall not be adulterated in any way, but shall be used as supplied by the manufacturer. Any mixing or tinting required shall be carried out by the manufacturer. Tinting of paint on the Site by the Contractor will only be allowed with the written permission of the manufacturer and the Engineer.

PD 7.3 *Inspection and Preliminary Work*

Before commencing paintwork, the Contractor shall carefully inspect the surfaces to be painted to satisfy himself that the surfaces are in a satisfactory or acceptable condition to receive the paint system specified. All metal fittings and fastenings shall be removed where applicable before the preparatory processes are commenced. On completion, the metal fittings and fastenings shall be cleaned and refitted in position.

PD 7.4 Workmanship and Finishes

Paint may be applied by spray, brush or roller depending on the materials used, the surface to be painted, and the manufacturer's instructions. Every coat of paint, irrespective of the method of application, shall be adequately and permanently keyed or bonded to the base material or previously applied coat, and shall be evenly distributed, continuous, free from sags, runs, brush marks, pin holes or other imperfections, and shall dry to a smooth finish. An approved water trap and air-regulating valve shall be furnished and installed on all equipment used in spray painting.

Before painting the interiors of buildings they shall be cleaned and the floors shall be washed and kept free from dust during the progress of the interior work.

The Contractor shall protect all nearby surfaces against disfigurement by spatters, splashes and smirches of paint or paint materials. The Contractor shall be responsible for any damage by paint or dirt caused by his operations to vehicles or property or injury to persons and he will be required to provide protective measures to prevent any such damage or injury and make good, where required, at his own expense. If passing traffic creates dust which may harm or spoil the appearance of external painted surfaces, the Contractor shall sprinkle the adjacent areas with water, at his own cost, for a sufficient distance on each side of the location where painting is being done.

Undercoats shall be tinted by the manufacturer to distinguish between successive coats. The final coats or finishing coats of paint shall be applied after all the other work in the vicinity has been completed. The painter shall keep some of the final paint in reserve in the event of his having to make good any patching which may be required as a result of damage or unforeseen circumstances.

Upon completion, the Contractor shall, in the case of buildings, clean all glass, remove all paint spots from walls, floors and fittings, and leave the premises clean and fit for occupation. All inflammable materials, comprising solvents, thinners, wiping cloths, etc. shall be placed in tightly closed containers and properly disposed of.

PD 7.5 Painting of Plaster, Concrete or Brick Surfaces

PD 7.5.1 *Surface preparation*

Surfaces for painting shall be prepared by sandpapering, scraping or wire-brushing to remove loose material, dust, laitance, scum or other deleterious materials or high spots. Defective areas shall be cut out where necessary and made good with an approved non-shrink filler. Cracks shall be cut out, suitably keyed, and given a coat of an approved bonding agent before the filler is applied. All patches shall be rubbed down to an even surface. Surfaces shall be washed and allowed to dry. Surfaces

shall be treated with neutralising liquid for walls, and if the surface is coarse or textured, either one full coat of pigmented wall sealer or one full filler coat shall be applied in addition to the neutralising liquid.

PD 7.5.2 *Paint application*

Prior to the emulsion paint being applied, the surface shall be sealed with an approved clear sealer and primed with an undercoat diluted to 50%. Emulsion paint (PVA or acrylic) shall then be applied in two finishing coats. Egg-shell finish (alkyd oil-based), oil gloss paint or enamel gloss paint shall be applied as follows: one coat of universal undercoat shall be applied and it shall be followed by one coat of a mixture comprising 50% of the undercoat and 50% of the paint to be used for the finishing coat. A finishing coat of semi-gloss eggshell, or oil gloss paint or enamel gloss paint shall then be applied.

PD 7.6 *Painting of Woodwork*

PD 7.6.1 *Surface preparation*

The surfaces shall be cleaned, sandpapered and rubbed down to a smooth, even face before painting. The moisture content of the timber shall not be more than 20% at the time when the first coat is applied. All cracks, shakes or scars shall be filled flush with a filler approved by the Engineer before painting. The surface shall then be washed with cleaner and allowed to dry.

PD 7.6.2 *Primer application*

One coat of an approved wood primer shall be applied. After open-grained timber has been prepared and primed, the grain shall be stopped and filled with synthetic filler and rubbed down with water paper. All new woodwork shall be properly primed on all surfaces and edges before being fixed in position. All woodwork not previously painted shall be given a prime coat, well brushed in.

PD 7.6.3 *Paint application*

One coat of universal undercoat shall be applied followed by one coat of a mixture of 50% of the undercoat and 50% of the paint to be used for the finishing coat. A finishing coat of oil gloss paint or enamel gloss paint or semi-gloss egg-shell (alkyd oil-based) paint shall then be applied.

PD 7.6.4 *Varnish finish*

Two coats of gloss varnish or egg-shell varnish shall be prepared, stopped and applied.

PD 7.7 *Painting of Metal Surfaces*

PD 7.7.1 *General*

Wherever possible, all painting shall be done at the manufacturer's works, but where this is not feasible, the Engineer may permit the application of the undercoat and finishing coats to be carried out on the Site, in which case a prime coat shall be applied at the manufacturer's works prior to the members being despatched to the Works.

PD 7.7.2 *Surface preparation*

The preparation of metal surfaces shall comply with SABS Code of Practice 064 and shall receive the greatest care to ensure rust-free conditions prior to the paint system being applied. All surfaces shall be prepared by removing loose paint, rust, plaster, scale, dust, dirt, grease etc. and by repairing or patching defective paint surfaces before painting or repainting. Damaged shop-primed surfaces shall be thoroughly cleaned of rust and patched with a prime coat.

PD 7.7.3 *Paint application*

PD 7.7.3.1 *Iron and steel work*

All iron and steel work shall be properly primed with a red-lead-based primer where steel work is likely to be exposed to the elements for longer than 30 days. Zinc-chromate primer may be used where overpainting will be completed within 30 days of priming. Metal-etch wash primers may be used under dry conditions where overpainting will be completed within 24 hours of priming. The dry-film thickness of the prime coat shall not be less than 0,300 mm.

After priming, one coat of universal undercoat shall be applied. If necessary, the undercoat shall be tinted to a shade just lighter than the desired finish with approved liquid stainers. The dry-film thickness shall not be less than 0,250 mm.

The two finishing coats shall either be of alkyd resin-based synthetic enamel, gloss or matt oil paint, or as specified elsewhere. The dry-film thickness shall not be less than 0,250 mm per coat.

When mating surfaces are brought together, both surfaces shall have been given the full treatment specified, but where this cannot be done, each surface shall be given a copious coating of primer and the surfaces drawn together while the paint is still wet.

The portion of structural steel members to be buried in soil, and all bases to a height of 500 mm shall be given two coats of an epoxy-tar primer instead of the zinc-chromate primer specified for other surfaces.

The surfaces of steel and cast-iron articles, such as floor gratings, grids and manhole covers shall, after a thorough brushing to remove loose rust, be painted with two coats of epoxy-tar paint, each at least 0,230 mm thick.

PD 7.7.3.2 *Galvanized iron and steel*

All traces of protective coating shall be removed with galvanized iron cleaner, and two coats of calcium plumbate primer shall be applied. One coat of tinted universal undercoat and two finishing coats of alkyd resin-based synthetic enamel gloss paint shall be applied.

PD 7.7.3.3 *Non-ferrous metals*

Surfaces of aluminium, copper etc. shall be prepared and cleaned, and one coat of self-etch zinc-chromate wash primer shall be applied. One coat of universal tinted undercoat and two finishing coats

of enamel gloss paint shall then be applied. Where non-ferrous metals are not to be painted, the surfaces shall be cleaned, polished and two coats of lacquer applied.

PD 7.8 Painting of Floor Screeds

Where chemicals could cause damage to floors, such floors shall be painted with an approved epoxy paint. The type of paint to be used will be shown on the Drawings and will depend on the types of chemical that are used. The preparation of such floor screeds for painting and the subsequent application of paints shall be carried out strictly in accordance with the manufacturer's instructions.

PD 7.9 Paint Thickness

Unless otherwise specified, all coats of paint, whether prime coat, undercoat or finishing coat, shall have a dry-film thickness of not less than 0,200 mm, irrespective of the method of application.

PD 7.10 Inspection

The Contractor shall provide the necessary equipment to establish whether the primers, undercoats and finishing coats have been applied to the correct thickness according to the correct applications. The Engineer may take samples of the paints during painting operations for testing and quality control.

PD 8 MEASUREMENT AND PAYMENT

PD 8.1 Brickwork

(Thickness, type and class indicated) Unit: m²

The unit of measurement shall be the square metre of each type of brickwork built, calculated from the leading dimensions of the brickwork. Areas of pipes etc. built into brickwork shall not be included in the areas measured. At corners and intersections common to more than one brick wall, the areas shall be measured only once. The tendered rates shall include full compensation for the construction of the brickwork complete as specified, including pointing, the supply and building-in of conduits, beams, lintels, pipe sleeves, the raking-out of joints, weepholes, wall ties, brickforce reinforcement as specified, as well as the building in of plasterwork, facings, paintwork doors, windows, etc. where scheduled.

PD 8.2 Plasterwork

(Thickness of plaster and finish indicated) Unit: m²

The unit of measurement shall be the square metre of each type of coat completed as specified. The tendered rates shall include full compensation for the construction of the plasterwork, including supplying all materials, mixing, applying, finishing, forming reveals, joints, narrow widths, rounded angles, V-joints etc. complete as specified.

PD 8.3 Floor Screeds

(Description and thickness indicated) Unit: m²

The unit of measurement shall be the square metre of floor screed laid, as specified, on floors, steps or areas shown on the Drawings or as designated by the Engineer. The tendered rates shall include full compensation for constructing the floor screeds, including supplying all materials, mixing, laying, finishing, and forming nosings, reedings, skirtings etc.

PD 8.4 Doors and Windows

(Type and size indicated) Unit: No.

The unit of measurement shall be the number of doors and windows installed complete as specified. The tendered rates shall include full compensation for manufacturing and installing steel or aluminium doors, windows, and frames complete with hinges, handles, locks, barrel bolts, door closers, retaining devices, door stops, stays and any other work or ironmongery necessary to complete the work as specified or as shown on the Drawings. The tendered rate for doors and windows shall also include full compensation for glazing, window sills and thresholds as specified, including all necessary timber subframes for aluminium doors and windows, etc

PD 8.5 Ceilings

(1) Plaster-board ceiling (type and thickness indicated):

a) Fixed ceiling Unit: m²

The unit of measurement shall be the square metre of fixed or suspended ceiling or bulkheads installed complete as scheduled. The unit of measurement for cornices shall be the linear metre. The tendered rates shall also include full compensation for the construction of the ceilings, bulkheads and cornices including the exposed tees, grids, frameworks, hangers, trap doors, insulation blanket and brandering as specified, as well as the suspension system where applicable.

PD 8.6 Joinery

(1) Items measured by number:

a) Doors (type and size indicated) Unit: No.

b) Etc for other items measured by number

(2) Items measured by length:

a) Skirtings (type and size indicated) Unit: m

b) Etc for other items measured by length

The units of measurement shall be the number or metre of each type and/or size of joinery item specified. The tendered rates shall include full compensation for supplying all materials, and manufacturing, cutting, wasting, fixing and installing the joinery items. Tendered rates for doors shall also include for all ironmongery applicable to the specific doors as specified and indicated on the door and ironmongery schedule drawings, including fixing, installing, testing etc.

PD 8.7 Miscellaneous Work

- (1) Paintwork Unit: m², m, Sum
- (2) Plumbing Unit: m, No., Sum

The unit of measurement shall be as scheduled. The tendered sums or rates shall include full compensation for the supply of all materials, delivery to site, storage, all equipment and labour, preparation, application, installation, testing, all temporary work and safety precautions, replacement of defective work, protection of completed work and clean-up after completion.

PD 8.8 Miscellaneous Items

- (1) Items measured by area:
 - a) (Description of item) Unit: m²
- (2) Items measured by length:
 - a) (Description of item) Unit: m
 - b) Etc
- (3) Items measured by number:
 - a) (Description of item) Unit: No.
 - b) Etc

The unit of measurement shall be the number, linear metre and square metre as applicable to each item. The tendered rates shall include full compensation for all labour, plant, equipment, transport etc., manufacturing or providing and installing each item complete as scheduled and shown on the Drawings, and shall include all corrosion protection where applicable.

PE MECHANICAL EQUIPMENT SPECIFICATIONS

PE1	Refurbishment of Steel Pipelines and Fittings
PE1.1	<p>General</p> <p>If possible, pipes and fittings are to be moved to a convenient location for inspection by the Engineer. Long pipes may be cut only upon written instruction from the Engineer, but this is to be kept to a minimum.</p> <p>Once the pipes and fitting have been moved and cleaned, the Contractor is to arrange for inspection by the Engineer. The Contractor will make available any equipment necessary for the inspection, which may include lifting and rotating the items.</p> <p>On inspection the Engineer will confirm if the items may be reused, and which method is to be followed for the refurbishment. A combination of methods may be instructed.</p> <p>It is anticipated that Surface Preparation Method 1 will be required over the full length of the pipes and fittings to be refurbished.</p>
PE1.2	<p>Surface Preparation Method 1 (Hand)</p> <p>Power tool cleaning with chipping hammers, scrapers, wire brushes and sanding to remove all loose rust, mill scale, old loose paint and foreign matter to a Swedish St2 standard.</p>
PE1.3	<p>Surface Preparation Method 2 (Abrasive Blasting)</p> <p>Surface preparation is to comply with the Society for Protective Coatings (SSPC) standards SSPC-SP6. All oil, grease, dirt, rust, scale and foreign matter are completely removed from the surface and all rust, mill scale and old paint are completely removed by abrasive blasting except for slight shadows, streaks or discoloration caused by rust stains, mill scale oxides or slight, tight residues of paint or coating that remain. If the surface is pitted, slight residue or rust or paint may be found in the bottom of pits. At least two thirds of each square inch of surface areas shall be free of all visible residues and the remainder shall be limited to the light residues mentioned above.</p>
PE1.4	<p>Coating and Lining</p> <p>The prepared surface is to be coated with Carbogaurd 891 Epoxy coating or similar approved. The products are to be applied in accordance with the manufacturer's specifications.</p> <p>The minimum dry film thickness of coating is to be 250 microns.</p>

	Where pipes are being coating prior to butt welding, the blast cleaned surface shall be stopped or cut back by suitable masking which shall not contaminate the cleaned surface. Cut backs to be 100mm in length from the end to be welded. All coatings are to be feathered or mitred to prevent air entrapment in the joint coating system.
PE1.5	<p>Testing</p> <p>The coating shall be free from holidays and tested in accordance with Clause 7.2.2 of SABS 1178 at 15Kv.</p> <p>The coating thickness on each pipe is to be tested. At least four readings at equally spaced intervals around the pipe circumferences, approximately 300mm from each end of the pipe shall be taken. One reading shall be over the weld bead if it is visible.</p>
PE1.6	<p>Payment</p> <p>Recover pipe and fittings (m)</p> <p>Rate to include for all costs associated with the recovery, cleaning and inspection of the pipes and fittings in accordance with this specification.</p> <p>Refurbish and coat pipes</p> <p>To Method 1 preparation (m)</p> <p>To Method 2 preparation (m²)</p> <p>Rate is to include for all costs to prepare the surface and coat the pipe and fittings.</p>
PE2	Pumps – Standard Specification
PE2.1	General
PE2.1.1	Pumps shall be silent and vibration free during operation.
PE2.1.2	No pump shall be started before installation of strainers.
PE2.1.3	Pumps shall be provided with adequate protection over inlet and outlet flanges before being delivered to site. Protection covers shall be able to withstand normal handling during construction work.
PE2.1.4	Pumps shall be suitable for the fluids and fluid temperature that they handle and shall be selected accordingly. See pump data forms in this regard.
PE2.1.5	Manual vent valves shall be provided at high points on the pump casings. For

	applications with temperatures above boiling point, the vent must be piped to a safe drain point.
PE2.1.6	Drain plugs shall be provided at low points on the pump casings.
PE2.2	Couplings and Alignment
PE2.2.1	Pumps shall be complete with flexible drive couplings to allow for angular and axial misalignment where applicable.
PE2.2.2	Pumps shall be aligned by a representative of the pump supplier, but the contractor still remains solely responsible for the guarantee period.
PE2.2.3	Pump drives shall be suitably protected by a securely mounted sheet metal guard and comply with Machinery and Occupational Safety Act (Act 611983).
PE2.2.4	Each flexibly coupled pump shall be provided with a cast iron or fabricated steel baseplate of ample size to hold both pump and motor in correct alignment. The pump and motor shall be accurately aligned when running at normal temperature. Dowel pins shall be fitted to base plates after alignment.
PE2.2.5	Couplings shall be selected to match at least the power of the electric motor and shall not impose any restriction on the normal expansion and tolerances.
PE2.3	Pump Selection
PE2.3.1	The efficiency of each pump selected shall not be less than 70% (unless otherwise impossible) and not more than 115% of the <i>Best Efficiency Point</i> for the impeller furnished. As shown in the pump data forms, where a number of alternative duty points are provided, the selected pump must be capable of operating for extended periods at any combination of points. These points correlate to the total system head when different combinations of pumps are run.
PE2.4	Pump Installation
PE2.4.1	All pumps are to be installed in accordance with the Manufacturers specifications. The rate for installation and commissioning of pumps must include for all nuts, bolts, base plates or straps that are required for their fixing, according to the Manufacturers specifications.

PE3	Electric Motors, Motor Starters And Motor Protection
PE3.1	<p>Motors</p> <p>All electric motors shall fully comply with the relevant standard specifications:</p> <p style="padding-left: 40px;">SABS 948: Standard Specification for Three Phase Induction Motors.</p> <p style="padding-left: 40px;">BS 2613: The Electrical Performance of Rotating Electrical Machinery.</p> <p style="padding-left: 40px;">BS 170: The Electrical Performance of Fractional Horsepower Electric Motors and Generators.</p>
PE3.2	Motor Installation
PE3.2.1	<p>All motors are to be installed in accordance with the Manufacturers specifications. The rate for installation and commissioning of motors must include for all nuts, bolts, base plates or straps that are required for their fixing, according to the Manufacturers specifications.</p> <p style="padding-left: 40px;">IEC 2 pole motors with cast iron frames to be provided. The motor selection to provide a minimum of three consecutive star delta starts per hour with the full load connected without exceeding the allowable temperature limits. Motors should be able to operate under all weather conditions.</p> <p style="padding-left: 40px;">Cable entry: Looking from the backside of the motor to the drive end side, a left side cable entry port needs to be provided.</p> <p style="padding-left: 40px;">Electric motors to be supplied with thermistors</p>
PE4	Power Transmission
PE4.1	<p>General</p> <p>In the interest of standardisation and ease of maintenance, the drive components shall wherever possible be standard stock items</p>
PE4.2	<p>Couplings</p> <p>Couplings shall be of the rubber tyre type, with taper lock bushes which shall be keyed to the shafts. After installation the Contractor in the presence of the Project Manager shall check the alignment of all couplings. Alignment shall be accurate resulting in the specified vibration levels and to the approval of the Project Manager. Alignment of motor and pumping units should be of a high standard to protect the bearings of the units.</p>
PE4.3	<p>Baseplates</p> <p>Both direct coupled and belt driven machines shall be mounted with their motors</p>

	<p>on common cast iron or fabricated steel base plates of rigid construction. Each item to be mounted on the base plate shall be provided with mounting pads, which shall have machined faces. On fabricated base plates this machining shall be done after fabrication and, where applicable, stress relieved. The thickness of the pads shall be not less than 1,25 times the diameter of the holding down bolts and shall be drilled and tapped to suit fastening down by studs or set screws.</p> <p>Preliminary alignment shall be done at the factory to ensure that the baseplate has been correctly manufactured, but final alignment shall always be done on site after installation and grouting has been completed. Alignment shall be accurate and to the approval of the Project Manager and a final alignment check, witnessed by the Project Manager, must be carried out by the Contractor prior to start up.</p> <p>Multiple shimming, which can cause subsequent misalignment due to corrosion, will not be accepted.</p> <p>With direct-coupled units with motor weights exceeding 150 kg, jacking screws for motor alignment shall be provided.</p> <p>Base plates shall be so designed and grouted so as not to provide collection points for water or dirt.</p> <p>Except where otherwise approved in writing by the Project Manager, all baseplates on concrete plinths shall be fully grouted in. Suitable grouting holes must be provided on baseplates having a continuous top plate and holes tapped through shall be suitable protected.</p> <p>In applications where baseplates are not practical, machined soleplates, suitably fixed and grouted to the concrete plinths, shall be provided.</p> <p>No machine may be mounted directly onto a concrete base without the use of either a baseplate or soleplate.</p>
<p>PE5</p>	<p>Welding</p>
<p>PE5.1</p>	<p>General</p> <p>This specification covers the gas and arc welding of butt and fillet and socket welds in piping. The welding may be done by shielded metal-arc welding, gas tungsten-arc welding, gas metal-arc welding or oxy acetylene welding process, using a manual semi-automatic or automatic welding technique or combination of these techniques.</p> <p>No position welding will be allowed without written approval by the Engineer.</p> <p>Metal arc welding shall be in accordance with BS 1856 or BS 2633 as applicable.</p> <p>All oxy-acetylene welding and testing shall be in accordance with BS 1821 or BS2640 as applicable.</p> <p>The Engineer shall have the right to test any welds in the installation during the installation period or before final acceptance.</p>

	<p>The Contractor shall at his expense cut out the required welds for testing and also re-weld the piping where such test pieces have been removed.</p> <p>Welding Electrodes: Welding electrodes shall be in accordance with SABS 455. Electrodes shall be stored and handled in accordance with the recommendations of the supplier and electrodes which are older than six months, shall not be used.</p>
PE7	Inspection And Testing
PE7.1	General
PE7.1.1	The equipment supplied under this Contract shall be subject to inspection by the Engineer or his Nominated Agent at all stages of manufacture.
PE7.1.2	<p>The tests and commissioning procedure laid out below and such additional tests as the Engineer may reasonably require proving compliance with the specification shall be carried out at the Contractor’s Works and at site.</p> <p>The Contractor shall give reasonable notice of time and place in writing to enable the Engineer to inspect and witness tests of materials and equipment. He shall provide the Engineer with facilities for witnessing these tests and for any additional tests or inspection of any portion of the Works as required by the Engineer.</p> <p>The Contractor shall at his own cost render all assistance and supply all labour appliances and any other materials the Engineer may require to check the setting out, measure up and inspect any portions of the Works at any stage during fabrication, construction, erection or painting. During such operations the Contractor shall, if required, suspend any or all of the Works without having claim for loss or damage as a result thereof.</p>
PE7.1.3	<p>The testing of the plant (or a part thereof) supplied under this Contract shall be carried out through its full operating range (or part thereof) as required by the Engineer.</p> <p>All such tests and inspections and the necessary inspection facilities shall be provided at the Contractor’s expense.</p>
PE7.1.4	At the commencement of, and during the whole of Commissioning and Testing periods, the Contractor shall have available on site all essential spares and tools considered necessary to enable repair of defective parts to be carried out immediately, in the event of a breakdown.
PE7.1.5	The Contractor shall be responsible for the proper operation and maintenance of

	the plant throughout the period of the tests and until the operator training period is complete.
PE7.1.6	Acceptance by the Engineer of any plant item, following such inspection or tests, shall not relieve the contractor of any obligations under this Contract.
PE7.2	Testing Before Delivery
PE7.2.1	All items of plant will be subject to inspection at the manufacturer's works before despatch.
PE7.2.2	Materials, components and electric motors shall be tested for compliance with relevant British or South African standards and certificates submitted in triplicate.
PE7.2.3	Pressure vessels shall be tested in accordance with an acceptable Code of Practice and to the requirements of any statutory body having jurisdiction over the Works.
PE7.2.4	Electrical equipment shall be subjected to appropriate insulation resistance tests, function tests and general inspection.
PE7.3	Testing At Site
PE7.3.1	Welds Welds shall be tested as required by the relevant Code of Practice.
PE7.3.2	Pressure tests shall be applied to each pipework system by filling it with water and applying a pressure of 1.5 times the operating pressure. Systems shall be tested in sections to suit the overall contract programme and all pipework, which is to be concealed, shall be tested before it is concealed. Care shall be taken that no equipment items are over-stressed during pressure testing and components not suitable for the test pressure shall be by-passed or replaced with make-up pipe sections. The Contractor shall provide and fit all necessary temporary connections, blanks, make-up pieces and drains required for the tests and make good on completion of the tests. The section of pipework to be tested shall be fully vented and primed and the pressure applied for 24 hours. At the end of this period the Employer will inspect the pipework and witness that no pressure loss occurs over a period of one hour. Welded joints shall be lightly hammered during testing. On completion of the sites, water shall be drained rapidly out of the system to

	<p>provide a flushing action. Any faults found during the test shall be rectified in an approved manner and the system shall be retested until no faults are found. When the Employer is satisfied with test results, an approval certificate will be issued.</p>						
PE7.3.3	<p>Schedule of Test Pressure (<i>Example</i>)</p> <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>Service</th> <th>Normal Operating Pressures</th> <th>Test Pressure</th> </tr> </thead> <tbody> <tr> <td>Mainlines</td> <td>600 kPa</td> <td>900 kPa</td> </tr> </tbody> </table> <p>Where the test pressure specified for individual items of equipment is less than the test pressure specified for the connecting pipe line the equipment shall be disconnected for the test and suitable makeup lengths of pipework or plugged connections shall be installed to enable the pipe line tests to be carried out.</p>	Service	Normal Operating Pressures	Test Pressure	Mainlines	600 kPa	900 kPa
Service	Normal Operating Pressures	Test Pressure					
Mainlines	600 kPa	900 kPa					
PE7.3.4	<p>Draining and Cleaning</p> <p>On completion of the pressure test on a section of pipework, the water used for testing shall be drained away as quickly as possible to remove as much dirt and dross as possible. After completion of a pipework circuit, the circuit shall be flushed through to remove all pipe scale, dross and similar material.</p> <p>The contractor shall provide all necessary connections, by-pass pipes, temporary strainers, and temporary make-up pieces, to enable the systems to be drained and cleaned.</p>						
PE7.3.5	<p>Alignment</p> <p>Alignment checks of all driven machinery may be required and shall be witnessed by the Employer and the results recorded.</p>						
PE7.3.6	<p>Controls</p> <p>All automatic control functions, alarm and safety cut-out devices shall be tested by operational or simulated tests and set-points and calibrations set and their settings recorded, all in the presence of the Engineer.</p>						
PE7.3.7	<p>Electrical Equipment</p> <p>All electrical equipment installed under this Contract shall be tested in accordance with the requirements of the Local Authority and certificates of acceptance by the Authority obtained by the Contractor prior to electrical power being applied.</p>						
PE7.3.8	<p>Performance Tests</p> <p>Tests shall be carried out on all plant items to check that they are capable of their related performance.</p>						

	<p>The Engineer, or his nominated agent, shall witness each test and a signed certificate of approval shall be obtained from the Engineer upon completion of the tests to his satisfaction.</p>
PE7.3.9	<p>Tests on Completion</p> <p>During completion of the balancing and commissioning of equipment the plant shall be brought into normal operation and the final adjustments of the equipment shall be made.</p> <p>Thereafter the Tests on Completion in terms of the Conditions of Contract shall be carried out to ensure that the plant will fulfil the functions for which it has been designed.</p> <p>Such tests shall include the following:</p> <p style="padding-left: 40px;">Simulated tests for all alarm and safety cut out equipment to prove the operation of the equipment.</p> <p style="padding-left: 40px;">Simulation tests on automatic controls to prove the ability of the controls to correct the conditions outside the required design parameters needs to be done by the Contractor. The tests shall be carried out by manually changing the desired values to produce an incorrect condition and then re-setting the controls to the design conditions and checking the operation of valves, etc, to restore the design conditions.</p> <p>The Contractor shall provide all necessary temporary measuring and recording equipment. The equipment shall be of a type generally used for this type of testing and shall be to the approval of the Engineer. All instruments shall be accurately calibrated before the tests begin.</p> <p>On completion of the whole of the tests and when the Contractor is satisfied that the entire plant is operating satisfactorily and will fulfil the function for which it has been supplied, he shall submit to the Engineer triplicate copies of all test records and charts together with reports on all the tests called for in this Specification.</p> <p>The Engineer shall reserve the right to ask for any reasonable additional tests or for the repetition of previous tests in order to prove that the operation of the plant is satisfactory and in accordance with the Specification and Drawings.</p>
PE7.3.10	<p>Test Certificates</p> <p>The Contractor shall provide three copies of test certificates for the installed pumps and materials and equipment specified for testing. Further copies are to be bound into the manuals to be supplied.</p>
PE8	Operation And Maintenance Manuals
PE8.1	The contractor prior to commissioning shall provide three copies of the Operation

	<p>and Maintenance Manual. These manuals shall be of a standard acceptable to the Engineer and shall be subject to his approval. At least one set of manuals shall contain original copies.</p> <p>Manuals shall be in English, shall be easy to use, practically and neatly presented, bound between plastic protected covers, clearly titled, well indexed and sectionalised and specifically applicable to the equipment supplied. Where standard manuals are used these shall be marked up to be unambiguously applicable to the equipment supplied. Drawings shall be held in plastic envelopes in the manual.</p> <p>The manuals must contain the following:</p> <ul style="list-style-type: none"> A description of the equipment supplied giving full details of name, manufacturer, model number, size design duty and design and performance data. This shall, inter alia, include the information called for in the Pump and Motor Data Forms – part of the bill of quantities. Descriptive and technical literature including clear and comprehensive performance curves specifically applicable to the equipment supplied. (Re Pump curves and test certificates) Operating instructions supported by drawings, flow diagrams, explanatory sketches etc as may be necessary and including details of control and protection systems incorporated, and safety precautions which must be observed. Dimensional arrangement and layout drawings. A comprehensive lubricating schedule covering all equipment supplied with full details of recommended lubricants, initial fill lubricants used, capacities and lubrication periods. A comprehensive schedule of routine maintenance with timelines, for all equipment supplied. Assembly and disassembly instructions supported by clear assembly and/or exploded view drawings. A comprehensive spare list for the equipment, complete referenced cross-sectional drawings and indicating recommended spares. All information required for the ordering of spares to be given including manufacturer’s part numbers, supplier’s name and all identification information. Electrical circuit drawings. Copies of all Test Certificates. Documents, information and charts providing a full record of the results of the Tests on Completion.
PE9	Control Philosophy For Pump Station
	The preferred method of Pumping control is through the use of timers and VSDs.

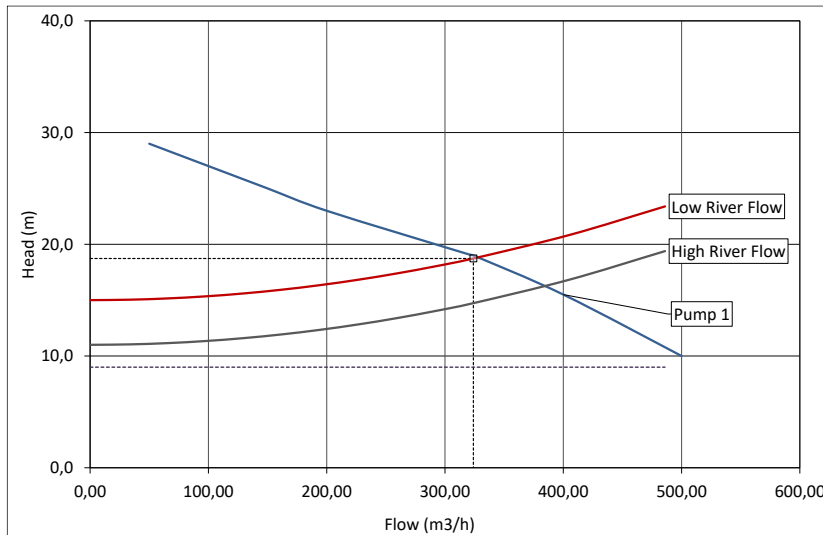
PE9.1

Pump Station

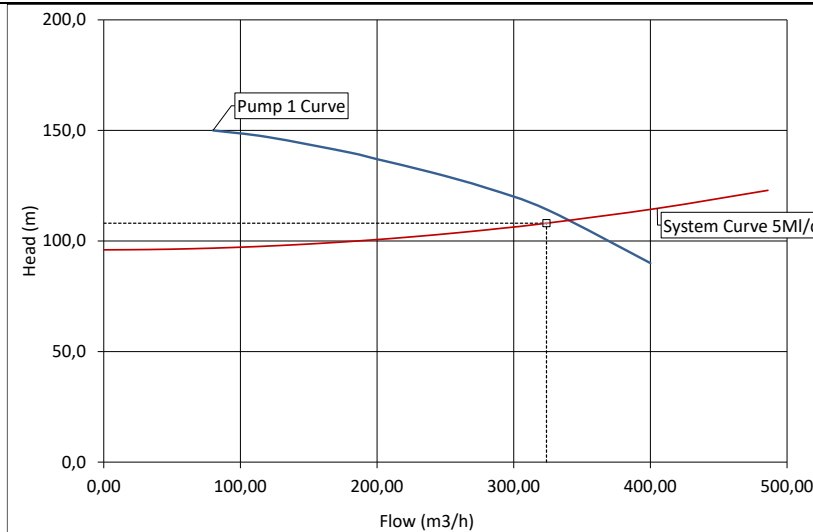
General

The Pump Station will be required to provide raw water to 5MI/d Centocow WTW from Umzimkhulu and clear water from the Centocow Water Treatment Works to a 3ML Creighton Town Reservoir. The Pump Station are sized as seen below:

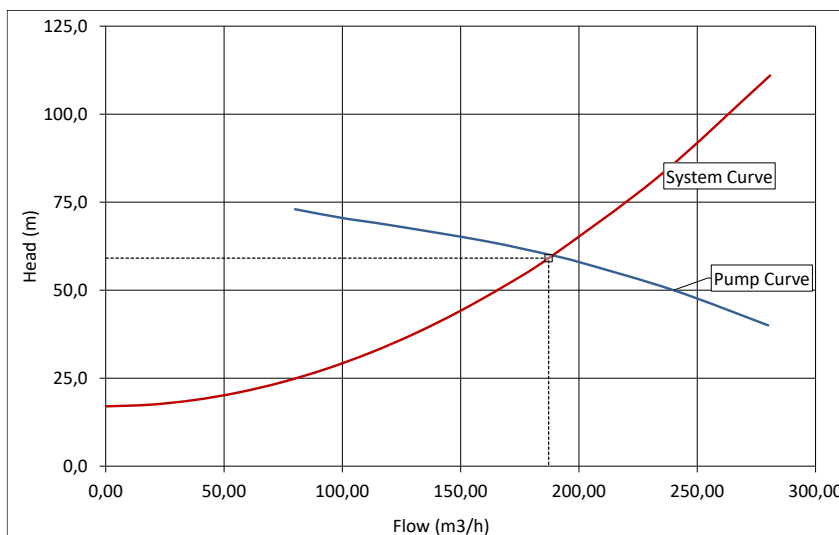
Low Lift Raw Water Submersible pumps to be located in the intake chamber have a Duty Point: 324.00 m³/h @ 19.00 m. The pumps efficiency is at 82.7% with power requirement of 20.3Kw. The pumps will be protected by sluice gates and fine screens. The pumps will be arranged in the 1-duty 1-standby. The required flow will be delivered within 16 hours/day.



High Lift Raw Water Pumps to WTW to be located in the abstraction works pump house have a Duty Point: 324.00 m³/h @ 113 m. The pumps efficiency is at 79.4 % with power requirement of 127 kW. The pumps will be arranged in the 2-duty 1-standby, whilst each pump will be capable of supplying the required daily flow. The required flow will be delivered within 16 hours/day.



High Lift Clear Water Pumps to Creighton Town 3ML Reservoir to be located in the abstraction works pump house have a Duty Point: 188.00 m³/h @ 60 m. The pumps efficiency is at 76.1 % with power requirement of 40 kW. The pumps will be arranged in the 2-duty 1-standby, whilst each pump will be capable of supplying the required daily flow. The required flow will be delivered within 16 hours/day.



Power supply to the pump station will be via a transformer that will be installed under this contract.

The pumps will be controlled via Pump Control Timers. Any surges in the pipeline will be mitigated through a DN350 and DN300 Non-Return Valves located on the valve chamber just outside the pumpstation and Surge Anticipating Control Valve

	<p>with Solenoid Control (Bermad Model 735-55-M or similar approved) that will be located inside the Pump Station.</p> <p>A “No Flow” switch must be installed on the suction line before the Pumps.</p> <p>Pump Operation / Control Philosophy</p> <p>The 16 hour timer will signal the Pump to start after manual startup. This time period is adequate to supply the peak daily water demand of 3-5 Mℓ/day. The pumps are sized for ultimate future supply of 5Mℓ/day (Maximum Pumps Capacity and Pipelines higher for future purposes). Flow pumping optimisation will be done through decreasing pumping period and flow since pumps are sized to each deliver required flows, which is the ultimate future demand. Current demand will be limited to guidance from Area Manager on water requirements for Creighton, Centocow and Khukhulela once system and WTW is fully upgraded.</p> <p>At Pump start, the pumps will start over a period of 30 seconds through using the soft start in the control room. The duty and standby pumps should be alternated regularly at least weekly.</p> <p>If the “no flow sensor” senses no flow in the suction pipe, then the pump is to stop via the STANDARD SHUT DOWN PROCEDURE.</p> <p>Surge Anticipating Bermad to be set to open at pressures less than 10bar, greater than 25bar or on POWER FAILURE. To avoid this valve opening during pump startup, it must be set with a timeout for say 120 seconds. In the event that any fault occurs, then the pump is to stop via the STANDARD SHUT DOWN PROCEDURE.</p> <p>Emergency Stops located on pedestals beside the motor are to stop the pumps immediately, bypassing the STANDARD SHUT DOWN PROCEDURE – this will start the EMERGENCY SHUT DOWN PROCEDURE. Indication lamps are to identify whether it is a suction fault (low Reservoir / no flow), delivery faults (over pressure, low pressure or no flow), Standard Shut Down Procedure (pressure off / manual off), or emergency stop.</p> <p>If the “no flow sensor” senses no flow at any stage, then the EMERGENCY SHUT DOWN PROCEDURE must commence immediately.</p>
PE10	<p>Soft Starter and Timer</p> <p>The Control Unit should have a pump control option. The soft start shall start the</p>

	<p>electric motor by setting an adjustable initial torque setting which is user-adjustable from 0% to 90% of locked rotor torque. From the initial torque level, the output voltage to the motor is incrementally increase during an acceleration ramp time of 30 seconds. After the controller sense that the motor has reached the desired rotational speed after the voltage ramp operation, the internal bypass contactor will be pulled in.</p> <p>The control unit should also include a 30hr timer to set and adjust the pump runtime between soft-start and soft-stop in hourly increments ranging from 1-24 hours.</p> <p>The controller should also employ a soft stop after the pre-set run-time have been completed.</p> <p>Protection: The unit should provide the following protective and diagnostic features:</p> <ul style="list-style-type: none">Overload protectionUnderload protectionUnder-voltage protectionOvervoltage protectionUnbalance in line voltage protectionStall protection and Jam detectionGround fault sensor, trip and alarmThermistor/PTC ProtectionExcessive starts per hour, over temperature, open gate indicator and line faults detector.
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PE LABOUR INTENSIVE CONSTRUCTION

PE 1 CONSTRUCTION ACTIVITIES

PE 1.1 Excavation

Material, including topsoil may be excavated by hand only if practicable. Harder material may be loosened by mechanical means prior to excavation by hand, where practicable. The excavation of any material which could represent danger or injury to workers shall not be excavated by hand.

PE 1.1.1 Trench Excavation

Materials classified as suitable for hand excavation may be excavated by hand in trenches having a depth of less than 1.5 metres.

Typical task rates for labour intensive constructive methods (for tendering purposes) are provided below.

Activity	Production Rate / Person / Day
1. Trench Excavation 0 to 1m deep	
(i) In Very Loose/Very Soft material	3.5m ³
(ii) In Loose/Soft material	2.8m ³
(iii) In Medium Dense/Firm material	1.7m ³
2. Trench Excavation 1 to 1.5 m deep	
(i) In Very Loose/Very Soft material	3.0m ³
(ii) In Loose/Soft material	2.4m ³
(iii) In Medium Dense/Firm material	1.5m ³
3. Grubbing 1 metre wide strip	10.0m
4. Earthworks (incl. load up to 1m lifting)	
(i) In Very Loose/Very Soft material	4.5m ³
(ii) In Loose/Soft material	4.0m ³
(iii) In Medium Dense/Firm material	3.5m ³
(iv) In Dense/Stiff material	3.0m ³
5. Wheel barrow haul	
(i) 0 - 20 m	11,5m ³
(ii) 20 - 40 m	8,5m ³
(iii) 40 - 60 m	6,5m ³
(iv) 60 - 80 m	5m ³
(v) 80 - 100 m	4,5m ³
6. Backfilling using sand 0 - 1,5 m deep	3,5m ³
7. Placing pipe bedding	2.5m ³
8. Concrete	
(i) Mixing	1,5m ³
(ii) Placing	1m ³
9. Laying blockwork/brickwork	
(i) Per packer	50m ²

(ii)	Per team member	3,5m ²
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PE 1.1.2 *Backfilling to trenches in non-trafficable areas*

Backfilling to trenches shall be placed in layers of thickness not exceeding 100 mm. Each layer may be compacted by hand stampers where practicable:

- a) To 90% Proctor density;
- b) Such that more than 5 blows of a Dynamic Cone Penetrometer (DCP) is required to penetrate 100 mm of the backfill, provided that the backfill does not comprise more than 10 percent gravel of size less than 10 mm and contains no isolated boulders, or
- c) Such that the density of the compacted trench backfill is not less than that of the surrounding undisturbed soil when tested comparatively with a DCP.

PE 1.1.3 *Other Excavation*

In all other excavations up to a depth of 1.5 meters, materials suitable for excavation by hand, including topsoil so classified, may be excavated by hand where practicable. Harder material may be loosened by mechanical means for removal by hand.

PE 1.2 *Clearing and Grubbing*

Grass, shrubs and small bushes may be cleared by hand where practicable.

PE 1.3 *Shaping*

All shaping may be done by hand where practicable.

PE 1.4 *Loading*

All loading of material excavated by hand, regardless of the method of haulage, may be undertaken by hand where practicable.

PE 1.5 *Haulage*

Material excavated by hand may be hauled to its point of placement by means of wheelbarrows where practicable, where the haulage distance is not greater than 100 metres and the slope against which the haulage is done is less than 20 percent.

PE 1.6 *Offloading*

Material not hauled by tipper trucks, dumpers or wheelbarrow, may be off-loaded by hand where practicable.

PE 1.7 *Spreading*

Materials, except rock fill, may be spread by hand where practicable.

PE 1.8 *Grassing*

Grassing may be undertaken by hand where practicable.

PE 1.9 Stone pitching and rubble concrete masonry

Stone required for stone pitching and rubble concrete masonry, whether grouted or dry, may be collected, loaded and offloaded by hand where practicable, unless acquired from a commercial source. Stone placing may be by hand. Grout for stone pitching may be mixed by hand where practicable.

PE 1.10 Manufactured Elements

Individual elements designed and manufactured by the contractor, such as manhole rings, cover slabs, concrete planks and pipes, edge beams and the like, may not have a mass of more than 320kg. The elements should also be large enough so that four workers can comfortably and simultaneously acquire a proper handhold on them.

PE 2 EMPLOYMENT OF LOCAL LABOUR

PE 2.1 Labour Resourcing

Unskilled and semi-skilled labour shall be resourced through the project's labour desk.

PE 2.2 Contract of Employment

A pro-forma Contract of Employment must be completed for each member of the labour force engaged. A copy of the Contract of Employment completed for each and every member of the labour force engaged shall be given to the Engineer prior to their commencing work on this Contract.

PE 2.3 Construction Activity Tasks

PE 2.3.1 *Production Rates for Tender Purposes*

It will be assumed that the tendered rates, where applicable, have been based on the typical production rates given in the table under clause PF 1.1.1.

Notwithstanding the production rates shown in the table, tasks established by the Contractor shall be such that:

- i. the average worker completes 5 tasks per week in 40 hours or less and,
- ii. the weakest worker completes 5 tasks per week in not more than 55 hours.

When it is established that the production rates set by the Contractor do not comply with (i) and (ii) above, the Contractor shall, on instruction from the Engineer, revise the production rates to comply with the requirements of (i) and (ii).

PF ELECTRICAL SPECIFICATION: SMALL POWER & LIGHTING

PF 1 DEFINITIONS / ABBREVIATIONS

A	Ampere(s)
AC	Alternating Current
al	Aluminium
CT	Current Transformer
cu	Copper
DB	Distribution Board
ECC	Earth Continuity Conductor
HV	High Voltage (> 36 000 V)
kV	kilo Volt (voltage)
kVA	kilo Volt-Ampere (unit of apparent power)
kVAr	Kilo Vars (unit of reactive power)
kW	kilo Watt (unit of real power)
kWh	kilo Watt Hours (unit of energy consumption)
LED	Light Emitting Diode
LM	Lumens
LV	Low Voltage (< 1000 V)
m	Metre (unit of length)
MCB	Miniature Circuit Breaker
MCC	Motor Control Centre
MCCB	Moulded Case Circuit Breaker
MV	Medium Voltage (1000 – 36 000 V)
OHS&E	Occupational Health, Safety & Environment
PEC	Photo Electric Cell
PVC	Polyvinyl Chloride
SWA	Steel Wired Armored
TBD	To be Determined
TBP	To be Provided
V	Volt(s)
W	Watt

PF 2 SCOPE OF WORKS

PF 2.1 INTRODUCTION

This section is to provide guidelines for the electrical design concepts that will be used in the design of the Electrical Installation for the pump station. The design shall provide the best options with respect to safety, cost and quality.

PF 3 GENERAL

PF 3.1 BRIEF SCOPE DESCRIPTION

The scope of works for the electrical installation is the design, manufacture, factory testing, supply, delivery, installation, site testing, commissioning and upholding during the defects liability period of the following equipment and materials:

- New Motor Control Centre (MCC),
- Building lighting,
- Lightning protection system for pump station building to be inspected and refurbished if necessary,
- Factory and Site acceptance testing of MCC,
- Testing and commissioning of complete installation,
- Issue a Certificate of Compliance, and
- Issue of Operating Manuals (3).
- PLC/SCADA
- CCTV Cameras System linked to off-site operator to monitor Umzimkhulu River Intake.

PF 3.2 OBJECTIVES AND DESIGN BASIS

The electrical equipment shall be designed, engineered and or selected to (in order of Priority):

- Provide a safe working environment for personnel and equipment,
- Integrate with the existing installations,
- Provide a reliable electrical installation based on sound engineering utilising as far as practicable, concepts which have been tested and proven,
- Technological advance where appropriate on current installations, and
- Minimize the environmental impact.

PF 4 DOCUMENTATION

Drawings are to be produced on the latest available version of AutoCAD.

Electrical Drawing symbols and standards shall be to IEC60617 or NRS 002, as amended.

All drawings listed shall be taken to be "as built" status on completion of the project.

PF 5 APPLICABLE STANDARDS, REGULATIONS AND CODES OF PRACTICE

The following SANS and IEC specifications will be used for this project:

- SANS 10142-1 Wiring of premises, Part 1
- IEC 61439-1 General rules
- IEC 61439-2 Power switchgear and control assemblies
- IEC 61439-3 Distribution boards
- IEC 61439-4 Particular requirements for assemblies for construction sites
- IEC 61439-5 Assemblies for power distribution in public networks
- IEC 61439-6 Busbar trunking systems

PF 6 AREA CLASSIFICATION – SANS 10108

The plant contains no hazardous materials and therefore no study will be done for this project.

PF 7 DESIGN CONSIDERATIONS

PF 7.1 ELECTRICAL SUPPLY

An electrical supply from the Electrical Supply Authority will be co-ordinated with supply to the Water Treatment Works.

PF 7.2 MAINTAINABILITY

Wherever possible all equipment shall be selected such that:

- It is standardized
- It is proven technology
- It shall be purchased from approved suppliers
- It is maintainable without the need for special tools and equipment.
- It has remote supplier support

PF 7.3 EQUIPMENT REDUNDANCY

No redundancy will be provided on the LV system.

PF 7.4 EQUIPMENT NUMBERING SYSTEM

The equipment will be numbered based on the Plant Numbering Standard. If a numbering system is not available, the Contractor will submit a numbering system for approval.

PF 7.5 VOLT DROPS

The following volt drops shall be applied.

Steady State Volt Drop to be based on the following:

- Volt drop from MCC to motor terminals under normal running conditions will be 3%.
- Volt drop during motor starting will be less than 15%.

PF 8 ELECTRICAL PHILOSOPHIES

PF 8.1 LOAD ESTIMATION

The Total Designed Operating load estimate shall be the vector sum of the following loads:

- All normally operating motors per MCC – excluding all loads designated standby.
- All normally operating non-rotating loads - Excluding loads designated standby.
- All provision for known future loads.
- Mechanical equipment/power users list.
- Lighting and small power.
- All emergency power requirements.

The sum totals of the above shall be vectorially added to arrive at the final design load per distribution board and or MCC. Each Distribution board or MCC shall on the Overall SLD detail both the Total Connected Load as well as the total designed operating load.

The load schedule shall be periodically updated as the engineering progresses and issued to all concerned.

PF 8.2 CONSTRUCTION POWER

Construction power will be available from the existing electrical infrastructure.

PF 9 EARTHING AND LIGHTNING PROTECTION

PF 9.1 GENERAL

All earthing designs to comply with SANS Code of Practice: 10313. Soil resistivity will be ascertained by means of an earthing survey. The design of the earthing and lightning protection system will be determined from the results of this survey. The new earthing system will be bonded to the existing earthing system. The lightning protection system will be connected to the earthing system.

Earthing connections shall be made on clean metal surfaces free of paint, primers or any insulating material, using materials designed for the purpose.

Earthing connections shall be made using thermo-weld moulded type connections such as "Cadweld", or equivalent, covered with a coat of zinc rich paint or by compression connectors made with proper compression tools and dies. Enough slack shall be provided to ensure no mechanical constraint.

PF 9.2 EARTHING REQUIREMENTS FALL INTO THE FOLLOWING CATEGORIES

- Electrical systems and structures - Electrical system and equipment, structures and other non-electrical metal work. A dedicated earthing system shall be provided for this requirement.
- Contractor shall design and install buried earthing system to provide maximum earthing grid resistance.

PF 9.3 LIGHTNING PROTECTION

Lightning protection shall be carried out in accordance with the requirements of SANS 10313:2005.

The lightning protection system shall be connected to the main earthing system to form a common system. The lightning protection design will be conducted by an appointed lightning protection specialist.

PF 10 ELECTRICAL EQUIPMENT SELECTION & SYSTEM DESIGN

PF 10.1 MOTOR CONTROL CENTRE (MCC)

The Motor Control Centre (MCC) will conform to the following minimum requirements:

- The MCC will be fixed pattern type, with front/back access and bottom entry
- The MCC colour will be B26 electric orange, epoxy powder coated.
- Enclosures shall be the general-purpose type for indoor/outdoor use, with individual starter cubicles per drive/feeder application as per the following drawings:
- Main MCC
- Motor starters shall utilise motor starting MCCBs - Type 2 co-ordinated using published charts for heavy duty starting and rated for the designed maximum fault level.
- Interface shall be hardwired, via potential free contacts.
- The control voltage will be taken directly from one phase and neutral off the 400V main busbars. Fuse protection will be used to limit the fault rating.
- Each cubicle shall be provided with a door interlocked and pad-lockable handle for safe isolation.
- Indicating lamps shall be LED cluster type.
- Each motor starter and feeder will be provided with 1 ammeter with associated CT's as required.
- Incomers will be provided with Voltmeters, and Instantaneous ammeters.
- All control wiring shall be single core, PVC insulated, multi-stranded wire with a minimum voltage rating of 660 V and minimum 1,5 mm² cross-section. Solid core wire shall not be used.
- Each starter shall be equipped with at least the following:
 - One triple pole MCB serving as main isolator and circuit breaker, interlocked with the cubicle door. Unit shall be suitable for padlocking in the 'off' position.
 - Variable Speed Drives.
 - One single pole control circuit breaker.
 - Interlocking control relays.
 - All necessary wiring, interconnections, terminal blocks, cable glands, labels, etc.
- Protection and warning instrumentation for reverse power and low voltage shall be incorporated in MCC.

PF 11 INSPECTION, TESTING AND COMMISSIONING

The equipment shall be checked and tested to mechanical completion as per the individual vendor completion check sheets (Approval required from Project Engineer). Prior to commencing tests on equipment and electrical systems a test program shall be submitted.

A competent person to execute, supervise and control all testing and checking activities. This person shall liaise closely with the Project Engineer in order that testing activities may be conducted and sequenced in a manner best suited to the commissioning programme.

Defects revealed during testing and checking shall be made good by the Contractor.

Before any equipment is to be energised, continuity and insulation tests are to be performed and protection settings verified. These results are to be submitted to the Project Engineer for approval.

PF 12 FIRE EXTINGUISHERS, FIRST AID KITS, DANGER SIGNS AND NOTICES

All danger signs and safety notices shall be in two of the official languages, operating notices, signs and labels that are not safety related need only be in English. Signs / notices with approved symbols may be used in the place of text signs.

Fire extinguishers shall be provided alongside the entrance.

First aid kits shall be provided at the entrance/exit of the pump room at a position to be agreed with the Engineer. The kit will be in a metal first aid box, at an appropriately demarcated and sign posted first aid station, on a wall mounted shelf or other approved mounting.

"Burn shield" Dressings" shall be provided in each kit as follows:

- 4 off 100 x 100 mm,
- 2 off 200 x 200 mm.

PF 13 CERTIFICATE OF COMPLIANCE

On completion of an installation a Certificate of Compliance will be issued for the electrical installation as required by SANS 10142.

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PZ EMPLOYER'S ENVIRONMENTAL MANAGEMENT SPECIFICATION FOR
ENVIRONMENTAL MANAGEMENT OF CONSTRUCTION PROJECTS

PZ1 INTRODUCTION

PZ1.1SCOPE

This specification is additional to the South African Bureau of Standards Standardised Specification for Civil Engineering Contracts and must be read in conjunction with the said specification.

This specification covers the principles, responsibilities and requirements generally applicable to implement effective environmental management during the execution of any construction contract. The aim of this specification is to ensure that construction activities are conducted in an environmentally and socially responsible manner.

PZ1.2 INTERPRETATIONS

This specification contains clauses that are generally applicable to the implementation of effective environmental management on construction contracts. Interpretations of, and variations to, this specification are set out in the project specification.

PZ1.2.1 Supporting specifications:

Reference is made to the SABS 1200 standards which are to be read in conjunction with this specification. All aspects of these SABS requirements which are relevant to environmental management during construction contracts will apply.

PZ1.2.2 Principles

- The following principles should be considered at all times during construction phase activities:
- The Environment is considered to be composed of both biophysical and social components.
- Construction is a disruptive activity and all due consideration must be given to the environment, particularly the social environment, during the execution of a project to minimise the impact on affected parties.
- Minimisation of areas disturbed by construction activities will minimise many of the construction related environmental impacts of the project and reduce rehabilitation requirements and costs.
- As minimum requirements, all relevant standards relating to international, national, provincial and local legislation, as applicable, shall be adhered to. This includes requirements relating to waste emissions (e.g. hazardous, airborne, liquid and solid), waste disposal practices, noise regulations, road traffic ordinance etc.
- All effort should be made to minimise, reclaim or recycle 'waste' material.

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PZ1.3 DEFINITIONS

For the purpose of this specification, the definitions given in SABS 1200 shall apply.

Additional definitions which shall apply to this specification are as follows:

Environmental Control Officer: Either an Employer's staff member or an Environmental Consultant assigned to the project on a part or full-time basis. The Environmental Control Officer will be part of the Project staff and will advise the Engineer on all environmental matters relating to the works, in terms of this specification and the project specification, if applicable.

Environmental Officer: Either an Employer's employee (e.g. Quality Assurance Inspector) or Consultant designated to monitor the implementation and compliance with the environmental specifications and environmental management plan on a daily basis.

Cleared surface: "surface vegetation" as referred to in SABS 1200 C 2.3 will be deemed to be any woody or herbaceous vegetation but exclude grasses, sedges, rushes and reeds. Clearing and grubbing shall for the purpose of this specification mean the removal of all woody and herbaceous vegetation including stumps, but excluding grass and groundcover vegetation.

Engineer: Is to read Engineer or Supervisor (in the case of the NEC contract), whichever is applicable to the Contract.

Interested and Affected Parties (IAP): All persons who may be affected by the project either directly or indirectly, or who have an interest or stake in the area to be affected by the project. IAPs include landowners, tribal or local authorities, public interest groups etc.

Liquid Waste Stream: Any reagent solutions, fuels, oils, greases, contaminated run-off, sewerage and wash water, etc.

Open Trench: Open trench will, for the purpose of this specification, be deemed to include: clearing and grubbing; stripping of topsoil; trenching; placing of bedding; pipe-laying; placing of selected fill; backfilling to ground level; removing excess material; construction of cross berms to channel water (if required); and replacement of topsoil to final finished level (refer to Figure 1: Appendix A).

Progressive Reinstatement: Reinstatement of disturbed areas to topsoil profile on an ongoing basis, immediately after selected construction activities (e.g. backfilling of a trench) are completed. This allows for passive rehabilitation (i.e. natural recolonisation by vegetation) to commence. See also 'Open Trench' and 'Rehabilitation'.

Project Manager: The person responsible for co-ordinating and integrating activities across multiple, functional lines.

Rehabilitation: Rehabilitation is defined as the return of a disturbed area to a state which approximates the state (where possible) which it was before disruption. Rehabilitation for the purposes of this specification is aimed at post-reinstatement revegetation of a disturbed area and the assurance of a stable land surface. Revegetation should aim to accelerate the natural succession processes so that the plant community develops in the desired way, i.e. promote rapid vegetation establishment.

Riparian vegetation: Vegetation occurring on the banks of a river or stream (i.e. vegetation fringing a water body). In this specification, riparian vegetation in terms of removal, storage and replacement (see PZ3 17.1 and PZ3 17.2), is only applied to sedge, grass, groundcover, reed, bulrush, or herbaceous component of riparian vegetation and excludes the woody component.

Sedges: Grass-like plants growing in wetland/ marshy areas or adjacent to water.

Subsoil: Subsoil is the soil horizons between the topsoil horizon and the underlying parent rock. Subsoil often has more clay-like material than the topsoil. Subsoil is of less value to plants, in terms of nutrient (food) and oxygen supply, than topsoil. When subsoil is exposed it tends to erode fairly easily.

Timeous: At least 5 working days prior to an activity.

Topsoil: This is defined as the A horizon of the soil profile. Topsoil is the upper layer of soil from which plants obtain their nutrients for growth. It is often darker in colour, due to the organic (humic) fraction. Topsoil is deemed for the purposes of this specification as the layer of soil from the surface to the specified depth required for excavation (see PZ3 5.3, relevant SABS 1200 clause and project specification). Where topsoil is referred to, it is deemed to be both the soil and grass / ground cover fraction. (see 'Cleared Surface')

Veld: This is defined for the purpose of this specification as unimproved natural vegetation areas (e.g. grasslands).

Water body: Any open body of water including streams, dams, rivers, lakes, and the sea.

Wetland: A seasonally, temporally, or permanently wet area which also may exhibit a specific vegetation community. It is often marshy in character.

Wetland Vegetation: Vegetation which is indicative of a wetland environment - for example, sedges, rushes, reeds, hydrophilic grasses and groundcovers, but for the purposes of this specification excludes woody species.

Xeriscaping: Landscaping with vegetation which has a low water usage. The objective is to conserve as much water as possible, whilst still beautifying an area (i.e. conservation and aesthetics). Concept embraces utilising indigenous as opposed to exotic plants.

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PZ1.4 ABBREVIATIONS

DWAF : Department of Water Affairs and Forestry
ECO : Environmental Control Officer
EMP : Environmental Management Plan
EMPR : Environmental Management Programme Report
EO : Environmental Officer
IAPs : Interested and Affected Parties
IEM : Integrated Environmental Management
MSDS : Material Safety Data Sheet
NEC : New Engineer Contract or The Engineering and Construction Contract

PZ1.5DRAWINGS

Drawings referred to in this specification are included in C4.4 Drawings of Section C4 Site Information.

PZ1.6FORMS

Forms referred to in this specification are included in Part T2 or attached to this environmental specification.

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PZ1.7 CONDITIONS OF CONTRACT

PZ1.7.1 DUTIES AND POWERS OF THE PROJECT MANAGER

The Project Manager is ultimately responsible for ensuring compliance with the environmental specification and upholding the Employer's Environmental Policy on a project.

The Project Manager:

- Arranges information meetings for or consults with IAPs about the impending construction activities;
- May on the recommendation of the Engineer and /or Environmental Officer order the Contractor to suspend any or all works on site if the Contractor or his Sub-Contractor/ supplier fails to comply with the said specifications;
- Maintains a register of complaints and queries by members of the public at the site office as per attached pro-forma. This register is forwarded to the Environmental Control Officer on a monthly basis.

PZ1.7.2 Duties and Powers of the Engineer / Supervisor (NEC)

The Engineer or Supervisor is responsible for:

- enforcing the environmental specification on site;
- monitoring compliance with the requirements of the specification;
- assessing the Contractor's environmental performance in consultation with the

Environmental Officer from which a brief monthly statement of environmental performance is drawn up for record purposes;

- documenting, in conjunction with the Contractor, the state of the site prior to construction activities commencing. This documentation will be in the form of photographs or video record.

PZ1.7.3 Duties and Powers of the Environmental Control Officer

The Environmental Control Officer:

- briefs the Contractor about the requirements of the Environmental Specification and/ or Environmental Management Plan, as applicable;
- advises the Project Manager and Engineer/ Supervisor about the interpretation, implementation and enforcement of the Environmental Specification and other related environmental matters;
- attends site meetings, as necessary;
- monitors the Constructor's compliance with this specification and the project environmental specification as applicable;
- undertakes periodic audits of the effectiveness of the environmental specifications on the site;
- communicates environmental policy issues to the Project Manager;
- provides technical advice relating to environmental issues to the Engineer/ Supervisor and Project Manager;
- reports on the performance of the project, in terms of environmental compliance.

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PZ1.7.4 DUTIES AND POWERS OF THE ENVIRONMENTAL OFFICER

The Environmental Officer:

- attends site meetings;
- monitors the site for compliance with the Environmental Specification and EMP;
- reports on the performance of the project in terms of environmental compliance to the ECO and Project Manager as per the pro-forma attached;
- liaises with the ECO on matters of policy and those requiring clarity and advice.

PZ1.7.5 EXTENT OF THE CONTRACTOR'S OBLIGATIONS

The Contractor is required to:

- provide information on previous environmental management experience and company environmental policy;
- supply method statements for all activities requiring special attention as specified and/or requested by the Project Manager, Environmental (Control) Officer and/or Engineer during the duration of the Contract;
- be conversant with the requirements of this environmental specification and the project specification as applicable;
- brief his staff about the requirements of the environmental specification; comply with requirements of the Environmental (Control) Officer in terms of this specification and the project specification, as applicable, within the time period specified;
- ensure any sub-Contractors/ suppliers who are utilised within the context of the contract comply with the environmental requirements of the Employer, in terms of the specifications. The Contractor will be held responsible for non-compliance on their behalf;
- bear the cost of any delays, with no extension of time granted, should he or his Sub-Contractors/ Suppliers contravene the said specifications such that the Engineer orders a suspension of work. The suspension will be enforced until such time as the offending party(ies), procedure, or equipment is corrected;
- bear the costs of any damages/ compensation resulting from non-adherence to the said specifications or written site instructions;
- comply with all applicable legislation in terms of 7.6 below;
- ensure that he informs the engineer timeously of any foreseeable activities which will require input from the Environmental (Control) Officer.

The Contractor will conduct all activities in a manner that minimises disturbance to directly affected residents and the public in general, and foreseeable impacts on the environment.

PZ1.7.6 COMPLIANCE WITH APPLICABLE LAWS

The supreme law of the land is “The Constitution of the Republic of South Africa”, which states:

“Every person shall have the right to an environment which is not detrimental to his or her health or well-being”

Laws applicable to protection of the environment in terms of Environmental Management (and relating to construction activities) include but are not restricted to:

Animals Protection Act, Act No 71 of 1962

Atmospheric Pollution Prevention Act, No 45 of 1965

Conservation of Agricultural Resources Act, No 43 of 1983

Environmental Conservation Act, No 73 of 1989

Environmental Planning Act, Act No 88 of 1967

Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, No 36 of 1947

Forest Act, No 122 of 1984

Forest and Veld Conservation Act, Act No 13 of 1941

Hazardous Substances Act, No 15 of 1973

Lake Areas Development Act No 34 of 1975

Land Survey Act, No 9 of 1921

Minerals Act, No 50 of 1991

Mountain Catchment Act, No 63 of 1970

National Monuments Act, No 28 of 1969

National Parks Act, No 57 of 1976

National Resources Development Act, Act no 51 of 1947

Occupational Health and Safety Act, No 85 of 1993

Provincial and Local Government Ordinances and Bylaws

Soil Conservation Act, Act No 76 of 1969

Water Act, No 54 of 1956

Water Services Act No 108 of 1997

and all regulations framed thereunder and amendments there to.

PZ1.7.7 COMPLIANCE WITH THE ENVIRONMENTAL SPECIFICATION

The Contractor is deemed not to have complied with the Environmental Specification if:

- within the boundaries of the site, site extensions and haul/ access roads there is evidence of contravention of clauses;
- if environmental damage ensues due to negligence;
- the Contractor fails to comply with corrective or other instructions issued by the Project Manager or Engineer within a specified time,
- the Contractor fails to respond adequately to complaints from the public.

Application of a penalty clause will apply for incidents of non-compliance. The penalty imposed will be per incident. Unless stated otherwise in the project specification, the penalties imposed per incident or violation will be:

Failure to demarcate working servitudes	R1000
Working outside of the demarcated servitude	R2000
Failure to strip topsoil with intact vegetation	R1000
Failure to stockpile topsoil correctly	R500
Failure to stockpile materials in designated areas	R500
Pollution of water bodies (including increased suspended solid loads)	R1000
Failure to control stormwater runoff	R1000
Failure to provide adequate sanitation	R500
Unauthorised removal of woody vegetation	R2000
Failure to erect temporary fences	R500
Failure to provide adequate waste disposal facilities and services	R500
Failure to reinstate disturbed areas within the specified timeframe	R3000
Failure to rehabilitate disturbed areas within the specified timeframe	R3000
Any other contravention of the project specific specification	R400
Any other contravention of the particular (general) environmental specification	R300

PZ2 SITE ESTABLISHMENT AND HOUSEKEEPING

PZ2.1 LAYOUT

The Contractor will take into account any of the limitations identified in the project specification with regard to establishment of site, in particular the location of access routes, and establishment layout.

Notwithstanding the provision of a project specification, the Contractor will provide the Project Manager and Environmental Control Officer with a layout design of the site indicating the position of all of the following, as applicable: offices, ablution facilities, storage areas, workshops, laboratories, batching plant, particulate matter stockpile area (i.e. soil/ granular chemicals/ cement fines etc), waste disposal facilities, hazardous substances storage area, access routes, etc. This layout plan is to be submitted prior to site establishment for acceptance. Any changes to this plan require review by the Project Manager in conjunction with the ECO.

The Contractor will take into account prevailing wind directions when designing the site layout to minimise impacts due to dust, unpleasant odours etc.

The Contractor will take into account the positions of residences when designing the site layout in order to minimise noise impacts on the residents.

Site security lighting is to be positioned such that the direct beam is focused away from residential properties and does not pose a nuisance or danger to road users.

No site establishment will be allowed within 100 m of a water body or drainage channel or on a flood plain unless approved by the Environmental (Control) Officer or specified in the project specification.

PZ2.2 SITE CLEARANCE

No trees or shrubs may be removed without the prior permission of the Environmental Officer, unless in keeping with the final site reinstatement and rehabilitation plan.

Topsoil is to be stripped from all areas where permanent or temporary structures and access roads are to be constructed. Topsoil conservation is to be in terms of clause PZ3 5.3 of this document.

PZ2.3 SERVICES

PZ2.3.1 Sanitation

Portable chemical toilets are to be utilised at site unless a connection to sewer is possible or a proper septic tank system is installed. In the case of the septic tank, the installation will require the relevant approvals from the local authority and will require removal upon completion of the contract, unless otherwise directed.

Sanitation facilities will be located within 100 m from any point of work, but not closer than 50 m to a water body.

PZ2.3.2 Solid Waste Facilities

Facilities for solid waste collection are to be provided. These are to be at least a 200 l drum and clearly identified as the point for waste disposal.

Waste is to be separated into paper, glass and metal with separate collection points for each. The Contractor will ensure that the appropriate recycling Contractors receive this waste.

The Contractor is to institute a daily litter collection programme. The collected waste is to be disposed of regularly and proportionately to its generation at a site designated for waste disposal.

No burning will be permitted on any site unless by approved incineration methods and in a low risk fire area. In the case of incineration, ash is to be co-disposed with spoil in a designated spoil dump.

No burying of waste will be allowed on any site.

PZ2.3.3 Cooking and Heating Facilities

No open fires will be allowed anywhere on site.

Contained fires (i.e. in a fire drum) will be allowed for heating and cooking only in designated areas, in other cases cooking is restricted to gas or electrical equipment.

PZ2.4 FUELS, HAZARDOUS SUBSTANCES AND OTHER LIQUID POLLUTANTS

PZ2.4.1 Storage and handling

All potentially hazardous raw and waste materials are to be handled by trained staff and stored on site in accordance with manufacturer's instructions and relevant legal requirements. The product MSDS is to be lodged with the Engineer.

Storage and handling areas for fuels, lubricants, chemicals and other hazardous substances are to be paved with concrete to prevent accidental contamination of the soil. Alternatively, an impermeable liner may be placed beneath above-ground storage tanks. The integrity of the liner is to remain intact for the duration of the contract, until removal.

Open storage vessels, for example shutter lubricant drums, are to be stored under cover to prevent 'splash' contamination.

All storage areas are to be bunded (with at least sandbags) and have a peripheral collection drain, with oil interceptors (if required).

The bunded area is to be sufficiently large to contain a spillage equivalent to the volume of one container of the substances stored.

All products to be dispensed from 200 litre drums will be done so with appropriate equipment, and not dispensed by tipping of the drum.

Daily checks are to be conducted on the dispensing mechanism of above-ground storage tanks to ensure the timeous identification of faults.

Collection containers (e.g. drip trays) are to be placed under all dispensing mechanisms of hydrocarbon or hazardous liquid substances to ensure contamination from leaks and dispensing is contained.

The dispensing mechanism of diesel and petrol storage tanks is to be stored in a container when not in use.

PZ2.4.2 Control of pollutants

A drainage diversion system is to be installed to divert runoff from areas of potential pollution, e.g. batching area, vehicle maintenance area, workshops, chemical and fuel stores, etc if applicable.

Contaminated runoff and wastewater is to be directed into a collection system (e.g. sump, attenuation dam, PVC porta-ponds etc.) for treatment or collection and disposal. The final collection point (e.g. sump) is to be PVC lined.

Collected contaminated runoff/ wastewater is to be pumped out of the final collection point and disposed of at an appropriate landfill site. Sump liners are to be treated in the same manner.

The treated wastewater, effluent and contaminated runoff may require analysis prior to discharge as detailed in the project specification or instructed by the Environmental Officer.

Details regarding proposed methods for treatment of pollutants are to be submitted to the Environmental (Control) Officer for acceptance upon award of the Contract.

Any spillages, irrespective of their size, are to be contained and cleaned up immediately. The Pollution Control section may provide technical assistance for clean-up, if required. No spills may be hosed down into a stormwater drain or sewer.

Use of specialised clean-up techniques and/ or products may be required depending on the spill. This will be instructed by the Environmental Control Officer. These will be to the Contractor's cost.

PZ2.5 GENERAL

Site staff are not permitted to use any open water body or other natural water source (e.g. springs) for purposes of bathing, or the washing of clothes, machinery or vehicles. Nor draw water from a spring without the permission of the community utilising that spring.

PZ2.6 MEASUREMENT AND PAYMENT

Measurement and payment for compliance with clauses PZ2.1 to 5 of the specification are deemed to be fully included in the Contractor's rates for fixed and time related Preliminary and General Items scheduled under SABS 1200 A or AA.

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PZ3 CONSTRUCTION

PZ3.1 CONSTRUCTION METHODS AND PROGRAMME

PZ3.1.1 Construction Method

The Contractor will provide method statements for construction activities (14 working days prior to the activity commencing) relating to the following environments and those listed in the project environmental specification, unless methods have been prescribed in this or the project environmental specification:

- rivers, streams, or any other open water body;
- wetlands;
- access roads (see PZ3.13 below);
- steep slopes (i.e. steeper than 1:4) or less if friable material is present;
- indigenous bush/ forest;
- close proximity (i.e. 50 m or less) to a residential dwelling;
- drilling and/or blasting of rock.

If a construction method employed by the Contractor is not environmentally acceptable to the Employer, the Contractor may be instructed to cease the utilisation of that method in favour of a more environmentally acceptable one, proposed either by himself or the Employer.

PZ3.1.2 Construction Programme

The Contractor will programme construction so as to minimise the impact on the environment and provide this programme to the Environmental Control Officer for perusal and acceptance at the onset of the contract period. The Environmental Control Officer is to be made aware of any amendments to the construction programme or alterations to the scope of work in order that their impacts on the environment can be assessed.

The Contractor (through the Project Manager) will ensure that all affected landowners/ authorities are advised of the proposed programme at the beginning of the contract period.

PZ3.2 AREAS OCCUPIED / DEMARCATION OF SITE

Routes for temporary access and haul roads are to be located within the approved demarcated areas and vehicle movement is to be confined to these roads. Movement of vehicles outside the designated working areas is not permitted without authorisation from the Engineer.

All construction activities are restricted to working areas designated on the drawings and/or demarcated and approved by the Engineer. Materials including spoil are stockpiled at designated areas.

Any areas disturbed outside of the demarcated areas or without permission of the Environmental (Control) Officer or Engineer will be subject to reinstatement and rehabilitation (as per PZ4 below) to the Contractor's cost.

In terms of pipeline projects, a general maximum working servitude width of 15 m will apply for machine excavation unless otherwise indicated in the project specification. A maximum width of 6 m will apply for manual excavation. These maximum working servitude widths may vary depending on the sensitivity of the environment, as detailed in the project specification.

In sensitive biophysical environments, for example wetlands, indigenous forest / bush, pristine natural grasslands, and sensitive social environments, as defined in the project specification or by the Environmental Control Officer, the working servitude is reduced as indicated in the project specification.

The working servitude shall contain all construction related activities, including, stockpiling of materials, placing of toilets, vehicle movement areas, etc.

Demarcation of linear projects (executed with machine excavation) and features (e.g. pipelines, access roads, etc.) will be by means of wooden stakes. These stakes will be at least 1 m high, painted white and placed at least every 15 m, on either side of the linear feature, in all areas where works are occurring. Progressive movement of stakes is required as linear projects progress.

In the case of a fenced site, the boundary fences will be denoted as the outermost limit of the site, but internal areas may be demarcated with stakes as above. The site boundaries of non-fenced, but 'contained' projects are to be delineated using stakes or temporary fencing, depending on the hazard which that site poses.

PZ3.3 SUPPLY OF WORKS FACILITIES

No water may be abstracted from water bodies for the purposes of construction, without approval of the Engineer in consultation with the Environmental Control Officer.

PZ3.4 CLEANLINESS

SABS 1200 AD, clause 5.2.4, second sentence, is to read: "No rubbish or debris shall be deposited below the full supply level (FSL)."

PZ3.5 SITE CLEARANCE

PZ3.5.1 Clearance

Spoil sites will require clearing and grubbing in addition to those areas in terms of SABS 1200 C 5.1.

The site shall only be cleared immediately prior to construction activities commencing i.e. at the last practicable stage.

No trees or indigenous shrubs may be removed without the prior permission of the Environmental (Control) Officer, unless in keeping with the final site reinstatement and rehabilitation plan.

PZ3.5.2 Disposal of materials

Material obtained from clearing and grubbing operations shall be disposed of at appropriate municipal disposal facilities. They are not to be disposed of as per Paragraph 1 of Sub-clause 3.1 of SABS 1200 C.

Wood obtained from clearing and grubbing operation remains the property of the landowner/ community and must be stacked at sites designated by relevant person. The Contractor will be required to remove and dispose of any wood from site at a designated site for vegetation disposal, should the landowner/ community not require it.

All tree trunks and branches of diameter greater than 50mm are to be cut into lengths not exceeding 2400mm.

Brush wood (i.e. < 50mm diameter) is to be disposed of, or utilised as specified in the project specification or upon instruction of the Engineer.

PZ3.5.3 Conservation of topsoil

The Contractor is required to strip topsoil (as defined in this specification) together with grass, groundcover and sedges from all areas where permanent or temporary structures are located, construction related activities occur, and access roads are to be constructed, etc. The depth to which topsoil will be stripped shall be 200mm unless stated otherwise in the project specification.

Topsoil is to be handled twice only - once to strip and stockpile, and secondly to replace, level, shape and scarify.

Topsoil is to be replaced along the contour.

Topsoil is to be replaced by direct return (i.e. replaced immediately on the area where construction is complete), rather than stockpiling it for extended periods. This is feasible for progressive construction (e.g. pipelines), but not necessarily so for reservoirs, site establishments, dams, etc.

Topsoil stockpiles are not to exceed 2 m in height.

Topsoil stockpiles are to be maintained in a weed free condition (i.e. no 'broad-leafed' plants regarded as weeds in terms of the Conservation of Agricultural Resources Act No 43 of 1989, or those plants regarded as a 'general nuisance in the area' are to be growing on the stockpiles). The Environmental Control Officer will provide guidance as to which plants are weeds and require removal.

The stockpiles are not to be contaminated with sub-soil, or any other waste material.

Topsoil may not be compacted in any way, nor may any object be placed or stockpiled on it.

Topsoil may not be compacted in any way, nor may any object be placed or stockpiled on it.

Topsoil which is to be stockpiled for periods exceeding 4 months is to be vegetated. In summer a mixture of *Eragrostis tef* (Teff) and *Eragrostis curvula* (Weeping Lovegrass) (ratio 1:2) is to be applied at an application rate of 6 kg/ha, unless otherwise instructed in the project specification.

In winter, a mixture of *Lolium multiflorum* (Annual/Italian Rye grass) and *Eragrostis curvula* (Weeping Lovegrass) (ratio 1:1) is to be applied at an application rate of 6kg/ha (see PZ4 5.3 for sowing times), unless otherwise instructed in the project specification. Fertiliser is to be applied as per PZ4 5.2.

PZ3.5.4 Cutting of trees

Any tree branches which require removal are to be properly pruned and sealant applied to the cut surface, if required.

The Contractor's attention is drawn to Sub-clause 5.2.3.3 of SABS 1200 C with respect to work in indigenous forests.

Any indigenous trees or bush which require removal in terms of the project, and which have not been identified in the project specification or EMP, are to be timeously indicated to the Environmental Officer prior to work affecting them.

PZ3.5.5 Landscape Preservation and Conservation of Flora

Notwithstanding Clause 5.7 of SABS 1200 C, the Contractor will be required to transplant designated plants to alternative locations as specified in the project specification or identified by the Environmental Control Officer, upon the instruction of the Engineer.

Transplanting shall be undertaken by employing the following method:

Removal

- Mark the orientation of the tree/shrub (for example, the north-facing side of the trunk indicated by a small arrow made with indelible ink) trunk. Do not scratch a mark on the surface of the trunk;
- Delineate a circle from the trunk with a radius equivalent to the dripline of the tree, or as indicated by the Environmental Control Officer on site;
- Excavate the tree with an intact rootball.

Replanting

- A hole 500mm larger in diameter than the anticipated rootball must be prepared in advance of the tree removal in order that the tree can be replanted immediately;
- The tree must be positioned as per its original orientation;
- A planting method known as 'puddling' must be employed. This method involves the addition of soil and water simultaneously to expels air from the planting hole. Place the tree in its new hole, making sure the top surface of the rootball is level with the ground level. Place a hose pipe in the hole and leave it running whilst extra soil is added around the rootball;
- 'Compact' the tree in the hole and attach tree stays for stabilisation.

Compensatory planting of species may be required should transplantation not be feasible, as indicated in the project specification or upon instruction of the Engineer.

PZ3.6 EARTHWORKS

PSZ3.6.1 Backfill material

With reference to SABS 1200 DB sub-clause 3.5, no material stripped or excavated which is classed, in terms of this specification, as topsoil, may be used as backfill in any excavation.

PZ3.6.2 Excavation and backfilling

During excavation 'conservation of topsoil', as specified in PZ3 5.3 above will apply.

Excavated material is to be stockpiled along a pipeline trench within the working servitude, unless otherwise authorised.

Surplus excavated soft, intermediate and hard rock material shall not be disposed of along the pipeline trench as indicated in SABS 1200 DB sub-clause 5.6.3 and 5.6.4, but shall be removed to a spoil site (see PZ3.15 below) designated during the project if applicable, or agreed by the Engineer in conjunction with the Environmental Control Officer and Project Manager.

In certain cases, for example to help stabilise the disturbed area or to reinstate the natural aesthetics of an area, excess excavated intermediate and hard material may be disposed of in a designated manner along a pipeline trench, as indicated by the Environmental Control Officer and Project Manager, or in the project specification. In this case, rock material shall not exceed 250mm in maximum dimension (see PZ4 2.1).

In terms of SABS 1200 DB 5.6.5 and SABS 1200 LB 3.4.2, deficiency of backfill material shall not be made up by excavation within the free haul distance of 0.5km of site, without the prior approval of the Engineer of the source of the material. Where backfill material is deficient, it should ideally be made up by importation from an approved borrow pit (i.e. one which operates within the ambient of an EMPR.) (See also PZ3 14 below).

The Contractor will backfill in accordance with the requirements of progressive reinstatement.

The maximum length of open trench shall be specified in the project specification.

PZ3.7 SAFETY

All works which may pose a hazard to humans and animals are to be adequately protected and appropriate warning signs erected. The Contractor's attention is drawn to SABS 1200 D section 5.1 in this regard.

With reference to SABS 1200 D 5.1.1.3, where blasting is required in terms of the project, the Contractor will ensure that all structures in the vicinity that could be affected by the activity will be inspected and their condition photographically recorded (as necessary), prior to blasting.

Notice of intent to blast is to be provided to landowners timeously.

Speed limits, appropriate to the vehicle driven, are to be observed at all times on access roads. Operators and drivers are to ensure that they limit their potential to endanger humans and animals at all times, by observing strict safety precautions.

PZ3.8 PLANT

PZ3.8.1 Silencing of plant

With reference to SABS 1200 A amend: "built up areas": to read as "all areas within audible distance of residents (albeit urban, peri-urban or rural areas)."

Appropriate directional and intensity settings are to be maintained on all hooters and sirens.

Silencer units on equipment and vehicles are to be maintained in good working order.

Construction activities are to be confined to normal working hours (07h30 - 17h00) Mondays to Saturdays, except for the activities designated to be carried out at night.

PZ3.8.2 Appropriate use of plant

The Contractor will at all times use plant which is appropriate to the task in order to minimise the extent of damage to the environment.

PZ3.9 DEALING WITH WATER ON WORKS

PZ3.9.1 Disinfection of Potable Water Infrastructure

Disinfection water is to be neutralised before release of this water to the environment.

PZ3.9.2 Discharge of water from site

Any water which is discharged from site is to comply with the relevant Water Quality Guidelines implemented by DWAF.

Water discharged to the stormwater / sewer system may only be done so with the permission of the relevant local authority.

PZ3.10 CONTROL OF EROSION

Surface erosion protection measures will be required to prevent erosion where slopes are steeper than 1:8 on all soil types.

Erosion protection measures required may include all or some of the below, as specified in the project specification or upon instruction of the Engineer in conjunction with the Environmental (Control) Officer:

- use of groundcover or grass
- construction of cut off berms (earth and/or rockpack) - these are to be angled across the contour and normally would approximate an angle of 30° from the bisector of the contour.
- placing of brush wood on bare surface;
- pegging of wattle trunks or branches along the contour;
- hard landscaping, e.g. use of Loffelstein walls, ground anchors, gabions etc.

Scour chambers are to be fitted with energy dissipaters, or the jet of water directed onto a protected (i.e. grouted stone pitching/ rock pack/ reno mattress) area to dissipate water velocity and to control and prevent erosion.

Storm water drainage measures might be required on site to control runoff and prevent erosion.

PZ3.11 CONTROL OF POLLUTION

No waste in a solid, liquid or gaseous state shall be emitted from or spilled on the site without the approval of the Engineer.

No mixed concrete shall be deposited directly onto the ground prior to placing. A board or other suitable platform is to be provided onto which the mixed concrete can be deposited whilst it awaits placing.

Excess concrete from mixing shall be deposited in a designated area awaiting removal to an approved landfill site.

The Contractor will contain wash water from cement mixing operations, by directing the water into a sump for collection. The material contained in the sump will be removed to an appropriate landfill site. No concrete rubble shall be present at the site.

Liquid wastes will not be disposed of to storm water drains. They may be disposed of to sewer only if permitted by (local council) legislation.

In the event of pollution of a water body (including sediment loading), the Contractor will provide alternative water supply to users of that water body until the quality of the water body is restored to its previous unpolluted state. For the sake of this clause, pollution is deemed to be a state which is substandard to the normal quality of the water body, but is not necessarily in contravention of the South African Water Quality guideline standards for a prescribed activity.

Any ancillary damages resulting from pollution of a water body will be repaired / remediated at the Contractor's cost.

Where, due to construction requirements, pollution of a water body may potentially occur, the Contractor is to ensure adequate measures (e.g. attenuation/ settlement dams / oil absorbent products) are in place to prevent pollution. A method statement is to be provided to this effect (see PZ3 1).

PZ3.12 CONTROL OF FIRE

The Contractor will ensure he has the necessary firefighting equipment on site in terms of SABS 1200. This will include at least rubber beaters when working in 'veld' areas, and at least one fire extinguisher of the appropriate type when welding activities are undertaken, irrespective of the site.

PZ3.13 USE AND MAINTENANCE OF ACCESS FACILITIES

PZ3.13.1 Responsibility

The Project Manager [not the Contractor (SABS 1200 AD 5.3.1)] will be responsible for obtaining permission for temporary and permanent rights of way over all private property affected by project activities.

The Project Manager will ensure that the Contractor has kept a photographic record of all access facilities and that these are reinstated to a state not worse than upon commencement of the project and to the satisfaction of the landowner (not withstanding that the project's objective is not to upgrade landowners' access roads).

PZ3.13.2 Fencing

Temporary fencing is to consist of 1.2 m bonnox fencing, or similar, suitably tensioned and supported on 1.8 m fencing standards at 3 m intervals, with all necessary straining posts and stays. All temporary fencing as indicated by the Engineer is removed on completion of the contract.

PZ3.14 BORROW PITS

Where the Contractor is required to import material, this shall be from commercial sources or borrow areas specified in the project specification.

The Contractor may source material from alternative borrow pits provided: the site location; method of winning material and reinstatement and rehabilitation are environmentally acceptable and approved by the Environmental Control Officer.

In this regard, the Contractor shall give the Environmental Control Officer in writing, 30 days prior to opening up alternative borrow pits the following information for acceptance:

- quantities of borrow material required;
- method statement for excavation of material including depth and extent of excavation;
- anticipated 'active life' of the borrow area;
- proposal for reinstatement and rehabilitation of borrow area, including final profile;
- written approval from the landowner/ relevant authority that material may be removed from their land subject to their stated conditions, requirements, and royalties, and if the proposal is acceptable to the Environmental Control Officer.

Development and rehabilitation of borrow pit areas are likely to include the following activities (but these must not be regarded as exhaustive):

- Stripping and stockpiling of topsoil as per PZ3 5.3 of this specification;
- Removal (to nominal depth of 500mm) and stockpiling of sub-soil;
- Infill of borrow pit with spoil material;
- Contouring of borrow pit to approximate natural topography and/ or reduce erosion impacts on the site;
- Placement of excavated subsoil over spoil material;
- Placement of stripped topsoil on subsoil;
- Grassing of topsoil in terms of clause PZ4 4 of this specification.

The Contractor is to familiarise himself with the requirements of the Minerals Act No 50 of 1991 in terms of borrow pit development, and the requirements of the EMPR, as applicable.

PZ3.15 SPOIL SITES

Where the Contractor is required to spoil material, spoil sites must be identified which are environmentally acceptable and approved by the ECO, unless spoil site areas have been identified in the project specification, in which case these will be the designated spoil sites.

If no spoil sites have been previously identified together with reinstatement and rehabilitation criteria, the Contractor is to provide the following information to the ECO at least 30 days prior to requiring sites to spoil material:

- the location, description of and access to alternative sites identified in order that they may be assessed;
- the quantity of material to be spoiled;
- the type of material to be spoiled (i.e. blast rock/ excavated rock/ soft shale/ subsoil etc.);
- the proposed method of spoiling;
- the proposed reinstatement and rehabilitation plan including final profile;
- written approval from the landowner/ relevant authority that material may be spoilt on land subject to their stated conditions and requirements and if the proposal is acceptable to the ECO.

Development and rehabilitation of spoil areas are likely to include the following activities (but these must not be regarded as exhaustive):

- Stripping and stockpiling of topsoil as per PZ3 5.3 of this specification;
- Removal (to nominal depth of 500mm) and stockpiling of sub-soil;
- Placement of spoil material;
- Contouring of spoil site to approximate natural topography and/ or reduce erosion impacts on the site;
- Placement of excavated subsoil over spoil material;
- Placement of stripped topsoil on subsoil;

Grassing of topsoil in terms of clause PZ4 4 of this specification.

PZ3.16 NUISANCE

PZ3.16.1 Dust

At all times the Contractor shall control dust on the site, access roads, borrow pits and spoil dumps with water, chemical soil stabilisers or temporary surfacing as specified in the project specification or upon instruction of the Engineer.

Dust control shall be sufficient so as not to have significant impacts in terms of the biophysical and social environments. These impacts include visual pollution, decreased safety due to reduced visibility, health aspects, and ecological impacts due to dust particle accumulation.

On gravel or earth roads, vehicle speeds may not exceed 30km per hour.

PZ3.16.2 Noise

The operational layout of the construction site is to be designed to control and reduce noise from source (see clause PZ2 1).

Machinery and vehicle silencer units are to be maintained in good working order. Offending machinery and /or vehicles will be banned from use on site until they have been repaired.

Construction activities generating output levels of 85 dB(A) or more (excessively noisy), in residential areas, are to be confined to working hours (08h00 - 17h00) Mondays to Fridays only.

'Normal' or 'noisy' working hours may only be extended with the prior written approval of the Project Manager, who has been notified, at least 7 days in advance, of the impending work requiring extension. The Project Manager will ensure that the neighbours are timeously forewarned of imminent noisy activities.

Should community complaints be received with regard to noise generation, the Contractor will, at the discretion of the Project Manager and Environmental Control Officer, provide an independent and registered noise monitor to undertake a survey of noise output levels from site, and implement measures to reduce noise to legislated levels.

PZ3.16.3 Visual

All site establishment components, as well as equipment, will be positioned to limit visual intrusion to neighbours (see clause PZ2 1 above).

The type and colour of roofing and cladding materials are to be selected to reduce reflection.

Security lighting (both temporary and permanent) and lighting required for specific works activities must be placed such that it is not a nuisance to residents and the general public.

PZ3.16.4 Interference with neighbours and public

No construction staff may approach site neighbours, for whatever reason, without the knowledge and permission of the Project Manager.

Complaints from neighbours and public with regard to interference from contract staff will be regarded in a serious light, and the offender(s) may be subject to disciplinary action.

PZ3.16.5 Disruption of Services

Disruption of services, e.g. road access, water and electricity, must be kept to a minimum at all times.

Where service disruption is unavoidable, the Contractor is to advise the Project Manager (at least 7 days in advance), who in turn will timeously warn the affected parties.

PZ3.17 SPECIAL ENVIRONMENTS

PZ3.17.1 Wetlands

Pipeline trenches which traverse wetlands shall be constructed as specified in the project specification.

The Contractor will submit a method statement for work in wetland areas as per PZ3 1.1

Construction may not permanently alter the surface or subsurface flow of water through the wetland.

The Contractor shall submit a method statement for review at least 14 days prior to commencing construction in a wetland.

The Contractor will remove all wetland vegetation with their root ball intact. This vegetation is to be kept moist at all times. It is to be placed in the shade and covered with moistened hessian cloth until replanting, which is to be undertaken immediately surface reinstatement is complete.

No construction materials may be stockpiled in any wetland areas.

The pre-construction profile of the wetland shall be returned to one similar as before construction, with no created "ridge or channel" features present.

PZ4.1 HOUSEKEEPING

All areas are to be cleared of rubble associated with construction. This includes the removal of surplus materials, excavation and disposal of consolidated waste concrete and concrete wash water, litter, etc.

All soil contaminated by hydrocarbons, for example from leaking machines, refuelling spills etc., is to be excavated to the depth of contaminant penetration, placed in 200 litre drums and removed to an appropriate landfill site.

PZ4.2 FINISHING

PZ4.2.1 Final Grading

Final levels of all disturbed areas are, where feasible in terms of the project requirement, to be consistent with the natural topography of the area.

In certain instances, it will be acceptable to reinstate rock onto a works area (e.g. pipeline servitude), provided that that rock does not exceed 250mm in maximum dimension and is placed in a manner consistent with the natural surrounds as indicated by the Environmental Control Officer and Project Manager.

All drainage lines affected by construction are to be reinstated to approximate their original profile. Where this is not feasible due to technical constraints, the profile is to be agreed upon by the Environmental Control Officer and Project Manager.

All compacted (disturbed) areas (including stockpile areas) are to be ripped (along contour) to a depth of 150mm prior to the replacement of topsoil.

PZ4.2.2 Topsoiling

Topsoil is to be replaced to a minimum depth of 100mm.

Topsoil is not to be compacted, but once replaced is to be scarified (to a depth of 50mm) consistent with the natural contour.

If insufficient topsoil is available, subsoil or similar material may be used that may be a suitable substrate after addition of soil improving substances e.g. compost, pH rectifiers (lime or gypsum) etc. Soil testing may be required at an approved facility.

PZ4.5.3 Planting times

Summer (includes Spring) is considered to be between the 1 September and 28 (29) February.

Winter (includes Autumn) is considered to be between 1 March and 31 August.

Re-grassing will be undertaken (as far as possible) in summer as germination and establishment of grasses is most effective, assuming reasonable spring rains.

Vegetation re-establishment is likely in many cases to be held off until this suitable growing season.

Hydroseeding with a winter mix will only be specified where regrassing is urgently required and cannot wait until the summer season. In this case irrigation will be required as per PZ4 5.4 below.

PZ4.5.4 Establishment and maintenance

During summer, 25mm of irrigation shall be applied each week until reasonable (60%) ground cover has been obtained.

During winter (where annual rye grass is specified) 15mm of irrigation shall be applied each week until reasonable (60%) ground cover has been obtained.

If rapid establishment is required, additional watering may be necessary as specified in the project specification

The amount of irrigation to be applied will make up the difference between rainfall recorded on site and the minimum requirement.

PZ4.5.5 Grass Seed Selection and Application Rates

The specific seed selection and application rates for each of the defined areas are covered separately, as follows.

PZ4.5.5.1 Coastal area

Summer mix (1 September - 28 February)

Grass species	Common name	General application rate (kg/ha)
Eragrostis tef	Teff	5
Eragrostis curvula	Weeping lovegrass	10
Chloris gayana	Rhodes grass	10
Digitaria eriantha	Smuts' fingergrass	5
Total		30

Winter mix (1 March - 31 August)

Grass species	Common name	General application rate (kg/ha)
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Lolium multiflorum cultivar - Midmar	Annual/Italian rye grass	10
Eragrostis curvula	Weeping lovegrass	10
Chloris gayana	Rhodes grass	5
Total		25

PZ4.5.5.2 Coastal hinterland.**Summer mix (1 September - 28 February)**

Grass species	Common name	General application rate (kg/ha)
Eragrostis tef	Teff	5
Eragrostis curvula	Weeping lovegrass	10
Chloris gayana	Rhodes grass	10
Cenchrus ciliaris	Blue buffalo grass	2
Cynodon dactylon	Couch/KWeek/Star grass	10
Total		37

Winter mix (1 March - 31 August)

Grass species	Common name	General application rate (kg/ha)
Lolium multiflorum cultivar – Midmar	Annual/Italian rye grass	10
Eragrostis curvula	Weeping lovegrass	10
Chloris gayana	Rhodes grass	5
Cenchrus ciliaris	Blue buffalo grass	2
Cynodon dactylon	Couch/KWeek/Star grass	3
Total		30

PZ4.5.5.3 Midlands area**Summer mix (1 September - 28 February)**

Grass species	Common name	General application rate (kg/ha)
Eragrostis tef	Teff	4
Eragrostis curvula	Weeping lovegrass	10
Chloris gayana	Rhodes grass	10
Digitaria eriantha	Smuts' fingergrass	2
Cynodon dactylon	Couch/KWeek/Star grass	2
Paspalum notatum	Lawn paspalum	2
Total		30

Winter mix (1 March - 31 August)

Grass species	Common name	General application rate (kg/ha)
Lolium multiflorum cultivar - Midmar	Annual/Italian rye grass	10
Eragrostis curvula	Weeping lovegrass	10
Chloris gayana	Rhodes grass	5
Paspalum notatum	Lawn paspalum	2.5
Total		27.5

PZ4.5.6 SEEDING METHODS

Two methods are recommended, namely hydroseeding and hand-broadcasting. The required method shall be as specified in the project specification.

All seed supplied should be labelled in accordance with the Government Seed Act No. 20 of 1961 and the Contractor shall be required to produce such certification, if requested by the Engineer.

PZ4.5.6.1 HYDROSEEDING

The Grassing Contractor shall be conversant with this method.

Cellulose pulp (consisting of either wood shavings, shredded straw, shredded paper or cotton waste) shall be added to the mix to be applied at a rate of 250 kg/ha.

In addition to the cellulose pulp, compost (consisting of either chicken litter, kraal manure, sugar cane filter cake or mushroom compost) shall be incorporated at a rate of 5m³/ha (□100 X 50kg fertiliser bags/ha).

PZ4.5.6.2 HAND-BROADCASTING

Fertiliser, at the appropriate rate, is to be distributed by hand in a manner to ensure that there is an even spread of fertiliser over the site. This is to be done prior to seeding.

The seed mix is to be weighed and made up in an appropriately large container which shall be stirred to ensure no settling out of the grass seed, and a uniform distribution of the different types of seed.

The seed is to be distributed by hand in a regular grid broadcasting manner to ensure that there is an even spread of grass over the entire site.

The area seeded is to be raked over once the seed and fertiliser have been applied to incorporate these elements into the topsoil.

PZ4.5.7 GENERAL

Where there is a possibility of neighbourhood livestock grazing a rehabilitated site these should, as far as is practicable, be excluded for the first 3 months of re-grassing.

PZ4.6 LANDSCAPING

Landscaping of the site may be required as indicated in the project specification.

Compensatory planting of trees or shrubs may be required should the transplantation of such not be successful in terms of PZ3 5.5 or due to plants removed in terms of PZ3 5.4

Planting of trees will be in accordance with the following method:

- All tree holes shall be square in plan;
- Tree holes shall be a minimum of 600mm by 600mm square by 700mm deep;
- Holes are to be backfilled with excavated soil in a ratio of 3:1 with compost. The compost is to be weed free and have been composted at temperatures in the order of 65oC. Where possible, any available topsoil should be placed in the hole at the level where the tree rootball will rest. A handful (half-a-cup) of each Superphosphate and 2.3.2 should be mixed into the soil-compost mix;
- The tree holes are to be backfilled to the point where the tree and its rootball are in the desired position. The tree is to be removed temporarily and the hole filled with water and allowed to drain away. This operation of watering and draining should be repeated at least four times in order that the surrounding ground and hole are thoroughly moist. The tree is then to be replaced and the remaining soil replaced;
- All trees shall be tied (using a tree tie) to a suitable timber stake planted in the ground to a depth of at least 500mm. The stake shall have a minimum diameter of 35mm and shall be at least 300mm higher than the planted tree;
- Water retaining basins of at least 500mm diameters are to be formed around each tree;
- The Contractor is to apply at least 10 litres of water per tree per fortnight for a period of at least 3 months.

The planting of shrubs will be in accordance with the tree planting method with the exception that the holes are to be a minimum of 400mm by 400mm square by 500mm deep, and that the tree stakes and ties are not required.

PZ4.7 ALIEN PLANT CONTROL

All sites disturbed by construction activities will be monitored for colonisation by invasive alien plant species.

The Environmental Control Officer will identify those plants which require removal during both the construction and maintenance period, for the Contractor's action.

The Environmental Control Officer will provide advice as to effective methods of removal and control of alien plant species.

PUBLIC COMPLAINTS REGISTER

COMPLAINANTS NAME	DESIGNATION/ AFFILIATION	REASON FOR COMPLAINT	ACTION TAKEN	ACTION BY	ACTION BY DATE	ACHIEVED BY DATE	DATE REFERRED TO NW environmental control officer

HARRY GWALA DISTRICT MUNICIPALITY

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

CONTRACT No. HGDM 813/HGDM/2023

DATE	COMPLAINANTS NAME	DESIGNATION/ AFFILIATION	REASON FOR COMPLAINT
ACTION TAKEN	ACTION BY	ACTION BY DATE	ACHIEVED BY DATE
DATE REFERRED TO	NW environmental control officer		

MONITORING OF COMPLIANCE WITH ENVIRONMENTAL SPECIFICATIONS

PROJECT NAME:

CONTRACT NUMBER:

PROJECT MANAGER:

ENGINEER'S REPRESENTATIVE / SUPERVISOR:

CONTRACTOR:

CONTRACT PERIOD:

(including start and completion dates):

PERIOD COVERED:

REPORT PREPARED BY:

Signature

ENVIRONMENTAL CONTROL OFFICER REPORT

PROJECT NAME: CONTRACT N°

DATE OF SITE INSPECTIONS DURING REPORTING PERIOD:

Specification Breach Responsible	Spec. No. Action Taken	Remedial Action Recommended	Due Date	Authority
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1 PUBLIC COMPLAINTS

DATE	COMPLAINANTS NAME	DESIGNATION/ AFFILIATION	REASON FOR COMPLAINT	ACTION TAKEN	ACTION BY	ACTION BY DATE	ACHIEVED BY DATE	DATE REFERRED TO NW environmental control officer

HARRY GWALA DISTRICT MUNICIPALITY

CONSTRUCTION OF GENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION, AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

CONTRACT No. HGDM 813/HGDM/2023

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HARRY GWALA DISTRICT MUNICIPALITY

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS

CONTRACT No. HGDM 813/HGDM/2022

GOOD PERFORMANCE REPORT

HARRY GWALA DISTRICT MUNICIPALITY

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS

CONTRACT No. HGDM 813/HGDM/2022

LIST ANY ASPECTS OF THE CONTRACT IN WHICH THE CONTRACTOR IS PERFORMING WELL AND BEYOND THAT WHICH IS REQUIRED IN TERMS OF THE SPECIFICATION **PZ1**

INTRODUCTION

PZ1.1SCOPE

This specification is additional to the South African Bureau of Standards Standardised Specification for Civil Engineering Contracts and must be read in conjunction with the said specification.

This specification covers the principles, responsibilities and requirements generally applicable to implement effective environmental management during the execution of any construction contract. The aim of this specification is to ensure that construction activities are conducted in an environmentally and socially responsible manner.

PZ1.2 INTERPRETATIONS

This specification contains clauses that are generally applicable to the implementation of effective environmental management on construction contracts. Interpretations of, and variations to, this specification are set out in the project specification.

PZ1.2.1 Supporting specifications:

Reference is made to the SABS 1200 standards which are to be read in conjunction with this specification. All aspects of these SABS requirements which are relevant to environmental management during construction contracts will apply.

PZ1.2.2 Principles

- The following principles should be considered at all times during construction phase activities:
- The Environment is considered to be composed of both biophysical and social components.
- Construction is a disruptive activity and all due consideration must be given to the environment, particularly the social environment, during the execution of a project to minimise the impact on affected parties.
- Minimisation of areas disturbed by construction activities will minimise many of the construction related environmental impacts of the project and reduce rehabilitation requirements and costs.
- As minimum requirements, all relevant standards relating to international, national, provincial and local legislation, as applicable, shall be adhered to. This includes requirements relating to waste emissions (e.g. hazardous, airborne, liquid and solid), waste disposal practices, noise regulations, road traffic ordinance etc.
- All effort should be made to minimise, reclaim or recycle 'waste' material.

HARRY GWALA DISTRICT MUNICIPALITY

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS

CONTRACT No. HGDM 813/HGDM/2022

PZ1.3 DEFINITIONS

For the purpose of this specification, the definitions given in SABS 1200 shall apply.

Additional definitions which shall apply to this specification are as follows:

Environmental Control Officer: Either an Employer's staff member or an Environmental Consultant assigned to the project on a part or full-time basis. The Environmental Control Officer will be part of the Project staff and will advise the Engineer on all environmental matters relating to the works, in terms of this specification and the project specification, if applicable.

Environmental Officer: Either an Employer's employee (e.g. Quality Assurance Inspector) or Consultant designated to monitor the implementation and compliance with the environmental specifications and environmental management plan on a daily basis.

Cleared surface: "surface vegetation" as referred to in SABS 1200 C 2.3 will be deemed to be any woody or herbaceous vegetation but exclude grasses, sedges, rushes and reeds. Clearing and grubbing shall for the purpose of this specification mean the removal of all woody and herbaceous vegetation including stumps, but excluding grass and groundcover vegetation.

Engineer: Is to read Engineer or Supervisor (in the case of the NEC contract), whichever is applicable to the Contract.

Interested and Affected Parties (IAP): All persons who may be affected by the project either directly or indirectly, or who have an interest or stake in the area to be affected by the project. IAPs include landowners, tribal or local authorities, public interest groups etc.

Liquid Waste Stream: Any reagent solutions, fuels, oils, greases, contaminated run-off, sewerage and wash water, etc.

Open Trench: Open trench will, for the purpose of this specification, be deemed to include: clearing and grubbing; stripping of topsoil; trenching; placing of bedding; pipe-laying; placing of selected fill; backfilling to ground level; removing excess material; construction of cross berms to channel water (if required); and replacement of topsoil to final finished level (refer to Figure 1: Appendix A).

Progressive Reinstatement: Reinstatement of disturbed areas to topsoil profile on an ongoing basis, immediately after selected construction activities (e.g. backfilling of a trench) are completed. This allows for passive rehabilitation (i.e. natural recolonisation by vegetation) to commence. See also 'Open Trench' and 'Rehabilitation'.

Project Manager: The person responsible for co-ordinating and integrating activities across multiple, functional lines.

Rehabilitation: Rehabilitation is defined as the return of a disturbed area to a state which approximates the state (where possible) which it was before disruption. Rehabilitation for the purposes of this specification is aimed at post-reinstatement revegetation of a disturbed area and the assurance of a stable land surface. Revegetation should aim to accelerate the natural succession processes so that the plant community develops in the desired way, i.e. promote rapid vegetation establishment.

Riparian vegetation: Vegetation occurring on the banks of a river or stream (i.e. vegetation fringing a water body). In this specification, riparian vegetation in terms of removal, storage and replacement (see PZ3 17.1 and PZ3 17.2), is only applied to sedge, grass, groundcover, reed, bulrush, or herbaceous component of riparian vegetation and excludes the woody component.

Sedges: Grass-like plants growing in wetland/ marshy areas or adjacent to water.

Subsoil: Subsoil is the soil horizons between the topsoil horizon and the underlying parent rock. Subsoil often has more clay-like material than the topsoil. Subsoil is of less value to plants, in terms of nutrient (food) and oxygen supply, than topsoil. When subsoil is exposed it tends to erode fairly easily.

Timeous: At least 5 working days prior to an activity.

Topsoil: This is defined as the A horizon of the soil profile. Topsoil is the upper layer of soil from which plants obtain their nutrients for growth. It is often darker in colour, due to the organic (humic) fraction. Topsoil is deemed for the purposes of this specification as the layer of soil from the surface to the specified depth required for excavation (see PZ3 5.3, relevant SABS 1200 clause and project specification). Where topsoil is referred to, it is deemed to be both the soil and grass / ground cover fraction. (see 'Cleared Surface')

Veld: This is defined for the purpose of this specification as unimproved natural vegetation areas (e.g. grasslands).

Water body: Any open body of water including streams, dams, rivers, lakes, and the sea.

Wetland: A seasonally, temporally, or permanently wet area which also may exhibit a specific vegetation community. It is often marshy in character.

Wetland Vegetation: Vegetation which is indicative of a wetland environment - for example, sedges, rushes, reeds, hydrophilic grasses and groundcovers, but for the purposes of this specification excludes woody species.

Xeriscaping: Landscaping with vegetation which has a low water usage. The objective is to conserve as much water as possible, whilst still beautifying an area (i.e. conservation and aesthetics). Concept embraces utilising indigenous as opposed to exotic plants.

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PZ1.4 ABBREVIATIONS

DWAF : Department of Water Affairs and Forestry
ECO : Environmental Control Officer
EMP : Environmental Management Plan
EMPR : Environmental Management Programme Report
EO : Environmental Officer
IAPs : Interested and Affected Parties
IEM : Integrated Environmental Management
MSDS : Material Safety Data Sheet
NEC : New Engineer Contract or The Engineering and Construction Contract

PZ1.5DRAWINGS

Drawings referred to in this specification are included in C4.4 Drawings of Section C4 Site Information.

PZ1.6FORMS

Forms referred to in this specification are included in Part T2 or attached to this environmental specification.

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PZ1.7 CONDITIONS OF CONTRACT

PZ1.7.1 DUTIES AND POWERS OF THE PROJECT MANAGER

The Project Manager is ultimately responsible for ensuring compliance with the environmental specification and upholding the Employer's Environmental Policy on a project.

The Project Manager:

- Arranges information meetings for or consults with IAPs about the impending construction activities;
- May on the recommendation of the Engineer and /or Environmental Officer order the Contractor to suspend any or all works on site if the Contractor or his Sub-Contractor/ supplier fails to comply with the said specifications;
- Maintains a register of complaints and queries by members of the public at the site office as per attached pro-forma. This register is forwarded to the Environmental Control Officer on a monthly basis.

PZ1.7.2 Duties and Powers of the Engineer / Supervisor (NEC)

The Engineer or Supervisor is responsible for:

- enforcing the environmental specification on site;
- monitoring compliance with the requirements of the specification;
- assessing the Contractor's environmental performance in consultation with the

Environmental Officer from which a brief monthly statement of environmental performance is drawn up for record purposes;

- documenting, in conjunction with the Contractor, the state of the site prior to construction activities commencing. This documentation will be in the form of photographs or video record.

PZ1.7.3 Duties and Powers of the Environmental Control Officer

The Environmental Control Officer:

- briefs the Contractor about the requirements of the Environmental Specification and/ or Environmental Management Plan, as applicable;
- advises the Project Manager and Engineer/ Supervisor about the interpretation, implementation and enforcement of the Environmental Specification and other related environmental matters;
- attends site meetings, as necessary;
- monitors the Constructor's compliance with this specification and the project environmental specification as applicable;
- undertakes periodic audits of the effectiveness of the environmental specifications on the site;
- communicates environmental policy issues to the Project Manager;
- provides technical advice relating to environmental issues to the Engineer/ Supervisor and Project Manager;
- reports on the performance of the project, in terms of environmental compliance.

PZ1.7.4 DUTIES AND POWERS OF THE ENVIRONMENTAL OFFICER

The Environmental Officer:

- attends site meetings;
- monitors the site for compliance with the Environmental Specification and EMP;
- reports on the performance of the project in terms of environmental compliance to the ECO and Project Manager as per the pro-forma attached;
- liaises with the ECO on matters of policy and those requiring clarity and advice.

PZ1.7.5 EXTENT OF THE CONTRACTOR'S OBLIGATIONS

The Contractor is required to:

- provide information on previous environmental management experience and company environmental policy;
- supply method statements for all activities requiring special attention as specified and/or requested by the Project Manager, Environmental (Control) Officer and/or Engineer during the duration of the Contract;
- be conversant with the requirements of this environmental specification and the project specification as applicable;
- brief his staff about the requirements of the environmental specification; comply with requirements of the Environmental (Control) Officer in terms of this specification and the project specification, as applicable, within the time period specified;
- ensure any sub-Contractors/ suppliers who are utilised within the context of the contract comply with the environmental requirements of the Employer, in terms of the specifications. The Contractor will be held responsible for non-compliance on their behalf;
- bear the cost of any delays, with no extension of time granted, should he or his Sub-Contractors/ Suppliers contravene the said specifications such that the Engineer orders a suspension of work. The suspension will be enforced until such time as the offending party(ies), procedure, or equipment is corrected;
- bear the costs of any damages/ compensation resulting from non-adherence to the said specifications or written site instructions;
- comply with all applicable legislation in terms of 7.6 below;
- ensure that he informs the engineer timeously of any foreseeable activities which will require input from the Environmental (Control) Officer.

The Contractor will conduct all activities in a manner that minimises disturbance to directly affected residents and the public in general, and foreseeable impacts on the environment.

PZ1.7.6 COMPLIANCE WITH APPLICABLE LAWS

The supreme law of the land is “The Constitution of the Republic of South Africa”, which states:

“Every person shall have the right to an environment which is not detrimental to his or her health or well-being”

Laws applicable to protection of the environment in terms of Environmental Management (and relating to construction activities) include but are not restricted to:

Animals Protection Act, Act No 71 of 1962

Atmospheric Pollution Prevention Act, No 45 of 1965

Conservation of Agricultural Resources Act, No 43 of 1983

Environmental Conservation Act, No 73 of 1989

Environmental Planning Act, Act No 88 of 1967

Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, No 36 of 1947

Forest Act, No 122 of 1984

Forest and Veld Conservation Act, Act No 13 of 1941

Hazardous Substances Act, No 15 of 1973

Lake Areas Development Act No 34 of 1975

Land Survey Act, No 9 of 1921

Minerals Act, No 50 of 1991

Mountain Catchment Act, No 63 of 1970

National Monuments Act, No 28 of 1969

National Parks Act, No 57 of 1976

National Resources Development Act, Act no 51 of 1947

Occupational Health and Safety Act, No 85 of 1993

Provincial and Local Government Ordinances and Bylaws

Soil Conservation Act, Act No 76 of 1969

Water Act, No 54 of 1956

Water Services Act No 108 of 1997

and all regulations framed thereunder and amendments there to.

PZ1.7.7 COMPLIANCE WITH THE ENVIRONMENTAL SPECIFICATION

The Contractor is deemed not to have complied with the Environmental Specification if:

- within the boundaries of the site, site extensions and haul/ access roads there is evidence of contravention of clauses;
- if environmental damage ensues due to negligence;
- the Contractor fails to comply with corrective or other instructions issued by the Project Manager or Engineer within a specified time,
- the Contractor fails to respond adequately to complaints from the public.

Application of a penalty clause will apply for incidents of non-compliance. The penalty imposed will be per incident. Unless stated otherwise in the project specification, the penalties imposed per incident or violation will be:

Failure to demarcate working servitudes	R1000
Working outside of the demarcated servitude	R2000
Failure to strip topsoil with intact vegetation	R1000
Failure to stockpile topsoil correctly	R500
Failure to stockpile materials in designated areas	R500
Pollution of water bodies (including increased suspended solid loads)	R1000
Failure to control stormwater runoff	R1000
Failure to provide adequate sanitation	R500
Unauthorised removal of woody vegetation	R2000
Failure to erect temporary fences	R500
Failure to provide adequate waste disposal facilities and services	R500
Failure to reinstate disturbed areas within the specified timeframe	R3000
Failure to rehabilitate disturbed areas within the specified timeframe	R3000
Any other contravention of the project specific specification	R400
Any other contravention of the particular (general) environmental specification	R300

PZ2 SITE ESTABLISHMENT AND HOUSEKEEPING

PZ2.1 LAYOUT

The Contractor will take into account any of the limitations identified in the project specification with regard to establishment of site, in particular the location of access routes, and establishment layout.

Notwithstanding the provision of a project specification, the Contractor will provide the Project Manager and Environmental Control Officer with a layout design of the site indicating the position of all of the following, as applicable: offices, ablution facilities, storage areas, workshops, laboratories, batching plant, particulate matter stockpile area (i.e. soil/ granular chemicals/ cement fines etc), waste disposal facilities, hazardous substances storage area, access routes, etc. This layout plan is to be submitted prior to site establishment for acceptance. Any changes to this plan require review by the Project Manager in conjunction with the ECO.

The Contractor will take into account prevailing wind directions when designing the site layout to minimise impacts due to dust, unpleasant odours etc.

The Contractor will take into account the positions of residences when designing the site layout in order to minimise noise impacts on the residents.

Site security lighting is to be positioned such that the direct beam is focused away from residential properties and does not pose a nuisance or danger to road users.

No site establishment will be allowed within 100 m of a water body or drainage channel or on a flood plain unless approved by the Environmental (Control) Officer or specified in the project specification.

PZ2.2 SITE CLEARANCE

No trees or shrubs may be removed without the prior permission of the Environmental Officer, unless in keeping with the final site reinstatement and rehabilitation plan.

Topsoil is to be stripped from all areas where permanent or temporary structures and access roads are to be constructed. Topsoil conservation is to be in terms of clause PZ3 5.3 of this document.

PZ2.3 SERVICES

PZ2.3.1 Sanitation

Portable chemical toilets are to be utilised at site unless a connection to sewer is possible or a proper septic tank system is installed. In the case of the septic tank, the installation will require the relevant approvals from the local authority and will require removal upon completion of the contract, unless otherwise directed.

Sanitation facilities will be located within 100 m from any point of work, but not closer than 50 m to a water body.

PZ2.3.2 Solid Waste Facilities

Facilities for solid waste collection are to be provided. These are to be at least a 200 l drum and clearly identified as the point for waste disposal.

Waste is to be separated into paper, glass and metal with separate collection points for each. The Contractor will ensure that the appropriate recycling Contractors receive this waste.

The Contractor is to institute a daily litter collection programme. The collected waste is to be disposed of regularly and proportionately to its generation at a site designated for waste disposal.

No burning will be permitted on any site unless by approved incineration methods and in a low risk fire area. In the case of incineration, ash is to be co-disposed with spoil in a designated spoil dump.

No burying of waste will be allowed on any site.

PZ2.3.3 Cooking and Heating Facilities

No open fires will be allowed anywhere on site.

Contained fires (i.e. in a fire drum) will be allowed for heating and cooking only in designated areas, in other cases cooking is restricted to gas or electrical equipment.

PZ2.4 FUELS, HAZARDOUS SUBSTANCES AND OTHER LIQUID POLLUTANTS

PZ2.4.1 Storage and handling

All potentially hazardous raw and waste materials are to be handled by trained staff and stored on site in accordance with manufacturer's instructions and relevant legal requirements. The product MSDS is to be lodged with the Engineer.

Storage and handling areas for fuels, lubricants, chemicals and other hazardous substances are to be paved with concrete to prevent accidental contamination of the soil. Alternatively, an impermeable liner

may be placed beneath above-ground storage tanks. The integrity of the liner is to remain intact for the duration of the contract, until removal.

Open storage vessels, for example shutter lubricant drums, are to be stored under cover to prevent 'splash' contamination.

All storage areas are to be bunded (with at least sandbags) and have a peripheral collection drain, with oil interceptors (if required).

The bunded area is to be sufficiently large to contain a spillage equivalent to the volume of one container of the substances stored.

All products to be dispensed from 200 litre drums will be done so with appropriate equipment, and not dispensed by tipping of the drum.

Daily checks are to be conducted on the dispensing mechanism of above-ground storage tanks to ensure the timeous identification of faults.

Collection containers (e.g. drip trays) are to be placed under all dispensing mechanisms of hydrocarbon or hazardous liquid substances to ensure contamination from leaks and dispensing is contained.

The dispensing mechanism of diesel and petrol storage tanks is to be stored in a container when not in use.

PZ2.4.2 Control of pollutants

A drainage diversion system is to be installed to divert runoff from areas of potential pollution, e.g. batching area, vehicle maintenance area, workshops, chemical and fuel stores, etc if applicable.

Contaminated runoff and wastewater is to be directed into a collection system (e.g. sump, attenuation dam, PVC porta-ponds etc.) for treatment or collection and disposal. The final collection point (e.g. sump) is to be PVC lined.

Collected contaminated runoff/ wastewater is to be pumped out of the final collection point and disposed of at an appropriate landfill site. Sump liners are to be treated in the same manner.

The treated wastewater, effluent and contaminated runoff may require analysis prior to discharge as detailed in the project specification or instructed by the Environmental Officer.

Details regarding proposed methods for treatment of pollutants are to be submitted to the Environmental (Control) Officer for acceptance upon award of the Contract.

Any spillages, irrespective of their size, are to be contained and cleaned up immediately. The Pollution Control section may provide technical assistance for clean-up, if required. No spills may be hosed down into a stormwater drain or sewer.

Use of specialised clean-up techniques and/ or products may be required depending on the spill. This will be instructed by the Environmental Control Officer. These will be to the Contractor's cost.

PZ2.5 GENERAL

Site staff are not permitted to use any open water body or other natural water source (e.g. springs) for purposes of bathing, or the washing of clothes, machinery or vehicles. Nor draw water from a spring without the permission of the community utilising that spring.

PZ2.6 MEASUREMENT AND PAYMENT

Measurement and payment for compliance with clauses PZ2.1 to 5 of the specification are deemed to be fully included in the Contractor's rates for fixed and time related Preliminary and General Items scheduled under SABS 1200 A or AA.

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PZ3 CONSTRUCTION

PZ3.1 CONSTRUCTION METHODS AND PROGRAMME

PZ3.1.1 Construction Method

The Contractor will provide method statements for construction activities (14 working days prior to the activity commencing) relating to the following environments and those listed in the project environmental specification, unless methods have been prescribed in this or the project environmental specification:

- rivers, streams, or any other open water body;
- wetlands;
- access roads (see PZ3.13 below);
- steep slopes (i.e. steeper than 1:4) or less if friable material is present;
- indigenous bush/ forest;
- close proximity (i.e. 50 m or less) to a residential dwelling;
- drilling and/or blasting of rock.

If a construction method employed by the Contractor is not environmentally acceptable to the Employer, the Contractor may be instructed to cease the utilisation of that method in favour of a more environmentally acceptable one, proposed either by himself or the Employer.

PZ3.1.2 Construction Programme

The Contractor will programme construction so as to minimise the impact on the environment and provide this programme to the Environmental Control Officer for perusal and acceptance at the onset of the contract period. The Environmental Control Officer is to be made aware of any amendments to the construction programme or alterations to the scope of work in order that their impacts on the environment can be assessed.

The Contractor (through the Project Manager) will ensure that all affected landowners/ authorities are advised of the proposed programme at the beginning of the contract period.

PZ3.2 AREAS OCCUPIED / DEMARCATION OF SITE

Routes for temporary access and haul roads are to be located within the approved demarcated areas and vehicle movement is to be confined to these roads. Movement of vehicles outside the designated working areas is not permitted without authorisation from the Engineer.

All construction activities are restricted to working areas designated on the drawings and/or demarcated and approved by the Engineer. Materials including spoil are stockpiled at designated areas.

Any areas disturbed outside of the demarcated areas or without permission of the Environmental (Control) Officer or Engineer will be subject to reinstatement and rehabilitation (as per PZ4 below) to the Contractor's cost.

In terms of pipeline projects, a general maximum working servitude width of 15 m will apply for machine excavation unless otherwise indicated in the project specification. A maximum width of 6 m will apply for manual excavation. These maximum working servitude widths may vary depending on the sensitivity of the environment, as detailed in the project specification.

In sensitive biophysical environments, for example wetlands, indigenous forest / bush, pristine natural grasslands, and sensitive social environments, as defined in the project specification or by the Environmental Control Officer, the working servitude is reduced as indicated in the project specification.

The working servitude shall contain all construction related activities, including, stockpiling of materials, placing of toilets, vehicle movement areas, etc.

Demarcation of linear projects (executed with machine excavation) and features (e.g. pipelines, access roads, etc.) will be by means of wooden stakes. These stakes will be at least 1 m high, painted white and placed at least every 15 m, on either side of the linear feature, in all areas where works are occurring. Progressive movement of stakes is required as linear projects progress.

In the case of a fenced site, the boundary fences will be denoted as the outermost limit of the site, but internal areas may be demarcated with stakes as above. The site boundaries of non-fenced, but 'contained' projects are to be delineated using stakes or temporary fencing, depending on the hazard which that site poses.

PZ3.3 SUPPLY OF WORKS FACILITIES

No water may be abstracted from water bodies for the purposes of construction, without approval of the Engineer in consultation with the Environmental Control Officer.

PZ3.4 CLEANLINESS

SABS 1200 AD, clause 5.2.4, second sentence, is to read: "No rubbish or debris shall be deposited below the full supply level (FSL)."

PZ3.5 SITE CLEARANCE

PZ3.5.1 Clearance

Spoil sites will require clearing and grubbing in addition to those areas in terms of SABS 1200 C 5.1.

The site shall only be cleared immediately prior to construction activities commencing i.e. at the last practicable stage.

No trees or indigenous shrubs may be removed without the prior permission of the Environmental (Control) Officer, unless in keeping with the final site reinstatement and rehabilitation plan.

PZ3.5.2 Disposal of materials

Material obtained from clearing and grubbing operations shall be disposed of at appropriate municipal disposal facilities. They are not to be disposed of as per Paragraph 1 of Sub-clause 3.1 of SABS 1200 C.

Wood obtained from clearing and grubbing operation remains the property of the landowner/ community and must be stacked at sites designated by relevant person. The Contractor will be required to remove and dispose of any wood from site at a designated site for vegetation disposal, should the landowner/ community not require it.

All tree trunks and branches of diameter greater than 50mm are to be cut into lengths not exceeding 2400mm.

Brush wood (i.e. < 50mm diameter) is to be disposed of, or utilised as specified in the project specification or upon instruction of the Engineer.

PZ3.5.3 Conservation of topsoil

The Contractor is required to strip topsoil (as defined in this specification) together with grass, groundcover and sedges from all areas where permanent or temporary structures are located, construction related activities occur, and access roads are to be constructed, etc. The depth to which topsoil will be stripped shall be 200mm unless stated otherwise in the project specification.

Topsoil is to be handled twice only - once to strip and stockpile, and secondly to replace, level, shape and scarify.

Topsoil is to be replaced along the contour.

Topsoil is to be replaced by direct return (i.e. replaced immediately on the area where construction is complete), rather than stockpiling it for extended periods. This is feasible for progressive construction (e.g. pipelines), but not necessarily so for reservoirs, site establishments, dams, etc.

Topsoil stockpiles are not to exceed 2 m in height.

Topsoil stockpiles are to be maintained in a weed free condition (i.e. no 'broad-leafed' plants regarded as weeds in terms of the Conservation of Agricultural Resources Act No 43 of 1989, or those plants regarded as a 'general nuisance in the area' are to be growing on the stockpiles). The Environmental Control Officer will provide guidance as to which plants are weeds and require removal.

The stockpiles are not to be contaminated with sub-soil, or any other waste material.

Topsoil may not be compacted in any way, nor may any object be placed or stockpiled on it.

Topsoil may not be compacted in any way, nor may any object be placed or stockpiled on it.

Topsoil which is to be stockpiled for periods exceeding 4 months is to be vegetated. In summer a mixture of *Eragrostis tef* (Teff) and *Eragrostis curvula* (Weeping Lovegrass) (ratio 1:2) is to be applied at an application rate of 6 kg/ha, unless otherwise instructed in the project specification.

In winter, a mixture of *Lolium multiflorum* (Annual/Italian Rye grass) and *Eragrostis curvula* (Weeping Lovegrass) (ratio 1:1) is to be applied at an application rate of 6kg/ha (see PZ4 5.3 for sowing times), unless otherwise instructed in the project specification. Fertiliser is to be applied as per PZ4 5.2.

PZ3.5.4 Cutting of trees

Any tree branches which require removal are to be properly pruned and sealant applied to the cut surface, if required.

The Contractor's attention is drawn to Sub-clause 5.2.3.3 of SABS 1200 C with respect to work in indigenous forests.

Any indigenous trees or bush which require removal in terms of the project, and which have not been identified in the project specification or EMP, are to be timeously indicated to the Environmental Officer prior to work affecting them.

PZ3.5.5 Landscape Preservation and Conservation of Flora

Notwithstanding Clause 5.7 of SABS 1200 C, the Contractor will be required to transplant designated plants to alternative locations as specified in the project specification or identified by the Environmental Control Officer, upon the instruction of the Engineer.

Transplanting shall be undertaken by employing the following method:

Removal

- Mark the orientation of the tree/shrub (for example, the north-facing side of the trunk indicated by a small arrow made with indelible ink) trunk. Do not scratch a mark on the surface of the trunk;
- Delineate a circle from the trunk with a radius equivalent to the dripline of the tree, or as indicated by the Environmental Control Officer on site;
- Excavate the tree with an intact rootball.

Replanting

- A hole 500mm larger in diameter than the anticipated rootball must be prepared in advance of the tree removal in order that the tree can be replanted immediately;
- The tree must be positioned as per its original orientation;
- A planting method known as 'puddling' must be employed. This method involves the addition of soil and water simultaneously to expels air from the planting hole. Place the tree in its new hole, making sure the top surface of the rootball is level with the ground level. Place a hose pipe in the hole and leave it running whilst extra soil is added around the rootball;
- 'Compact' the tree in the hole and attach tree stays for stabilisation.

Compensatory planting of species may be required should transplantation not be feasible, as indicated in the project specification or upon instruction of the Engineer.

PZ3.6 EARTHWORKS

PSZ3.6.1 Backfill material

With reference to SABS 1200 DB sub-clause 3.5, no material stripped or excavated which is classed, in terms of this specification, as topsoil, may be used as backfill in any excavation.

PZ3.6.2 Excavation and backfilling

During excavation 'conservation of topsoil', as specified in PZ3 5.3 above will apply.

Excavated material is to be stockpiled along a pipeline trench within the working servitude, unless otherwise authorised.

Surplus excavated soft, intermediate and hard rock material shall not be disposed of along the pipeline trench as indicated in SABS 1200 DB sub-clause 5.6.3 and 5.6.4, but shall be removed to a spoil site (see PZ3.15 below) designated during the project if applicable, or agreed by the Engineer in conjunction with the Environmental Control Officer and Project Manager.

In certain cases, for example to help stabilise the disturbed area or to reinstate the natural aesthetics of an area, excess excavated intermediate and hard material may be disposed of in a designated manner along a pipeline trench, as indicated by the Environmental Control Officer and Project Manager, or in the project specification. In this case, rock material shall not exceed 250mm in maximum dimension (see PZ4 2.1).

In terms of SABS 1200 DB 5.6.5 and SABS 1200 LB 3.4.2, deficiency of backfill material shall not be made up by excavation within the free haul distance of 0.5km of site, without the prior approval of the Engineer of the source of the material. Where backfill material is deficient, it should ideally be made up by importation from an approved borrow pit (i.e. one which operates within the ambient of an EMPR.) (See also PZ3 14 below).

The Contractor will backfill in accordance with the requirements of progressive reinstatement.

The maximum length of open trench shall be specified in the project specification.

PZ3.7 SAFETY

All works which may pose a hazard to humans and animals are to be adequately protected and appropriate warning signs erected. The Contractor's attention is drawn to SABS 1200 D section 5.1 in this regard.

With reference to SABS 1200 D 5.1.1.3, where blasting is required in terms of the project, the Contractor will ensure that all structures in the vicinity that could be affected by the activity will be inspected and their condition photographically recorded (as necessary), prior to blasting.

Notice of intent to blast is to be provided to landowners timeously.

Speed limits, appropriate to the vehicle driven, are to be observed at all times on access roads. Operators and drivers are to ensure that they limit their potential to endanger humans and animals at all times, by observing strict safety precautions.

PZ3.8 PLANT

PZ3.8.1 Silencing of plant

With reference to SABS 1200 A amend: "built up areas": to read as "all areas within audible distance of residents (albeit urban, peri-urban or rural areas)."

Appropriate directional and intensity settings are to be maintained on all hooters and sirens.

Silencer units on equipment and vehicles are to be maintained in good working order.

Construction activities are to be confined to normal working hours (07h30 - 17h00) Mondays to Saturdays, except for the activities designated to be carried out at night.

PZ3.8.2 Appropriate use of plant

The Contractor will at all times use plant which is appropriate to the task in order to minimise the extent of damage to the environment.

PZ3.9 DEALING WITH WATER ON WORKS

PZ3.9.1 Disinfection of Potable Water Infrastructure

Disinfection water is to be neutralised before release of this water to the environment.

PZ3.9.2 Discharge of water from site

Any water which is discharged from site is to comply with the relevant Water Quality Guidelines implemented by DWAF.

Water discharged to the stormwater / sewer system may only be done so with the permission of the relevant local authority.

PZ3.10 CONTROL OF EROSION

Surface erosion protection measures will be required to prevent erosion where slopes are steeper than 1:8 on all soil types.

Erosion protection measures required may include all or some of the below, as specified in the project specification or upon instruction of the Engineer in conjunction with the Environmental (Control) Officer:

- use of groundcover or grass
- construction of cut off berms (earth and/or rockpack) - these are to be angled across the contour and normally would approximate an angle of 30o from the bisector of the contour.
- placing of brush wood on bare surface;
- pegging of wattle trunks or branches along the contour;
- hard landscaping, e.g. use of Loffelstein walls, ground anchors, gabions etc.

Scour chambers are to be fitted with energy dissipaters, or the jet of water directed onto a protected (i.e. grouted stone pitching/ rock pack/ reno mattress) area to dissipate water velocity and to control and prevent erosion.

Storm water drainage measures might be required on site to control runoff and prevent erosion.

PZ3.11 CONTROL OF POLLUTION

No waste in a solid, liquid or gaseous state shall be emitted from or spilled on the site without the approval of the Engineer.

No mixed concrete shall be deposited directly onto the ground prior to placing. A board or other suitable platform is to be provided onto which the mixed concrete can be deposited whilst it awaits placing.

Excess concrete from mixing shall be deposited in a designated area awaiting removal to an approved landfill site.

The Contractor will contain wash water from cement mixing operations, by directing the water into a sump for collection. The material contained in the sump will be removed to an appropriate landfill site. No concrete rubble shall be present at the site.

Liquid wastes will not be disposed of to storm water drains. They may be disposed of to sewer only if permitted by (local council) legislation.

In the event of pollution of a water body (including sediment loading), the Contractor will provide alternative water supply to users of that water body until the quality of the water body is restored to its previous unpolluted state. For the sake of this clause, pollution is deemed to be a state which is substandard to the normal quality of the water body, but is not necessarily in contravention of the South African Water Quality guideline standards for a prescribed activity.

Any ancillary damages resulting from pollution of a water body will be repaired / remediated at the Contractor's cost.

Where, due to construction requirements, pollution of a water body may potentially occur, the Contractor is to ensure adequate measures (e.g. attenuation/ settlement dams / oil absorbent products) are in place to prevent pollution. A method statement is to be provided to this effect (see PZ3 1).

PZ3.12 CONTROL OF FIRE

The Contractor will ensure he has the necessary firefighting equipment on site in terms of SABS 1200. This will include at least rubber beaters when working in 'veld' areas, and at least one fire extinguisher of the appropriate type when welding activities are undertaken, irrespective of the site.

PZ3.13 USE AND MAINTENANCE OF ACCESS FACILITIES

PZ3.13.1 Responsibility

The Project Manager [not the Contractor (SABS 1200 AD 5.3.1)] will be responsible for obtaining permission for temporary and permanent rights of way over all private property affected by project activities.

The Project Manager will ensure that the Contractor has kept a photographic record of all access facilities and that these are reinstated to a state not worse than upon commencement of the project and to the satisfaction of the landowner (not withstanding that the project's objective is not to upgrade landowners' access roads).

PZ3.13.2 Fencing

Temporary fencing is to consist of 1.2 m bonnox fencing, or similar, suitably tensioned and supported on 1.8 m fencing standards at 3 m intervals, with all necessary straining posts and stays. All temporary fencing as indicated by the Engineer is removed on completion of the contract.

PZ3.14 BORROW PITS

Where the Contractor is required to import material, this shall be from commercial sources or borrow areas specified in the project specification.

The Contractor may source material from alternative borrow pits provided: the site location; method of winning material and reinstatement and rehabilitation are environmentally acceptable and approved by the Environmental Control Officer.

In this regard, the Contractor shall give the Environmental Control Officer in writing, 30 days prior to opening up alternative borrow pits the following information for acceptance:

- quantities of borrow material required;
- method statement for excavation of material including depth and extent of excavation;
- anticipated 'active life' of the borrow area;
- proposal for reinstatement and rehabilitation of borrow area, including final profile;
- written approval from the landowner/ relevant authority that material may be removed from their land subject to their stated conditions, requirements, and royalties, and if the proposal is acceptable to the Environmental Control Officer.

Development and rehabilitation of borrow pit areas are likely to include the following activities (but these must not be regarded as exhaustive):

- Stripping and stockpiling of topsoil as per PZ3 5.3 of this specification;
- Removal (to nominal depth of 500mm) and stockpiling of sub-soil;
- Infill of borrow pit with spoil material;
- Contouring of borrow pit to approximate natural topography and/ or reduce erosion impacts on the site;
- Placement of excavated subsoil over spoil material;
- Placement of stripped topsoil on subsoil;
- Grassing of topsoil in terms of clause PZ4 4 of this specification.

The Contractor is to familiarise himself with the requirements of the Minerals Act No 50 of 1991 in terms of borrow pit development, and the requirements of the EMPR, as applicable.

PZ3.15 SPOIL SITES

Where the Contractor is required to spoil material, spoil sites must be identified which are environmentally acceptable and approved by the ECO, unless spoil site areas have been identified in the project specification, in which case these will be the designated spoil sites.

If no spoil sites have been previously identified together with reinstatement and rehabilitation criteria, the Contractor is to provide the following information to the ECO at least 30 days prior to requiring sites to spoil material:

- the location, description of and access to alternative sites identified in order that they may be assessed;
- the quantity of material to be spoiled;
- the type of material to be spoiled (i.e. blast rock/ excavated rock/ soft shale/ subsoil etc.);
- the proposed method of spoiling;
- the proposed reinstatement and rehabilitation plan including final profile;
- written approval from the landowner/ relevant authority that material may be spoilt on land subject to their stated conditions and requirements and if the proposal is acceptable to the ECO.

Development and rehabilitation of spoil areas are likely to include the following activities (but these must not be regarded as exhaustive):

- Stripping and stockpiling of topsoil as per PZ3 5.3 of this specification;
- Removal (to nominal depth of 500mm) and stockpiling of sub-soil;
- Placement of spoil material;
- Contouring of spoil site to approximate natural topography and/ or reduce erosion impacts on the site;
- Placement of excavated subsoil over spoil material;
- Placement of stripped topsoil on subsoil;

Grassing of topsoil in terms of clause PZ4 4 of this specification.

PZ3.16 NUISANCE

PZ3.16.1 Dust

At all times the Contractor shall control dust on the site, access roads, borrow pits and spoil dumps with water, chemical soil stabilisers or temporary surfacing as specified in the project specification or upon instruction of the Engineer.

Dust control shall be sufficient so as not to have significant impacts in terms of the biophysical and social environments. These impacts include visual pollution, decreased safety due to reduced visibility, health aspects, and ecological impacts due to dust particle accumulation.

On gravel or earth roads, vehicle speeds may not exceed 30km per hour.

PZ3.16.2 Noise

The operational layout of the construction site is to be designed to control and reduce noise from source (see clause PZ2 1).

Machinery and vehicle silencer units are to be maintained in good working order. Offending machinery and /or vehicles will be banned from use on site until they have been repaired.

Construction activities generating output levels of 85 dB(A) or more (excessively noisy), in residential areas, are to be confined to working hours (08h00 - 17h00) Mondays to Fridays only.

'Normal' or 'noisy' working hours may only be extended with the prior written approval of the Project Manager, who has been notified, at least 7 days in advance, of the impending work requiring extension. The Project Manager will ensure that the neighbours are timeously forewarned of imminent noisy activities.

Should community complaints be received with regard to noise generation, the Contractor will, at the discretion of the Project Manager and Environmental Control Officer, provide an independent and registered noise monitor to undertake a survey of noise output levels from site, and implement measures to reduce noise to legislated levels.

PZ3.16.3 Visual

All site establishment components, as well as equipment, will be positioned to limit visual intrusion to neighbours (see clause PZ2 1 above).

The type and colour of roofing and cladding materials are to be selected to reduce reflection.

Security lighting (both temporary and permanent) and lighting required for specific works activities must be placed such that it is not a nuisance to residents and the general public.

PZ3.16.4 Interference with neighbours and public

No construction staff may approach site neighbours, for whatever reason, without the knowledge and permission of the Project Manager.

Complaints from neighbours and public with regard to interference from contract staff will be regarded in a serious light, and the offender(s) may be subject to disciplinary action.

PZ3.16.5 Disruption of Services

Disruption of services, e.g. road access, water and electricity, must be kept to a minimum at all times.

Where service disruption is unavoidable, the Contractor is to advise the Project Manager (at least 7 days in advance), who in turn will timeously warn the affected parties.

PZ3.17 SPECIAL ENVIRONMENTS

PZ3.17.1 Wetlands

Pipeline trenches which traverse wetlands shall be constructed as specified in the project specification.

The Contractor will submit a method statement for work in wetland areas as per PZ3 1.1

Construction may not permanently alter the surface or subsurface flow of water through the wetland.

The Contractor shall submit a method statement for review at least 14 days prior to commencing construction in a wetland.

The Contractor will remove all wetland vegetation with their root ball intact. This vegetation is to be kept moist at all times. It is to be placed in the shade and covered with moistened hessian cloth until replanting, which is to be undertaken immediately surface reinstatement is complete.

No construction materials may be stockpiled in any wetland areas.

The pre-construction profile of the wetland shall be returned to one similar as before construction, with no created "ridge or channel" features present.

PZ4.1 HOUSEKEEPING

All areas are to be cleared of rubble associated with construction. This includes the removal of surplus materials, excavation and disposal of consolidated waste concrete and concrete wash water, litter, etc.

All soil contaminated by hydrocarbons, for example from leaking machines, refuelling spills etc., is to be excavated to the depth of contaminant penetration, placed in 200 litre drums and removed to an appropriate landfill site.

PZ4.2 FINISHING

PZ4.2.1 Final Grading

Final levels of all disturbed areas are, where feasible in terms of the project requirement, to be consistent with the natural topography of the area.

In certain instances, it will be acceptable to reinstate rock onto a works area (e.g. pipeline servitude), provided that that rock does not exceed 250mm in maximum dimension and is placed in a manner consistent with the natural surrounds as indicated by the Environmental Control Officer and Project Manager.

All drainage lines affected by construction are to be reinstated to approximate their original profile. Where this is not feasible due to technical constraints, the profile is to be agreed upon by the Environmental Control Officer and Project Manager.

All compacted (disturbed) areas (including stockpile areas) are to be ripped (along contour) to a depth of 150mm prior to the replacement of topsoil.

PZ4.2.2 Topsoiling

Topsoil is to be replaced to a minimum depth of 100mm.

Topsoil is not to be compacted, but once replaced is to be scarified (to a depth of 50mm) consistent with the natural contour.

If insufficient topsoil is available, subsoil or similar material may be used that may be a suitable substrate after addition of soil improving substances e.g. compost, pH rectifiers (lime or gypsum) etc. Soil testing may be required at an approved facility.

PZ4.5.3 Planting times

Summer (includes Spring) is considered to be between the 1 September and 28 (29) February.

Winter (includes Autumn) is considered to be between 1 March and 31 August.

Re-grassing will be undertaken (as far as possible) in summer as germination and establishment of grasses is most effective, assuming reasonable spring rains.

Vegetation re-establishment is likely in many cases to be held off until this suitable growing season.

Hydroseeding with a winter mix will only be specified where regrassing is urgently required and cannot wait until the summer season. In this case irrigation will be required as per PZ4 5.4 below.

PZ4.5.4 Establishment and maintenance

During summer, 25mm of irrigation shall be applied each week until reasonable (60%) ground cover has been obtained.

During winter (where annual rye grass is specified) 15mm of irrigation shall be applied each week until reasonable (60%) ground cover has been obtained.

If rapid establishment is required, additional watering may be necessary as specified in the project specification

The amount of irrigation to be applied will make up the difference between rainfall recorded on site and the minimum requirement.

PZ4.5.5 Grass Seed Selection and Application Rates

The specific seed selection and application rates for each of the defined areas are covered separately, as follows.

PZ4.5.5.1 Coastal area

Summer mix (1 September - 28 February)

Grass species	Common name	General application rate (kg/ha)
Eragrostis tef	Teff	5
Eragrostis curvula	Weeping lovegrass	10
Chloris gayana	Rhodes grass	10
Digitaria eriantha	Smuts' fingergrass	5
Total		30

Winter mix (1 March - 31 August)

Grass species	Common name	General application rate (kg/ha)
Lolium multiflorum cultivar - Midmar	Annual/Italian rye grass	10
Eragrostis curvula	Weeping lovegrass	10
Chloris gayana	Rhodes grass	5
Total		25

PZ4.5.5.2 Coastal hinterland.**Summer mix (1 September - 28 February)**

Grass species	Common name	General application rate (kg/ha)
Eragrostis tef	Teff	5
Eragrostis curvula	Weeping lovegrass	10
Chloris gayana	Rhodes grass	10
Cenchrus ciliaris	Blue buffalo grass	2
Cynodon dactylon	Couch/KWeek/Star grass	10
Total		37

Winter mix (1 March - 31 August)

Grass species	Common name	General application rate (kg/ha)
Lolium multiflorum cultivar – Midmar	Annual/Italian rye grass	10
Eragrostis curvula	Weeping lovegrass	10
Chloris gayana	Rhodes grass	5
Cenchrus ciliaris	Blue buffalo grass	2
Cynodon dactylon	Couch/KWeek/Star grass	3
Total		30

PZ4.5.5.3 Midlands area**Summer mix (1 September - 28 February)**

Grass species	Common name	General application rate (kg/ha)
Eragrostis tef	Teff	4
Eragrostis curvula	Weeping lovegrass	10
Chloris gayana	Rhodes grass	10
Digitaria eriantha	Smuts' fingergrass	2
Cynodon dactylon	Couch/KWeek/Star grass	2
Paspalum notatum	Lawn paspalum	2
Total		30

Winter mix (1 March - 31 August)

Grass species	Common name	General application rate (kg/ha)
Lolium multiflorum cultivar - Midmar	Annual/Italian rye grass	10
Eragrostis curvula	Weeping lovegrass	10
Chloris gayana	Rhodes grass	5
Paspalum notatum	Lawn paspalum	2.5
Total		27.5

PZ4.5.6 SEEDING METHODS

Two methods are recommended, namely hydroseeding and hand-broadcasting. The required method shall be as specified in the project specification.

All seed supplied should be labelled in accordance with the Government Seed Act No. 20 of 1961 and the Contractor shall be required to produce such certification, if requested by the Engineer.

PZ4.5.6.1 HYDROSEEDING

The Grassing Contractor shall be conversant with this method.

Cellulose pulp (consisting of either wood shavings, shredded straw, shredded paper or cotton waste) shall be added to the mix to be applied at a rate of 250 kg/ha.

In addition to the cellulose pulp, compost (consisting of either chicken litter, kraal manure, sugar cane filter cake or mushroom compost) shall be incorporated at a rate of 5m³/ha (□100 X 50kg fertiliser bags/ha).

PZ4.5.6.2 HAND-BROADCASTING

Fertiliser, at the appropriate rate, is to be distributed by hand in a manner to ensure that there is an even spread of fertiliser over the site. This is to be done prior to seeding.

The seed mix is to be weighed and made up in an appropriately large container which shall be stirred to ensure no settling out of the grass seed, and a uniform distribution of the different types of seed.

The seed is to be distributed by hand in a regular grid broadcasting manner to ensure that there is an even spread of grass over the entire site.

The area seeded is to be raked over once the seed and fertiliser have been applied to incorporate these elements into the topsoil.

PZ4.5.7 GENERAL

Where there is a possibility of neighbourhood livestock grazing a rehabilitated site these should, as far as is practicable, be excluded for the first 3 months of re-grassing.

PZ4.6LANDSCAPING

Landscaping of the site may be required as indicated in the project specification.

Compensatory planting of trees or shrubs may be required should the transplantation of such not be successful in terms of PZ3 5.5 or due to plants removed in terms of PZ3 5.4

Planting of trees will be in accordance with the following method:

- All tree holes shall be square in plan;
- Tree holes shall be a minimum of 600mm by 600mm square by 700mm deep;
- Holes are to be backfilled with excavated soil in a ratio of 3:1 with compost. The compost is to be weed free and have been composted at temperatures in the order of 65oC. Where possible, any available topsoil should be placed in the hole at the level where the tree rootball will rest. A handful (half-a-cup) of each Superphosphate and 2.3.2 should be mixed into the soil-compost mix;
- The tree holes are to be backfilled to the point where the tree and its rootball are in the desired position. The tree is to be removed temporarily and the hole filled with water and allowed to drain away. This operation of watering and draining should be repeated at least four times in order that the surrounding ground and hole are thoroughly moist. The tree is then to be replaced and the remaining soil replaced;
- All trees shall be tied (using a tree tie) to a suitable timber stake planted in the ground to a depth of at least 500mm. The stake shall have a minimum diameter of 35mm and shall be at least 300mm higher than the planted tree;
- Water retaining basins of at least 500mm diameters are to be formed around each tree;
- The Contractor is to apply at least 10 litres of water per tree per fortnight for a period of at least 3 months.

The planting of shrubs will be in accordance with the tree planting method with the exception that the holes are to be a minimum of 400mm by 400mm square by 500mm deep, and that the tree stakes and ties are not required.

PZ4.7 ALIEN PLANT CONTROL

All sites disturbed by construction activities will be monitored for colonisation by invasive alien plant species.

The Environmental Control Officer will identify those plants which require removal during both the construction and maintenance period, for the Contractor's action.

The Environmental Control Officer will provide advice as to effective methods of removal and control of alien plant species.

PUBLIC COMPLAINTS REGISTER

COMPLAINANTS NAME	DESIGNATION/ AFFILIATION	REASON FOR COMPLAINT	ACTION TAKEN	ACTION BY	ACTION BY DATE	ACHIEVED BY DATE	DATE REFERRED TO NW environmental control officer

HARRY GWALA DISTRICT MUNICIPALITY

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS

CONTRACT No. HGDM 813/HGDM/2022

DATE	COMPLAINANTS NAME	DESIGNATION/ AFFILIATION	REASON FOR COMPLAINT
ACTION TAKEN	ACTION BY	ACTION BY DATE	ACHIEVED BY DATE
DATE REFERRED TO	NW environmental control officer		

MONITORING OF COMPLIANCE WITH ENVIRONMENTAL SPECIFICATIONS

PROJECT NAME:

CONTRACT NUMBER:

PROJECT MANAGER:

ENGINEER'S REPRESENTATIVE / SUPERVISOR:

CONTRACTOR:

CONTRACT PERIOD:
.....
(including start and completion dates):

PERIOD COVERED:

REPORT PREPARED BY:

Signature

ENVIRONMENTAL CONTROL OFFICER REPORT

PROJECT NAME: CONTRACT N°

DATE OF SITE INSPECTIONS DURING REPORTING PERIOD:

Specification Breach Responsible	Spec. No. Action Taken	Remedial Action Recommended	Due Date	Authority
----------------------------------	------------------------	-----------------------------	----------	-----------

2 PUBLIC COMPLAINTS

DATE	COMPLAINANTS NAME	DESIGNATION/ AFFILIATION	REASON FOR COMPLAINT	ACTION TAKEN	ACTION BY	ACTION BY DATE	ACHIEVED BY DATE	DATE REFERRED TO NW environmental control officer

GOOD PERFORMANCE REPORT

List any aspects of the Contract in which the Contractor is performing well and beyond that which is required in terms of the specification

PE: THE CLIENT'S PRECONSTRUCTION HEALTH AND SAFETY PLAN

HARRY GWALA DISTRICT MUNICIPALITY

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

CONTRACT No. HGDM 813/HGDM/2023

PROJECT SPECIFIC OCCUPATIONAL HEALTH AND SAFETY SPECIFICATION

FOR

CREIGHTON BULK WATER SUPPLY SCHEME

CONTRACT No. HGDM 813/HGDM/2023

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

MANAGED ON BEHALF OF



**HARRY GWALA DISTRICT MUNICIPALITY
(THE “CLIENT”)**

KEY ROLE PLAYERS

CLIENT

Principal Agent:

Civil Engineer

Quantity Surveyor

Land Surveyor

Mechanical Engineer

Environmental Control Officer

Health and Safety Agent

PRINCIPAL CONTRACTOR

Contracts Manager

Site Agent

H&S Officer

Other:

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ANNEXURE I:	MANDATARY AGREEMENT

1. LIST OF ABBREVIATIONS

AIA	Approved Inspection Authority
BoQ	Bill of Quantities
CC	Compensation Commissioner
CR	Construction Regulations
DMR	Driven Machinery Regulations
DoL	Department of Labour
FEMA	Federated Employers Mutual Association
GAR	General Administration Regulations
GSR	General Safety Regulations
HCSR	Hazardous Chemical Substances Regulations
HIRA	Hazard Identification Risk Assessment
H&S	Health and Safety
ER	Engineer's Representative
LI	Labour Intensive
OH	Occupational Health
OHS	Occupational Health and Safety Act No. 85 of 1993 (as amended)
OHSS	Occupational Health and Safety Specification
PSHSS	Project Specific Health and Safety Specification
PC	Principal Contractor
PPE	Personal Protective Equipment
SANS	South African National Standards (Authority)
MSDS	Material Safety Data Sheet
SMME	Small, Micro, Medium Enterprise
SWP	Safe Work Procedure

2. DEFINITIONS

The definitions used will be those set out in the Construction Regulations, Gazette No 37305 of 7 February 2014 which are hereunder further emphasised with the following additions:

Client: Harry Gwala District Municipality

Construction Site:

Means a work place where construction work is being performed

Construction Supervisor:

Means a competent person responsible for supervising construction activities on a construction site

Designer: Means a competent person appointed by the Client as Agent to design, supervise and monitor construction on their behalf.

Fall Risk: Means any potential exposure to falling either from, off or into

Hazard: Source of or exposure to danger

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

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

Health and Safety Agent:

Means any competent person who acts as a representative for the Client in managing the projects health and safety and who is registered with the South African Council for the Project and Construction Management Profession (SACPCMP).

Health and Safety Plan:

Means a site, activity or project specific documented plan in accordance with the Clients Health and Safety Specification.

Induction Training:

Means once off introductory training on general health and safety issues given to all employees and visitors to the site before commencement of work on site.

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

Regulation/s:

Shall mean the relevant regulation/s promulgated in terms of the Occupational Health and Safety Act, No. 85 of 1993.

Temporary Works:

Means any falsework, formwork, support work, scaffold, shoring or other temporary structure designed to provide support or means of access during construction work

The Act: Means, unless the context indicates otherwise, the Occupational Health and Safety Act, No. 85 of 1993 and Regulations promulgated thereunder, as amended.

3. KEY REFERENCES

The following key references apply to the specifications:

- Occupational Health and Safety Act No. 85 of 1993 and Regulations (as amended)
- Compensation for Injury and Occupational Diseases Act No. 100 of 1993 (as amended)
- SANS Code 1921-6
- SANS Code 1200

4. INTRODUCTION

Harry Gwala District Municipality is responsible for the provision of adequate and reliable potable water and sanitation services within the district and takes cognizance that its current scope of works pose inherent risks to the health and safety of its agents and members of the public.

Each year fatalities, serious injuries and poor attitudes of Contractors mar the reputation of the Construction Industry. Harry Gwala District Municipality has a responsibility to limit its risk by ensuring a zero tolerance and better practice approach to Contractors and those affiliated to a particular project. Thus a high premium is placed on the health and safety (H&S) of Harry Gwala District Municipality stakeholders, which include its employees, professional service providers, public and its physical assets. The responsibilities that the Harry Gwala District Municipality and relevant stakeholders have toward its employees are captured in, but not limited to this document. The responsibilities stem from both moral, civil and a variety of legal obligations. The Principal Contractor is to take due cognizance of the above statement.

Harry Gwala District Municipality, as the Client and where there is an appointed H&S Agent on its behalf, shall provide a project specific Health & Safety Specification (PSHSS) for the project and provide the Principal Contractor/s making a bid or appointed to perform construction work for the project, or parts thereof.

4.1 Purpose of the Project Specific Health and Safety Specification (PSHSS)

The PSHSS is a performance specification to ensure that the Client and any bodies that enter into formal agreements with the Client viz. Agents, Professional Service Consultants (Engineers, Quantity Surveyors and Land Surveyors), Principal Contractors and Contractors achieve an acceptable level of OHS performance. No advice, approval of any document required by the PSHSS, such as hazard identification and risk assessments, or any other form of communication from the Client shall be construed as acceptance by the Client of any obligation that absolves the Principal Contractor from achieving the required level of performance and compliance with legal requirements. Furthermore, there is no acceptance of liability by the Client, which may result from the Principal Contractor failing to comply with the PSHSS, i.e. the Principal Contractor remains responsible for achieving the required performance levels.

A Mandatory Agreement in terms of Section 37.2 of the OHSA will be signed between parties prior to any works commencing.

The PSHSS highlights the aspects to be implemented over and above the minimum requirements of current legislation. Requirements may be changed should new risks or issues are identified that could not have been foreseen during the design phase of the project, or during the construction phase. Any new legislation or standards (legislated, or determined by Harry Gwala District Municipality) that are promulgated or accepted during the contract will automatically be applied.

Environmental management shall receive due attention as per the requirements of the Environmental Control Officer (ECO), but will be managed by the ECO directly.

4.2 Implementation of the Project Specific Occupational Health and Safety Specifications (PSHSS)

The project specific H&S specification (PSHSS) forms an integral part of the Contract, and PCs are required to make it an integral part of their Contracts with Contractors and Suppliers. A PSHSS will be available for each level of Contract and Contractor and must be complied with.

This specification must be read in conjunction with the OHSA, Regulations (as amended) and any other standards relating to work being done and ensure compliance thereto. The information relative to the scope of the project, the works etc. are detailed in the tender, are to be considered when developing the H&S plan and associated documentation.

The OHSA S.37.2 Mandatary Agreement must be fully completed by the PC, supplied by the Client. These documents shall be deemed to form part of the returnable Contract Documents.

No work may commence without written approval of the H&S plan by the H&S Agent, or the responsible person in the Harry Gwala District Municipality.

Should there be design changes, or change in the scope of works, an amended PSHSS may be issued. Where amended PSHSSs are issued, the PC will be required to ensure a resubmission of an amended H&S plan for approval. Further to this, the PC must ensure that similar information must be provided as it applies to the works to all their Contractors, within 5 working days following notification thereof. The H&S Agent will visit the project as deemed necessary by the Designer and the H&S Agent to ensure compliance and limit risk. All activities on the site and all appropriate documentation will be monitored and reported on to the Client and the Designer.

Non-conformances will be issued and penalties or work stoppage will be issued where appropriate. Communication between the H&S Agent and the PC will be through the Designer (or Client's responsible person) as determined at the commencement of the project.

4.3 Requirements at Tender Stage

Tenderers are required to submit a pre-tender H&S plan with their Tender submission.

The documentation submitted will be used to assess the competence of the tenderer, as required in the CRs, therefore the information submitted needs to be complete and as close as possible to the final product.

Adequate pricing for H&S is required, and the appropriate section in the BoQ is to be completed. Failure to do so could result in the Tender being regarded as non-responsive.

The PC shall ensure adequate information is submitted as supporting documentation with his completed Tender. Such information will be assessed against the criteria listed and a score provided to the Bid Award Committee (BAC) for consideration. Failure to provide such information could render the tender application non-responsive.

A project specific H&S Plan in response to this PSHSS will be subject to approval by the H&S Agent. This must include all supporting documentation as required to verify the H&S system:

- A declaration to the effect that he has the competence and necessary resources to carry out the work safely in compliance with the Occupational Health and Safety Act and its Regulations;
- A valid Letter of Good Standing;
- Detailed technical method statements for approval by the Designer and appropriate risk assessments and safe work procedures for approval by the H&S Agent or Client:
 - Site establishment including:
 - Clearing and grubbing;
 - Exposure of services, power, telecommunication etc.;
 - Arrangements for hoarding, traffic accommodation;
 - Excavating
 - An emergency plan indicating how and where emergencies will be handled
 - Working at heights
 - Appointments of the following: Construction Supervisor; Construction Health and Safety Officer; Risk Assessor: Fall Protection Plan Developer; First Aider.
 - An organogram of the site relationships showing at least the above appointments

Further method statements are to be submitted prior to, and during the project where changes or new work is required, and the approval of the Designer/Client is required before work on that aspect or activity can commence. The H&S Officer is to be included in production planning sessions/meetings to ensure that the appropriate risk assessments, safe work procedures and communication required are available and completed timeously. Penalties will be applied should this not be adhered to, and deemed a serious offence.

5. GENERAL REQUIREMENTS

5.1 Summary of Risks identified during Design

The intention of the summary of findings from the design risk assessment is to highlight the residual risks identified during the design phase. The summary of risks provided is to point the contractor towards some risks he may not be aware of during tendering stage and while developing his formal risk assessments for the project.

The design risks and the management thereof should be included in the Principal Contractors (PC) risk assessments. Where there are other Contractors appointed to do work, the PC is to ensure that Contractors include such information in their risk assessments.

The Contractor is herein advised that no other residual risks remain which the designers judged as significant and unusual other than those risks that a competent Contractor can reasonably be expected to know or deduce from the documents prepared for this project and supplied to them.

5.2 Specified Hazardous Chemical Substances

The following lists of products or substances are those which have been identified as likely to be used on the project. This list is not inclusive and other products may be considered. Where the PC is likely to supply the product as the product has not been specified, material safety data sheets (MSDSs) need to be considered prior to all selections.

PRODUCTS or SUBSTANCES	POTENTIAL HEALTH OR OTHER RISKS
Cement	<ul style="list-style-type: none"> • Hand mixing may occur, 50kg bags are an ergonomic risk from handling. • Pumping of concrete may produce extensive vibration, extended hours of work, and potential eye, skin and

PRODUCTS or SUBSTANCES	POTENTIAL HEALTH OR OTHER RISKS
	respiratory irritant from dust exposure, chromates.
Cement/Silica dust	Caused by cutting, grinding, sanding of any concrete/granite/tiled surface/masonry resulting in occupational respiratory health illness or disease
Petrol/diesel/lubricants	Potentially a fuel bowzer on site. Fire, spillage, fumes
Adhesives	Used as a bonding agent and may result in contact Dermatitis and occupational respiratory illness or disease from prolonged exposure
Plaster/mortar/screeds	Contact with products may result in Dermatitis and occupational respiratory illness or disease from prolonged exposure
Sealants/joint fillers	Contact with products may result in Dermatitis and occupational respiratory illness or disease from prolonged exposure
Welding fumes	Inhalation of fumes may result in occupational respiratory illness or disease from prolonged exposure
Lime	The product is classified an irritant, irritating the respiratory system, skin and risk of serious damage to eyes. In contrast to the powder itself, the product, when diluted with water, can produce severe skin damage in humans, (<i>alkaline burns</i>), especially if prolonged skin contacts takes place.
Paints	Contact with different paints may result in Dermatitis and occupational respiratory illness or disease from prolonged exposure

6. OCCUPATIONAL HEALTH & SAFETY MANAGEMENT

6.1 Structure and Organization of H&S Responsibilities

6.1.1 Notification of Commencement of Construction Work

The Client shall notify the Provincial Director of the Department of Labour (DoL) in writing, in the form of the Annexure 1 in the CRs for all projects requiring a work permit in terms of CR 3.

The PC who intends to carry out any construction work other than work noted in CR 3 shall notify the Provincial Director in writing in the form of the Annexure 2. This shall occur after the award of the contract, but before commencement of construction work. Proof of submission and/or receipt must be provided and kept in the H&S file. Work will not commence without the Notification being correctly completed and signed by the Client and proof of receipt by the Department of labour received. The Notification shall only be signed by the Client following the approval in writing by the H&S Agent, or the Client.

Where changes to the conditions given in the submission are required (i.e. Contractors, completion dates, increase in workers), a revised Annexure 1/2 must be submitted to the Department of Labour. The completion date is to include the defect and liability period. A copy of the notification form and any further submissions/correspondence must be kept in the H&S file.

6.1.2 Health and Safety Plan Framework

The H&S aspects related to the project outlined in the previous sections are to be taken into account when drawing up the H&S Plan. The PC is required to demonstrate competence by providing an H&S system that will address the requirements of the project.

The current legislative requirements, SANS codes and any other standards that may guide practice are to be taken into consideration. The following aspects must be addressed in the H&S Plan as they play a role in reducing the overall risk of a particular activity, or section of the project. The H&S Agent may from time to time request additions or systems as they relate to the works or legislative requirements at the time.

The PC is to prepare a site layout drawing to indicate at least the following:

- The positions of site offices of all Contractors, toilets, drinking water and worker rest areas;
- Indicate the positions of emergency personnel and equipment (fire, first aiders, first aid posts);
- Protection of plant and pedestrians, indicate parking, and
- Storage areas (materials and equipment, waste etc.)
- Access and egress to site for deliveries and intended temporary traffic management
- Emergency assembly point

Such layouts are to be updated regularly throughout the project.

6.1.3 Appointment of Competent Site Personnel

The CEO (OHSA S16.1) of the PC will take overall responsibility for the appointment of competent site staff for the duration of the project. Should the CEO not be personally involved in the project, the H&S responsibilities are to be delegated to the Contract Manager (OHSA 16.2). Knowledge and training in H&S is required, and certificates indicating H&S training as well as experience to be included in CVs.

All other legal appointments are to be made with relevance to the type of work required and kept current with the project programme. The construction team is to ensure the appointed H&S Officer is kept up to date with all planned activities, to ensure all H&S requirements are met.

All construction/technical method statements are to be generated by senior site personnel, and the appropriate risk assessments developed therefrom in conjunction with the H&S Officer.

The Occupational Health and Safety Plan shall include the following, but is not limited to the following key appointments:

6.1.4 Construction Supervision

Competent supervisors will be appointed to manage part or all of the works and have training and/or experience in the area of responsibility. All site supervisors must show evidence of appropriate training in H&S, and an understanding or training in areas of responsibility (i.e. risk assessments, method statements etc.).

Curriculum Vitae (CVs) are to be submitted for approval by the Designer, and/or Client. The Supervisor will be held responsible for the safety of working teams and subordinates, housekeeping and stacking and storage of materials.

6.1.5 Construction Health and Safety Officer

The PC will employ at least one competent, full-time or part time H&S Officer for the duration of the contract depending on the nature of the hazards on site and subsequent risks. The H&S Officer's CV is to be submitted for approval by the H&S Agent or the Client, at time of tender. The PC is to ensure adequate resources are provided in order to undertake all responsibilities (i.e. mobile phone, computer and internet access, vehicle etc.)

Qualifications shall include at least Grade 12, SAMTRAC/NEBOSH/Diploma in H&S qualifications or similar together with additional appropriate short courses (ie. Fall Protection Developer, Risk Assessor, Basic Firefighting and First Aider Level 1) with exposure to civil engineering and building that is appropriate given the level of project complexity and registration with SACPCMP. An in-depth knowledge of legislative requirements and the application thereof is required. The site supervisor may not act as the H&S Officer.

The H&S Officer/s will be held responsible for all H&S on the project.

- Senior site staff and supervision, Contractors are to follow systems, instructions etc. given by the H&S Officer at all times;
- No new workers or Contractors may commence work without approval or following the H&S plan as submitted, and
- No inductions of Contractor staff until the H&S documentation is approved by the H&S Officer.
- The H&S Officer/s may not be removed or replaced without the approval of the H&S Agent, nor may the site be left unattended for more than 1 day without adequate, competent cover.

A monthly report of all H&S activities and incidents is required by the end of the first week of each month, or at a date agreed to by the H&S Agent/Client and the H&S Officer. An example of the monthly report is attached as an *Annexure D*.

The H&S Officer will be responsible for collating the H&S documentation at the close out of the project in electronic format. A list of the typical aspects that should be provided is available as *Annexure B* to this document. The PC is to ensure that all Contractors documentation follows the same requirements and closed out H&S documentation must be completed and be available with the close out of the main contract.

Failure to do so will be considered a serious offence and penalties applied.

6.1.6 Traffic Safety

The H&S Officer will be responsible for ensuring that daily traffic management is adequately managed and additional care must be taken where workers and public interface.

No worker may be transported in, or on the rear of construction vehicles (bakkies included), or with plant and materials to, on, or from site. The number of passengers in any vehicle is limited to what is stated on the license disc. Vehicles used to transport workers to, from, or on site, shall have secure seats and be covered. No canopies may be used.

Tenderers must indicate in their OHS plans what type of transport is envisaged and how this will be managed.

Penalties will be issued for non-compliances noted.

6.1.7 Health and Safety Representatives and H&S meetings

H&S Representatives representing workers and Contractors are to be appointed following the startup of the project, irrespective of the number of workers on site. The appointed H&S Representatives are to be actively involved with H&S and will assist the H&S Officer and site management in meeting legislative duties.

The H&S Officer shall further ensure that H&S is discussed at all internal production or progress meetings. Issues arising from the H&S Agent audits are to be discussed, as well as all H&S related issues.

Minutes are to be kept for all H&S interventions and meetings. Failure to do so will be deemed to be a moderate offence.

6.1.8 Appointment of Competent Contractors

The Principal Contractor is to ensure compliance with the Clients minimum standards and all legislative requirements. The same H&S standards required of the PC are to be applied to all Contractors. An index of all Contractors and Suppliers is to be on file and kept updated at all times. The PC is to ensure there is sufficient funding for H&S compliance by each Contractor.

The following minimum aspects are applicable to any Contractor appointed:

- The H&S Officer is to ensure a Contractors appointment and approval of H&S documentation at least seven (7) working days prior to commencing work.
- No Contractor may work under the PCs Compensation registration number. If required the PC may assist SMMEs with their registration with the Compensation Commissioner. However, such Contractors will not be able to commence work until proof of registration or Letter of Good Standing has been received.
- No work may commence without Mandatary agreements between parties in place.

The following aspects are applicable to Suppliers or short-term works (surveying, repairs, servicing, deliveries etc). Cognisance is to be taken of the level of risk involved and the H&S Officer is to ensure the level of H&S documentation is appropriate:

- Mandatary agreements in place
- Letter of Good Standing
- Method statements and risk assessments
- Available information relative to:
 - Load testing and registers for cranes or lifting devices
 - Medical certificates of fitness
 - Material Safety data sheets (MSDSs)

Failure to provide written approval of H&S documentation will be considered a serious offense, and could result in aspects of, or all the activities being stopped, and penalties implemented.

7. GENERAL RISK MANAGEMENT

7.1 Health Risks and Medical Surveillance

The appropriate MSDSs are to be obtained for all products and used to develop the H&S documentation as they relate to the works. Many of the processes may be labour intensive and ergonomic risks are to be noted. All workers (including Contractors) are to be included in the medical surveillance programme.

Workers will be exposed to noise, dust, and physical risks from extended periods of work of a repetitive nature, materials specified and the general nature of the works.

All workers (including those of Contractors) are required to be in possession of a medical certificate of fitness prior to commencing work.

Full medical records are not to be placed in the H&S file. Given the potential health risks the following aspects are to be included in each medical surveillance intervention:

- Full medical, surgical and occupational history;
- Full physical examination of all systems; and
- Referral if required for the management of identified health issues that may affect the worker.

Specific testing for existing conditions and limitations relative to exposure could include, but are not limited to:

- Audiometry (hearing tests); and
- Any other tests identified as relevant from chemical or specifically identified risks of exposure

Failure to do so will be considered a serious offence.

7.2 Noise Risks

All plant from plant hire companies (suppliers) or that of the PC is to be compliant with the Noise Induced Hearing Loss Regulations. Plant identified that has not been tested and marked for noise emissions will result in having to be tested at the Contractors or PCs expense. Failure to do so within a reasonable time period will result in such plant being removed from site.

Audiometric testing of all workers is noted as required in the medical surveillance programme for all permanent workers prior to work commencing. Temporary labour working in identified noise areas will require testing if the noise levels are indicated on plant or through processes as greater than 85dB. Audiometry records are to be available in the H&S file.

Suitable SANS approved hearing protective equipment shall be issued and worn where noise levels are identified as equal to or greater than 85 dB.

Failure to do so will be considered a serious offence.

7.3 Emergency Procedures

A simple emergency plan and procedure that is appropriate to the risks is required prior to commencement on site. It is advised that the system should be simple and easy for any worker to follow. The plan may be adapted should new information or risks are identified.

The procedure shall detail the response plan in relation to the works, and include at least (*but are not limited to*) the following key elements:

- Appointment of a competent emergency response co-ordinator
 - Site Camp Fire;
 - Public injury, Motor vehicle accidents;
 - Falls from heights;
 - Serious injury to workers (medical or work-related); and
 - Any other major risks identified during risk assessments

The emergency plan is to ensure the inclusion of local service providers where possible. Such arrangements should be made with these persons prior to the commencement of the project. The general principals of emergency management are to be applied as it applies to the hierarchy of control and management.

7.4 First Aiders and First Aid Equipment

At least 1 first aider will be trained to Level 3. First aiders shall be available and accessible on site at all times, and be able to work as a team when responding to any emergency on the project.

Contractors are expected to ensure compliance and provide/manage their own first aiders and equipment. The number of First aiders will be determined by the complexity and exposed risks of the project, not numbers of workers

Appropriately stocked first aid kits are to be available at all times and to assure continual availability and access on site.

7.5 Fires and Emergency Management

The emergency plan is to include the risk of fire on site and related to any specific activities where gas, welding, cutting etc. occur.

Fire extinguishers will be appropriate for the risk and in sufficient numbers to deal with the type of fires that could occur. All mobile plant is to have fire extinguishers. Hot work permits are required for any such activities.

7.6 Incident Management and Compensation Claims

All incidents and accidents are to be investigated. All serious incidents involving any form of disabling injury or fatality are to be reported to the Designer /Client /H&S Agent immediately. This shall be confirmed in writing following the incident. Full details are to be included in each site meeting or when the Client visits site. A summary of incidents is to be included in the monthly report.

Failure to comply with emergency provisions will be considered a serious offence, and the operation or project may be stopped if deemed inadequate for the work at the time of assessment or site inspection.

7.7 Personal Protective Equipment (PPE) and Clothing

The PC is to provide a procedure as an addendum to indicate how PPE is managed within the Company.

The wearing of the identified SANS approved PPE at all times is non-negotiable. The PC shall ensure that all workers (Including Contractors) are issued with and shall wear:

- Hard hats;
- Protective footwear;
- Overalls that ensure worker visibility;
- Eye protection;
- Hearing protection;
- Reflective jackets (no bibs)
- Respiratory protection (minimum of FF2), and
- Any other necessary PPE identified from MSDSs and/or risk assessments.

Adequate quantities of PPE shall be available. This shall include necessary PPE for visitors. The procedure for managing PPE is to be in a formal procedure submitted with the H&S plan for approval.

Any person (*including Client, Designers etc.*) found on site without the necessary PPE will be removed from site until the PPE is supplied and worn.

Failure to comply will result in penalties being applied.

7.8 Occupational Health and Safety Signage

On-site H&S signage is required. Signage shall be posted up at fixed or temporary working areas, or other potential risk areas/operations. These signs shall be in accordance with the requirements of the General Safety Regulations or SANS requirements as amended. Signage is to be noted on the site drawings indicating where fixed/temporary signage is required.

Temporary signage is to include (*but not be limited to*) the following:

- 'Report to site office' / 'Warning: Construction Site – Keep out' or similar;
- 'Site office' (if relevant);
- 'hard hat area' or other PPE requirements noted;
- First aid box positions (*including vehicles*); and
- Fire extinguishers.

Signs shall be posted at areas of work on site indicating that a construction site is being entered and that persons should take note of H&S requirements.

Failure to comply will result in penalties being applied.

7.9 Induction of Employees and Visitors, General H&S Training

A simple, formal induction programme is to be submitted as an addendum for approval with the H&S plan. Inductions must be carried out for all workers and visitors (*including Client, Designers*) to the site.

Pre-task training is required to ensure workers are familiar with the risks and H&S measures of the work or tasks to be done. Such training is to be done at least daily. A record of inductions and pre-task training is to be kept in the H&S file.

Any person found on site without proof of induction will be removed from site until the proof is supplied and, a penalty issued per non-compliance.

7.10 Management of Plant and Equipment

Close control of plant and equipment is required, including that of Contractors.

Daily monitoring of all plant and equipment is required prior to commencing work. Full lists of hired and own plant are to be available at the H&S Agent's/Client audit. All daily inspection records are to be kept in the H&S file or Contractors where plant and equipment is brought onto site. Registers are not to be more than 1 week behind.

Only competent, medically fit plant operators are to be used. Medical certificates of fitness are required for all operators. Any plant or slings used to lift plant or material require annual load testing by an AIA, and all certificates must have the testers LMI/E number. Operators are to be adequately trained and certified to operate mobile cranes or crane trucks. Certificates and registers are to be placed in the H&S file.

Failure to do so will be considered a serious offence.

7.11 Excavations

A procedure for managing excavations is to be provided as an addendum to the H&S plan describing how excavations are to be managed.

Excavation method statements are to be approved by the Designer and associated risk assessments are required. Designs by competent persons are required where ground conditions are deemed to require shoring.

A competent person is to be appointed for managing all excavations. A permit system is to be available and used for all excavations. All equipment and ground conditions are to be checked daily and prior to work commencing.

Excavations should preferably not be open beyond what can be closed daily. Where excavations need to remain open, all excavations are to be properly protected. Adequate stakes with 1m high demarcation and berms/spoil are required to be a safe distance from the edge of the angle of repose. Danger tape may not be used to demarcate excavations. Cognisance is required of the surrounding area and increased levels of protection are required where work is in the vicinity of members of the public.

Work will be stopped, and penalties applied to any work in excavations that is not compliant.

7.12 Working at heights

A Fall Protection Plan (FPP) is to be available and supplied as an addendum to the H&S plan. The FPP must be appropriate for the project. Method statements, appropriate risk assessments, safe work procedures and training are to be available prior to work commencing.

Construction drawings shall be required for all temporary structures as they relate to the project. The drawings shall be accompanied by full calculations, design loads and any relevant test results as required by the SANS code and ensure adequate allowance for the development of appropriate documentation and training. All drawings are to be checked and signed by a competent structural engineer (registered with ECSA).

The focus for working at height shall include fall restraint systems where possible except during assembling or dismantling top components or where it is not deemed safe. The relevant SANS codes are to be applied as they apply to the works and the project, such as:

- SANS 10085
- SANS 50355
- SANS 50361
- SANS 50355

Should part of the works be contracted out, competent Contractors are to be appointed and submit documentation according to the project requirements. The PC is to note if such work is to be contracted to specialists in the H&S Plan. The plan is to be developed by and work managed by a competent person for the duration of the project. The following aspects must be included:

- The public are to be protected at all times by way of hoarding, barricading or fencing
- Notices to be posted
- Restrictions or stoppage when weather conditions are deemed hazardous
- Permit system for working at heights
- Prevention of falling tools or equipment
- Link to emergency plan regarding rescue
- All workers are to be in possession of valid certificates of fitness that extend for the duration of the works. Note the requirements in the section relating to medical surveillance.
- Registers and all relevant documentation are to be placed in the H&S file.

Work will be stopped, and penalties applied to any work at heights that is not compliant.

7.13 Cranes and lifting equipment

Should any form of lifting device or crane (fixed or mobile) be used during the project for deliveries, moving of supplies or equipment, the appropriate documentation must be made available. Method statements, risk assessments, safe work procedures and training are to be available prior to work commencing. A procedure for managing loads and lifting must be made available as an addendum to the H&S Plan.

7.14 Temporary Works (Scaffolding, support work, formwork)

Temporary works must be properly designed and signed off by a competent person who has sufficient experience in the design of the type of temporary work in question to be able to assess the design. The appropriate competent persons are to be appointed to manage and monitor such works to the satisfaction of the Engineer and H&S Agent. Records and registers are to be properly completed and kept in the H&S file. If temporary works are to be erected by a Contractor, this must be notified to the Designer/H&S Agent.

Failure to do so will be considered a serious offence.

7.15 Auditing

Frequency of external auditing by the H&S Agent or Client will be as agreed with the Client and Designer but will at least conform to the requirements of the Construction Regulations. The site will be inspected, and the documentation audited relative to the activities and H&S plan. The H&S Officer of the PC must accompany the Client, or the H&S Agent, on all audits and inspections. Not all audits will be, or need be announced.

The PC will ensure that all their Contractors are audited at a frequency determined by the H&S Agent or Client. Audit frequency may be increased if Contractors are not performing adequately. Audit results will be acted upon and non-conformances and penalties issued where deemed appropriate. The Client, Designer or H&S Agent may act or require further outcomes if non-compliances are noted or unsafe acts are noted on site.

Internal audits are to include site conditions as well as ensuring H&S files are appropriate, and compliant. Comprehensive audit reports are to be made available, the format of the audit reports are to be acceptable by the H&S Agent.

The PC will be audited using a template as supplied in the tender document. The audit template will be adjusted from time to time relative to the activities on site. A similar process is to be used by the PC when auditing their Contractors on site. Compliance with legislative requirements and the systems provided by the PC to manage the H&S on site will be measured. Full compliance is required. Time limits for corrective actions will be set and must be adhered to.

Failure to address findings or non-conformances will be considered a serious offence.

7.16 Mechanical installations

All mechanical installations are to be carried out in conformity with the manufacturer's instructions. Method statements and risk analyses must be compiled for each type of installation. A competent person must be designated to supervise the work.

7.17 Communication on Site

All H&S communication during the project between the H&S Agent and the PC will be done through the Engineering Consultant and be in writing, including the issue and responses to non-conformances and H&S audit results.

Failure to address issues timeously will be considered a serious offence.

7.18 Care of Workers on Site (Welfare)

Adequate toilets, clean, safe drinking water and decent shelter will be afforded workers at all times. Toilets will be within reasonable distance of workers, or placed with each working team in safe, with reasonable privacy. Hand washing facilities will be provided. Arrangements made where existing facilities are shared with existing users must be made in writing and placed in the H&S file.

Failure to ensure compliance will be considered a serious offence.

7.19 Discipline, Alcohol and Substance Abuse

All employees (management included) are to follow instructions given in the interest of H&S. A disciplinary procedure is to be developed and disciplinary action is to be imposed on those who do not follow such instructions or company rules or policies.

No person is allowed to work or access site if under the influence of alcohol or other substances that could impact on their own or others safety. The PC is to have a drug and alcohol policy available to manage such instances.

These requirements are applicable to any employee of any organization providing services on site. Penalties may also be applied by the Client, OHS Agent or Engineer.

7.20 Electrical Equipment

In addition to the requirements of the Electrical Machinery Regulations and the General Machinery Regulations any electrical distribution board used for construction work shall be fitted with suitable earth leakage protection. Leads must be properly and firmly connected. Plugs and sockets shall be in good and safe condition.

All electrical apparatus, other than electrical hand tools, shall have a physical “lock out” system which will prevent any operation other than that authorized by a supervisor. A “lock out” sign shall be displayed when the apparatus is not in use. Method statements and safe work procedures will be required for all work involving electrical apparatus.

7.21 HIV and AIDS Programme

The PC shall reduce the risk of transfer of HIV between and amongst construction workers and the local community, raise awareness amongst construction workers of the risk of infection with HIV, promote early diagnosis and assist affected individuals to access care and counselling by:-

- making condoms that comply with the requirements of SANS 4074 available for the duration of the contract to all construction workers at points on the site which are readily accessible and suitably protected from the elements
- either by placing and maintaining HIV/AIDS awareness posters of the size not less than an A1 in areas which are highly trafficked by construction workers or providing construction workers with a pamphlet in languages largely understood by the construction workers which reinforces the outcomes of the HIV/AIDS awareness programme
- encouraging voluntary HIV/STI testing
- providing information concerning counselling, support care of those that are affected

7.22 Safety Conflict

Where any conflict exists between the requirements of this PSHSS, the Site Rules or Statutory Requirements/Regulations the higher standard must apply unless such conflict is brought to the attention of the Client or H&S Agent and a direction provided. The PC is deemed to have allowed for the higher standard.

The PC is legally responsible for ensuring that he conforms to all applicable aspects of the Occupational Health and Safety Act 85/1993 and Regulations (OH&S Act) and other relevant Acts and Regulations. If in dispute with the PSHSS and other legislation the most stringent requirement must apply.

8. HEALTH AND SAFETY FILE

The documentation submitted and approved following the awarding of the contract will be used to form the H&S file. The H&S file is required to be laid out in a logical manner, and documentation filed within the file is to be easily accessible.

The following completed information shall be included (*but not be limited to*) as part of the index:

- The PSHSS;
- The H&S Plan and the approval by Client;
- Appointment by Client;
- Mandatary agreement with Client;
- Notification of construction work;
- A record of all working drawings, calculations and design where applicable;
- Detailed list of Contractors with contact details, appointments, Mandatories etc., H&S specifications issued;
- Record of Competencies (CVs) and appointments;
- Training Records;
- Permits;
- Method statements;
- Risk assessments;
- Safe work procedures;
- Emergency and injury management;
- Material Safety data sheets
- Medical surveillance records;
- Registers; and
- Records of audits, minutes etc.
- Plant lists
- Temporary electrical installations
- Employee records (*who is on site*)

9. NON-CONFORMANCES

Should, at any time, the works, or part of the works, be stopped due to unsafe acts or non-compliance with the Clients or PCs H&S Plan; neither the PC nor any other Contractor shall have a claim for extension of time or any other compensation.

The following constitute examples of the types of non-conformances that will attract penalties:

Minor: Penalty: R50/count	Medium: Penalty: R500/count and a non-conformance	Severe Penalty: R5000/count, a non- conformance and/or activity stoppage
Non-use of PPE supplied	Toilets not supplied or regularly serviced; lack of drinking water	Contractors working without Health and Safety Plan approval
Non completion of registers for plant and equipment on site	Contractors not audited	Workers transported in contravention of the OHS plan or legal requirements
Lack of H&S signage at work areas	Working without training or the appropriate, approved H&S method statements	Invalid Letters of Good Standing
Tools and equipment identified in poor condition during inspections	Legal non-conformances identified during the previous audit and not addressed within the agreed time frame	Non-compliance with traffic accommodation requirements: layout or physical conditions

Minor: Penalty: R50/count	Medium: Penalty: R500/count and a non-conformance	Severe Penalty: R5000/count, a non-conformance and/or activity stoppage
	No monthly OHS report at site meeting to report on	Any serious breach of legal requirements
	No certificates of fitness for workers as required	
	Working without approved method statements	

9.1 Failure to Comply with Provisions

Failure or refusal on the part of the PC or their Contractors to take the necessary steps to ensure the safety of workers and the general public in accordance with these specifications or as required by statutory authorities or ordered by the Principal Agent (PA), shall be sufficient cause for the PA to apply penalties as follows:

- (i) A penalty as shown in the Table above shall be deducted for each and every occurrence of non-compliance with any of the requirements of the PSHSS.
- (ii) In addition, a time-related penalty of R500,00 per hour over and above the fixed penalty may be deducted for non-compliance to rectify any non-conformance within the allowable time after a site instruction to this effect has been given by the PA. The site instruction shall state the agreed time, which shall be the time in hours for reinstatement of the defects. Should the Contractor fail to adhere to this instruction, the time-related penalty shall be applied from the time the instruction was given.

10. MEASUREMENT AND PAYMENT

The payment items for Occupational Health & Safety are contained in the Bill of Quantities. The same rules are applicable in respect of the pricing of these items as for every other payment item. Attention is drawn to the Pricing Instructions in this document.

Item and Unit

C.01 Preparation of Contractor’s Project Specific Health and Safety Plan. (Lump Sum (L.S))

The rate for this item must cover all expenses incurred in preparing the Contractor’s project specific Health and Safety Plan as required by the Client’s project specific Health and Safety Specification in this document.

C.02 Principal Contractor’s initial obligations in respect of the Occupational Health and Safety Act and Construction Regulations. (Lump Sum (L.S))

The full amount will be paid in one instalment only when the Client’s Agent has verified and approved the following

- (a) The Principal Contractor has notified the Provincial Director of the Department of Labour in writing of the project, Annexure 2 to the Regulations.
- (b) The Principal Contractor has made the required initial Appointments of Employees and Contractors.
- (c) The Client has approved the Principal Contractor’s project Health and Safety Plan.
- (d) The Principal Contractor has set up his Health and Safety File.

C.03 Principal Contractor's time related obligations in respect of the Occupational Health and Safety Act and Construction Regulations. (Month (Mth))

The amount shall represent full compensation for that part of the Principal Contractor's general obligations in terms of the Occupational Health and Safety Act and Regulations which are mainly a function of time. Payment will be made when the Client's Agent has verified the Principle Contractor's compliance as part of the audit. This will include the updating and administration of the Health and Safety file.

C.04 Provision of Personal Protective Equipment (PPE) as listed in the Bill of Quantities. (Number (No))

The rates for these items shall include for the procurement, delivery, storage, distribution and all other actions required for the supply of PPE to the employees of the Principle Contractor, full or part time, requiring them. Sub-Contractors are responsible for their own costs in this regard. Any items of PPE not included on the list will be paid for only after the PA has agreed to their acquisition.

Items listed will include, among others which may be noted, are: hard hats, reflective vests, high visibility overalls, protective foot wear, fall arrestor harness, gloves, ear muffs, earplugs and dust masks of appropriate type. Normal items such as standard overalls, waterproof clothing, gum boots and standard workshop safety equipment such as welding masks and goggles will not be paid for.

Payment will be based on the issues register for PPE as kept by the Construction Health and Safety Officer, backed up by paid invoices if requested.

C.05 Provision of a Full/Part Time Construction Health and Safety Officer (Month)

The Tender sum shall include for the cost of a Construction Health and Safety Officer on a fulltime or part time basis.

C.06 Costs of Medical Surveillance (Unit (No))

This item shall covers all costs in involved in the obtaining of baseline medical examinations of temporary labour, including operators for mobile plant as contemplated in CR 23(d) (ii); for temporary workers and workers exposed to noises at or above the limits given in the Noise-induced Hearing Loss regulations, as stipulated.

Workers in the permanent employ of the Contractor will only be paid for if their certificates require updating.

C.06 a) Initial (baseline) medical examinations, including audiometric and lung function testing.

C.07 Induction Training (Unit (No))

This item shall cover all costs incurred for the health and safety inductions as set out in Regulation 7 of the Construction regulations and the proof of induction required. Payment will be made on the figures contained in the induction section of the Health and Safety File.

C.08 Provision of First Aid Boxes. (Unit (No))

The rate for this item shall cover all costs incurred in the provision and maintaining of first aid boxes.

C.09 Establishment of noise levels (Unit (No))

This item shall cover all costs involved in the establishment of noise zones in terms of Regulation 9 of the Noise-induced Hearing Loss Regulations. Where a zone has previously been established for a particular item of plant within the last two years, the test need not be repeated but must be kept valid for the duration of the Contract.

C.10 Submission of the Health and Safety File. (Lump Sum)

Expenditure under this item shall be made in accordance with the general conditions of contract.

This amount will be paid only once the Principal Contractor has met all his obligations in respect of the Occupational Health and Safety Act and the Construction Regulations and has submitted his Health and Safety File complete as envisaged on this specification to the Client’s satisfaction. This must be done prior to the issue of a Certificate of Completion

ANNEXURE A

**H&S AGENT AUDIT SHEET
EXAMPLE OCCUPATIONAL HEALTH AND SAFETY AUDIT DOCUMENT**

PROJECT NAME:	
CONTRACT NUMBER:	
HEALTH AND SAFETY AUDIT No:	
CONDUCTED BY :	
DATE :	

EXECUTIVE SUMMARY

INTRODUCTION AND OVERVIEW

Scoring:

The audit has a scoring schedule, which will be used to deem compliance to what is available on site, and what the appropriate systems need to be to match them. The contractor should aim for a score of 3 on each aspect included in the audit. A low score could result in part or all of the work being stopped until compliance is reached.

Scoring schedule	
If the answer is "No" the rating will be 0	
If the answer is 'not applicable' it will be noted as n/a	
If the answer is "Yes" the following ratings are applicable	
1	Requirements partially met and no implementation.
2	Requirements partially met and partially implemented
3	Requirements fully met and partially implemented
4	Requirements fully met and fully implemented
5	Requirements and implementation exceeds expectation

Key Abbreviations:

Health and Safety	H&S	Driven Machinery Regulations	DMRs
Occupational Health	OH	Regulations for Hazardous Chemical Substances	RHCSs
Construction Regulations	CRs	Pressure Equipment Regulations	PERs
General Safety Regulations	GSRs	General Administration Regulations	GARs

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Explosive Regulations	ERs	South African National Standards	SANS
Noise Induced Hearing Loss Regulations	NIHLs	South African Road Traffic Safety Manual	SARTSM
Facilities Regulations	FRs		
South African Bureau of Standards	SABS		
Occupational Health and Safety Act	OHSA		

Provide a summary of site inspection, significant findings of the site inspection and the audit.

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CORE LEGAL RECORDS ON SITE:

This list is not conclusive – to be updated monthly relative to works in progress. However, the H&S Officer is to be pro-active and pre-empt requirements with the Construction Supervisor (Site Agent). The content will be linked to the physical conditions, processes and activities noted on site, or programme.

ITEM	Legal /SPEC Ref	RECORDS TO BE KEPT	SCORE	COMMENTS	By whom	Completion Date	Contractor Close out
1.		Updated project H&S Organogram					
2.	OHSA S. 16 (1) and (2)	CEO and subordinate (if required) • Proof of Competency provided					
3.	CR 8 (1) and (2)	Designation of Construction Manager and Subordinate Person(s) • Proof of Competency provided					
4.	OHSA S. 17; GAR 7	• H&S Representatives appointed • Monthly inspections completed • Representation from Contractors					
5.	OHSA S. 18; GAR 5	• H&S Committee appointed • Minutes on file • H&S representatives reports discussed • Incidents discussed • Signed by Chair • Evidence of minutes noted					
6.	GAR 4	Copy of OH&S Act (Act 85 of 1993) available on site					
7.	CR 5(j);	Written proof of registration /					

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ITEM	Legal /SPEC Ref	RECORDS TO BE KEPT	SCORE	COMMENTS	By whom	Completion Date	Contractor Close out
	7(c)(iv)	Letters of good standing available on Site					
8.	OHSA S.37.2	Copy of the Mandatary (S37.2) agreement between the PC and Client					
9.	OHSA S.37.2	Mandatary agreements between PC and contractors					
10.	CR 3(1); 4(1)	Notification to Provincial Director – Annexure 1/2 Available on site					
11.	CR 5(1)(m) 7(1)(b)	<ul style="list-style-type: none"> • Copy of Principal Contractor’s Health & Safety Plan Available on request. • Letter of approval from Agent. • Health & Safety File opened and kept on site (including all documentation-required in respect of the OHSA & Regulations) • Available at all times 					
12.	CR 7(1)(b)	Copy of Principal Contractor’s Health & Safety File provided to Contractors <ul style="list-style-type: none"> • Letters of approval for each contractor on file • List of Contractors on site • Verified monthly by Agent 					
13.		Copies of technical method					

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ITEM	Legal /SPEC Ref	RECORDS TO BE KEPT	SCORE	COMMENTS	By whom	Completion Date	Contractor Close out
		<p>statements approved by Designer</p> <ul style="list-style-type: none"> • Register available, signed by Designer 					
14.	CR 9(1) OHS CR 9(3)	<p>Risk Assessments:</p> <ul style="list-style-type: none"> • Up to date and available on site for inspection • Review and monitoring programme adhered to • Workers trained in risk assessments 					
15.	CR9(1)(c)	<p>Safe work procedures Procedure</p> <ul style="list-style-type: none"> • List of available SWPs • Workers trained in SWPs • Proof of training verified 					
16.	OHS S. 13 CR 7(5)(6)	<p>Induction programme available</p> <ul style="list-style-type: none"> • Proof of induction training available 					
17.	CR 6(1)(2)	<p>Structural information from Designer:</p> <ul style="list-style-type: none"> • Geo-science technical report • Design loading of the structure • Methods & sequence of construction • Design risk assessment • Amended H&S Specification 					

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ITEM	Legal /SPEC Ref	RECORDS TO BE KEPT	SCORE	COMMENTS	By whom	Completion Date	Contractor Close out
		<ul style="list-style-type: none"> Temporary Works Design 					
18.	CR 12(1)(3)	Temporary Works <ul style="list-style-type: none"> Appointment of temporary works designer Proof of Competency provided Approved temporary works drawings Temporary work inspection register Competencies of erectors of temporary works Construction method statements 					
19.	CR 13(1)(2)	Excavations: <ul style="list-style-type: none"> Competent persons appointed CVs available Depth of excavations on site Shoring in use Registers in line with open excavations noted at site inspection 					
20.	CR 13(f) GSR 13A	Ladders: <ul style="list-style-type: none"> Competent person appointed Registers kept Registers for ladders noted on site 					
21.	CR 16(1)	Scaffolding: SANS 10085 <ul style="list-style-type: none"> Competent Erector(s) and Inspector appointed 					

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ITEM	Legal /SPEC Ref	RECORDS TO BE KEPT	SCORE	COMMENTS	By whom	Completion Date	Contractor Close out
		<ul style="list-style-type: none"> • Proof of Competency provided • Registers in place 					
22.	CR 23	Construction Vehicles: <ul style="list-style-type: none"> • Appointment of competent operators • Plant Management: • Registers on file noting daily inspections • Plant and machine lists available • Inadequacies noted on site • Transportation of workers • Registers for sample of vehicles noted on site 					
23.	CR 24	Temporary Electrical Installations and Machinery <ul style="list-style-type: none"> • Competent Person appointed • Proof of Competency provided • Updated weekly installation inspection registers in place • Updated daily inspection registers in place 					
24.	CR 25	Flammable Liquids: <ul style="list-style-type: none"> • Competent Person appointed for inspections • Proof of Competency provided • Inspection registers in place 					
25.	CR 27, ER 6	Housekeeping, Stacking & Storage Supervisor:					

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ITEM	Legal /SPEC Ref	RECORDS TO BE KEPT	SCORE	COMMENTS	By whom	Completion Date	Contractor Close out
	GSR 8	<ul style="list-style-type: none"> Appointed per work area Proof of Competency provided Include site conditions Spoil areas Register available per area 					
26.	GSR 2	PPE: <ul style="list-style-type: none"> included in Risk Assessment PPE used and enforced Records of Issue kept Training to use (Induction) Registers for condition checks 					
27.	RHCSs CR 7; 23 GSR 4	Hazardous Chemical Use and Storage <ul style="list-style-type: none"> Competent Person/s appointed Proof of Competency provided Risk Assessments include use of HCSs Register of HCS kept/used on Site Flammable Store Bulk diesel storage Material Safety Data Sheets on file and utilised Other 					
28.	GSR 3	Emergency management: <ul style="list-style-type: none"> First aiders available through project Level 1 First aid boxes through site 					

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ITEM	Legal /SPEC Ref	RECORDS TO BE KEPT	SCORE	COMMENTS	By whom	Completion Date	Contractor Close out
		<ul style="list-style-type: none"> Evacuation procedures Registers available (noted on site) 					
29.	GAR	Incident Management: <ul style="list-style-type: none"> Emergency co-ordinator appointed Proof of Competency provided Emergency plan appropriate Emergency level included in Risk Assessments Workers trained Incident reports available and complete 					
30.	CR 1 (g), 7(8)	Medical Surveillance Programme <ul style="list-style-type: none"> All employee records 					
31.	CR 30/ FRs	Welfare Facilities: <ul style="list-style-type: none"> Toilets available where crews are working/clean Clean potable water available Adequate eating facilities 					
32.	SANS 1921-6	HIV AND AIDS PROGRAMME <ul style="list-style-type: none"> HIV and AIDS Policy and plan available Condoms available Peer review programme available Ongoing training of workers 					

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ITEM	Legal /SPEC Ref	RECORDS TO BE KEPT	SCORE	COMMENTS	By whom	Completion Date	Contractor Close out
29.		Other					

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RESPONSIBILITY	SIGNATURE	DATE
H&S AGENT SIGNATURE:		
PC SIGNATURE:		
DESIGNER SIGNATURE:		
CLIENT SIGNATURE:		

ANNEXURE B

CLOSE OUT REQUIREMENTS

The H&S files for the Principal Contractors and all Contractors require closure and handover to the Client at the completion of the project. The following list is an example of what should be included but is not exhaustive. The OHS Agent or the Client may require further information at the time of completion and the Principal Contractor is to ensure that all instructions are met. Documentation would include all records from the start of the project. Daily or monthly plant inspection records are not required unless they are related to an accident. All records to be in electronic format and submitted to the OHS agent for approval in adequately formatted lists and folders. Layout should be logical and in the same order as in the site files.

Health and Safety close out file requirements include:

- a) Client H&S Specification
- b) Principal Contractor's OHS Plan(s)
- c) Organograms
- d) Legal Appointments
- e) List of all employees employed on a permanent or contractual basis over the duration of the contract
- f) Notification to Department of Labour of commencement of work
- g) Letters of Good Standing for the Project
- h) Full files for all Contractors as well as their close out reports
 - List of Contractors
 - All employees employed on a permanent or contractual basis over the duration of the contract
 - Letters of Approval of Contractors
 - Mandatary Agreements
 - Letters of Good Standing
 - Appointments
- i) Incident Records
- j) Non- Conformance records
- k) Agent's Audits
- l) Method Statements
- m) Risk assessments
- n) Safe work procedures
- o) Medical surveillance certificates of fitness. Medical records are to be kept according to the OH&S Act as amended
- p) All drawings for temporary structures (suspended beams/scaffolds etc)
- q) All operating manuals for any systems that require ongoing maintenance
- r) Copies of test results, policies and procedures for environmental monitoring (silica, noise, dusts etc.)

Defect and Liability Period

The H&S files are to be kept 'live' for the defect and liability period by the Principal Contractor, including those of their Contractors. Any work required during the defect and liability period will require an assessment of the H&S file by the OH&S Agent prior to any work commencing. A copy drawing records for the as-builts are to be placed on file by the Designers once complete.

ANNEXURE C

NON CONFORMANCES

HEALTH AND SAFETY SITE INSPECTION NON CONFORMANCE NO		
AGENT:	PROJECT:	
Consultant:	Date and time:	
Client	Area:	
Contractor:		
ASPECTS NOTED:	COMMENTS:	COMPLETION REQUIRED BY (DATE):
	•	
	•	
	•	
	•	
	•	
PHOTOGRAPHIC EVIDENCE (if available):		
OTHER:		
The following penalties are to be applied:		
Signature of Designer		
Signature of H&S Officer/Site Agent		
Signature: of H&S Agent		

ANNEXURE D:

CONTRACTORS MONTHLY HEALTH AND SAFETY REPORT

(To be submitted by the end of the first week of each month and be available with each audit)

	CONTRACT NUMBER:	PROJECT NAME:	CONTRACT DETAILS:
1	GENERAL ACTIVITIES FOR THE MONTH (detail each area of work)		
2	NUMBER OF WORKERS (permanent and local, contractors)		
3	TRAINING DONE (supplier, no of people, type)		
4	INCIDENTS / ACCIDENT (list number and details, attach reports)		
6	NON-CONFORMANCES (closed out or active)		
7	CONTRACTORS (list, approval status)		
8	AUDITS COMPLETED (internal and external)		
9	CRITICAL ISSUES		

10	GENERAL	

H&S Officer _____ Signature _____ Date: _____
Site Agent _____ Signature _____ Date: _____

**ANNEXURE E
RISK ASSESSMENT FORMAT**

ACTIVITY		RA No.		Rev No.	
CONTRACT		DATE WRITTEN		REVIEW DATE	
	WRITTEN BY		REVIEWED BY		APPROVED BY
NAME					
SIGNATURE					

RISK REF	ACTIVITY	POTENTIAL HAZARD	RISK	S	H	E	RISK EVALUATION	PURE RISK	CONTROLS MITIGATION	EFFECTIVENESS OF CONTROLS	RESIDUAL RISK	RESIDUAL RISK RANKING
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Severity Criteria				Frequency Criteria			Exposure Criteria			
Weight No	Hazard Description	Environment	Safety/Health	Weight No	Hazard Description	Frequency	Weight No	Hazard Description	Environmental Exposure	Safety/Health Exposure
16	Catastrophic	Irreversible ecological damage	Multiple fatalities due to injury or occupational disease	1	Rare	Less than once every 2 years	1	Minimal	Incident site	A few of the workforce minimal time
8	Major	Reversible ecological damage with potential long term impact	Fatality or number of disabilities/disabling diseases	2	Infrequent	Every 1-5 years	2	Restricted	Localised	A few of the workforce, some of the time/some of the workforce minimal time
4	Moderate	Ecological disturbance, can be rehabilitated	Disabling injury or occupational illness	3	Frequent	Multiple times per year	3	Local	Construction Site Wide	Some of the workforce, some of the time
2	Minor	Short-term ecological impact. Requires intervention	Minor injuries or exposure requiring medical attention	4	Often	Monthly	4	Widespread	Immediate neighbours	Most of the workforce, some of the time/some of the workforce most of the time
1	Insignificant	Low impact, natural rehabilitation	First Aid treatment required	5	Page SW252	Weekly/Daily	5	Extensive	Community exposure	Most of the workforce, most of the time

ANNEXURE F:**TYPICAL BILL OF QUANTITIES FOR OCCUPATIONAL HEALTH AND SAFETY**

ITEM NO	DESCRIPTION	UNIT	QUANTITY	RATE	TOTAL
C.01	Preparation of the Contractor's site specific Health and Safety Plan	lump sum			
C.02	Principal Contractor's initial obligations in respect of the Occupational Health and Safety Act and Construction Regulations	lump sum			
C.03	Principal Contractor's time related obligations in respect of the Occupational Health and Safety Act and Construction Regulations	month			
C.04	Provision of Personal Protective Equipment (PPE)				
	(a) Reflective vests	No			
	(b) Hard hats	No			
	(c) Protective foot wear	No			
	(d) Earplugs	No			
	(e) Dust masks	No			
	(f) Gloves				
	(h) Ear Defenders SABS approved	No			
C.05	Provision of a full time Construction Health and Safety Officer	month			
C.06	Cost of medical certificates and medical surveillance				

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	(a) Initial (baseline) medical examinations	prime cost (PC) sum			
	(b) Periodic and exit examinations	prime cost (PC) sum			
	(c) Contractor's charges to allow for handling costs and profit in respect of sub items 13/X.06 (a) and (b)	%			
C.07	Induction training	No			
C.08	Provision of First Aid Boxes to GSR requirements	No			
C.09	Noise monitoring				
	(a) Establishment of noise zones (plant)	No			
	(b) Audiograms (personnel)	No			
C.10	Submission of a Health and Safety File	lump sum			

ANNEXURE G

HARRY GWALA DISTRICT MUNICIPALITY

HEALTH AND SAFETY (H&S) PRE-TENDER REPORT

Tenderers are required to submit a pre-tender H&S plan with their Tender submission.

The following requirements were set in the tender documentation and have been utilized to assess the completeness of the documentation presented with the submission of tenders. These requirements fulfil the requirements of the Client in terms of the Construction Regulations, Regulation 5(1)(h). They are to be read in addition to the Act and Regulations but are not a substitute for them.

The documentation submitted will be used to assess the competence of the tenderer, as required in the CRs, therefore the information submitted needs to be complete and as close as possible to the final product.

The following scores have been used to determine compliance with the pre-tender requirements:
Scoring as follows:

Not supplied or not adequate	0
Supplied and complete	1

If the tenderer has not completed any projects then Items 4 and 5 need not be supplied. A letter to this effect must be attached.

Tenderers are required to achieve a minimum of 10 out of a total of 17 for their tenders to be considered.

Legal or Specification Reference	Pre-Tender Requirement H&S	Tenderers Response	Max Score	Actual Score
Construction Regulations (CRs) 7(1)	1. A project specific H&S Plan in line with this project specification which will support the CRs, therefore the information submitted needs to be complete and as close as possible to the final product. See check sheet		1	
CRs 5(1)(g)	2. Adequate pricing for H&S is also required, and the appropriate section in the BoQ is to be completed. Failure to do so could result in the Tender being regarded as non-responsive.		1	
CRs 5(1)(h)	3. A declaration to the effect that he has the competence and necessary resources to carry out the work safely in compliance with the Construction Regulations 2014;		1	

	4. At least one copy of minutes of previous Occupational Health and Safety Committee meetings;		1	
	5. Incident Investigation Reports for other projects of a similar nature undertaken by the tenderer		1	
CRs 9(1)(b)	6. Detailed technical method statements for approval by the ER and for approval by the H&S Agent: a. Site establishment; b. Clearing and grubbing; c. Construction of offices and accommodation, and d. Proposed site layouts		1 1 1 1	
CRs 9(1)	7. Appropriate risk assessments: a. Site establishment; b. Clearing and grubbing; c. Construction of offices and accommodation, and d. Proposed site layout		1 1 1 1	
CR 9(1)	8. Appropriate safe work procedures a. Site establishment; b. Clearing and grubbing; c. Construction of offices and accommodation, and d. Proposed site layouts		1 1 1 1	
	FINAL SCORE		17	

ANNEXURE H**TENDER STAGE OHS PLAN EVALUATION**

Tenderers will be scored on their response to various facets of the Health and Safety Specification in the Tender Document. Failure to achieve a score of 60 % will render the tender non-responsive				
Proof of the evaluation must be given under the remarks column				
1	General	Is the Specification Project Specific? If not then score is 0.		
	Scoring	Response present and satisfactory	1	
		Not present	0	
OHS Act/regulation	Specification Section	Description	Max Score	Score
8(1)	6.1.4	Construction supervisor	1	
8(6)	6.1.5	Construction Health and Safety Officer	1	
	7.1	Health Risks and Medical Surveillance		
NIHLR	7.2	Noise Risks	1	
	7.3	Emergency Procedures		
GSR 3	7.4	First Aiders and First Aid Equipment	1	
CR 27	8	Fires and Emergency Management	1	
GAR 8	7.6	Incident Management and Compensation Claims	1	
GSR 2	7.7	Personal Protective Equipment (PPE) and clothing	1	
GSR 2B	7.8	Occupational Health and Safety Signage	1	
CR 7 (5)(6)	7.9	Induction of Employees and Visitors, General H&S Training	1	
CR 23	7.10	Management of plant and equipment	1	
CR13	7.11	Excavations	1	
CR 10	7.12	Working at Heights	1	
CR 8	7.12	Fall protection plan	1	
CR 24	7.13	Cranes and lifting equipment	1	
CR 12	7.15	Temporary works	1	
CR5(1)(0)	7.18	Auditing	1	
DMR/GMR	7.19	Mechanical installations	1	
OHSA 8(2)(j)	7.20	Communication on Site	1	
CR 30	7.21	Care of Workers on Site (Welfare)	1	
	Additional requirements			
	6.1.3	Declaration of competency	1	
Cr 9 (1)		Method statements (SWPs)		
		a) Site Establishment	1	
CR5(1)(g)		Has pricing for OHS been allowed for?	1	
		TOTAL SCORE	24	
		TOTAL PERCENTAGE		

HARRY GWALA DISTRICT MUNICIPALITY

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

CONTRACT No. HGDM 813/HGDM/2023

If a section is not applicable, then it must be deleted from the score sheet and the total score reduced.

ANNEXURE I

AGREEMENT IN TERMS SECTION 37.2 OF THE OCCUPATIONAL HEALTH AND SAFETY ACT 1993 (ACT NO. 85 OF 1993)

THIS AGREEMENT is made at _____ on this the _____ day of _____ in the year _____ between HARRY GWALA DISTRICT MUNICIPALITY (*hereinafter called "the Client"*) of the one part, herein represented by _____ in his capacity as _____ and delegate of the Client in terms of the Client's standard powers of delegation.

and

_____ (*hereinafter called "the Mandatary"*) of the other part, herein represented by

_____ in his capacity as _____

and being duly authorised by virtue of a resolution appended hereto as Annexure A.

WHEREAS the Client is desirous that certain works be constructed, viz **CONTRACT NO.** _____, and has accepted a tender by the Mandatary for the construction, completion & maintenance of such works and whereas the Client and the Mandatary have agreed to certain arrangements and procedures to be followed in order to ensure compliance by the Mandatary with the provisions of the Occupational Health and Safety Act 1993 (Act 85 of 1993 as updated);

NOW THEREFORE THIS AGREEMENT WITNESSETH AS FOLLOWS:

- 1 The Mandatary shall execute the work in accordance with the contract documents pertaining to this contract;
- 2 This Agreement shall hold good from its commencement date, which shall be the date determined in terms of the Form of Offer and Acceptance, or other date decided upon, in the Contract Data, to either;
 - a) The date of the final certificate issued or as contained in this Volume _____ of the contract documents pertaining to this Contract, or
 - b) The date of termination of the Contract;
- 3 The Mandatary declares himself to be conversant with the following:
 - a) All the requirements, regulations and standards of the Occupational Health and Safety Act (Act 85 of 1993 as updated), hereinafter referred to as "The Act", together with its amendments and with special reference to the following Sections of The Act.
 - i. Section 8: General duties of clients to their employees;

- ii. Section 9: General duties of clients and self-employed persons to persons other than employees;
 - iii. Section 10: General duties of manufacturers and others regarding articles and substances for use at work;
 - iv. Section 37: Acts or omissions by employees or Mandatories, and
 - v. Sub-section 37(2) relating to the purpose and meaning of this Agreement.
- b) The Contractor shall ensure that he familiarises himself with the requirements of the Clients health and safety specification developed for the project, and that he, his employees and any other Contractors employed during the project comply with them. The Contractor shall ensure that all health and safety documentation required as part of the health and safety plan is maintained for the duration of the project.
- 4 In addition to the requirements of conditions of contract (as amended by the Contract Data of the contract documents pertaining to this Contract), the Mandatary agrees to execute all the works forming part of this Contract and to operate and utilize all machinery, plant and equipment in accordance with The Act.
- 5 The Mandatary is responsible for the compliance with the Act by all his Contractors, whether or not selected and/or approved by the Client.
6. The Mandatary warrants that all his own and his Contractors' workmen are covered in terms of the Compensation for Occupational Injuries and Diseases Act 1993 as amended, which cover shall remain in force whilst any such workmen are present on site. A letter of good standing from the Compensation Commissioner to this effect must be produced to the Client upon signature of the agreement.
7. The Mandatary undertakes to ensure that he and/or subcontractors and/or their respective clients will at all times comply with the following conditions:
 - a) The Mandatary shall assume the responsibility in terms of Section 16.1 of the Occupational Health and Safety Act. The Mandatary shall not delegate any duty in terms of Section 16.2 of this Act without the prior written approval of the Client. If the Mandatary obtains such approval and delegates any duty in terms of section 16.2 a copy of such written delegation shall immediately be forwarded to the Client.
 - b) All incidents referred to in the Occupational Health and Safety Act shall be reported by the Mandatary to the Department of Labour as well as to the Client. The Client must further be provided with copies of all written documentation relating to any incident.
 - c) The Client hereby obtains an interest in the issue of any formal enquiry conducted in terms of section 32 of the Occupational Health and Safety Act into any incident involving the Mandatary and/or his employees and/or his Contractors.
 - d) The Mandatary shall conduct such risk assessments, method statements and safe work practices as may be necessary during the course of the contract and shall ensure that all staff are informed of these. Proof of this shall be placed in the project Health and Safety file.
 - e) Adherence to the Contractor's Health and Safety plan must be enforced including the application of penalties for non-conformance as set out in the Client's Health and Safety Specification.

In witness thereof the parties hereto have set their signatures hereon in the presence of the subscribing witnesses:

SIGNED FOR AND ON BEHALF OF THE CLIENT:- _____

WITNESS SIGNED:- 1. _____ 2. _____

NAME (IN CAPITALS) 1. _____ **2.** _____

SIGNED FOR AND ON BEHALF OF THE MANDATARY:- _____

WITNESS SIGNED:- 1. _____ 2. _____

NAME (IN CAPITALS) 1. _____ **2.** _____

HARRY GWALA DISTRICT MUNICIPALITY



CREIGHTON BULK WATER SUPPLY SCHEME

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS

CONTRACT No. HGDM 813/HGDM/2023

**PART C3
ENGINEER'S QUALITY MANAGEMENT
SPECIFICATION**

1. INTRODUCTION

HGDM subscribes to a Quality Management System accredited by a number of certification bodies including ISO 9001.

This document/specification summarises the Quality Control Procedures used by the Contractor in the Quality Assurance and Control on site works. These procedures are to be used by Engineer's Representative Staff (i.e. ER and his assistants) and the Contractor's staff on the following commonly encountered sites;

- Pipelines
 - UPVC Pipelines
 - HDPE Pipelines
- Building Works

The procedures have been developed as "intellectual" property of Harry Gwala District Municipality and may only be used on sites managed by Impande Consulting Engineers. Any other use is subject to consent/agreement with Harry Gwala District Municipality and Impande Consulting Engineers.

All references to approval by ER require that the Contractor (via the Site Agent) initiates the necessary request for approval). In addition, the Contractor will be required to maintain a copy of all records as required by this Specification.

The application of the procedures will be agreed as appropriate between the Contractor's Site Agent and the Engineer (or his Representative) at the commencement of construction activities.

It will be deemed that the Contractor has incorporated in his completion period and pricing, the necessary requirements to comply with this Specification fully.

1.1 Elements of Site Quality Assurance

The elements of Site Quality Assurance comprise the following:

- general elements that apply to all sites and
- site specific elements that are specific to sites and may be dependent on the type of construction.

2. GENERAL ELEMENTS APPLICABLE TO ALL SITES

2.1 Construction Quality Control Organization

This section presents the requirements of key site personnel involved on construction sites, i.e. Engineer's Representative (ER) staff and Contractor's staff. The following quality assurance procedures for site quality assurance personnel should be followed:

2.1.1 Engineer's Quality Assurance Personnel

The following ER staff appointments' procedure should be followed to ensure the right superintendence on contracts:

Item	Activity	Remarks	Responsible Party	Approval by
1	Appointment of Engineer for contracts	Stated in contract data	Engineer	Employer
2	Supervision staffing arrangements	Proposed prior to construction work	Engineer	Employer
3	Site staff	Proposal for site personnel including CV's	Engineer	Employer
4	Roles	Delegation of powers by Engineer	Engineer	Engineer

The site staff will comprise the Engineer's Representative (ER) and ER's assistants (Field Officers):

(a) Engineer's Representative (ER)

The ER is the primary point of contact for the Engineer on all construction management issues. The ER will monitor and approve each contractor's quality submittal to ensure that the project is meeting the specifications and requirements. The ER will manage the implementation of the CQAP at the project sites with assistance from Field Officers appointed by the Engineer.

(b) ER Assistants/Field Officers (FO's)

Field Officers (FOs) are responsible to the ER and support the ER's management of the CQAP. The FOs will monitor the day-to-day activities of the contractor. This includes ensuring that contractors comply with the drawings and specifications, applicable SABS standards, good workmanship, and the CQC requirements. As part of this effort, FOs will:

- conduct independent inspections to verify the quality of the work;
- participate in contractor inspections;
- review test and inspection reports; and
- ensure that the required documentation is submitted.

The FOs will be alerted to detect, record, and report any deviation from the contract documents, including calling any deficient item to the attention of the ER and the contractors' Site Agents. The FOs will keep accurate and detailed records of the contractor's performance and progress, delivery of materials, and other pertinent matters, including the daily inspection report.

2.2 Contractor’s Quality Assurance Personnel

The contractors are responsible for the quality control of their constructed work product as well as the necessary inspections and tests required to ensure that their work complies with the contract documents.

2.2.1 Contractor’s Site Staff

The contractors’ Site Agents are the primary point of contact for the Contractors on all construction management issues. The Site Agents must be full-time on site for the contractors. The Site Agents must have full authority to institute any and all actions necessary for the successful implementation of the CQC program to ensure compliance with the drawings and technical specifications.

The following procedures apply with respect to appointment of the contractor’s key personnel:

Aspect	Remarks	Approval By	When
Appointment of Site Agent	As per tender for quality based evaluated tenders	Engineer	Prior to commencement of construction
Appointment of Site Forepersons	As per tender for quality based evaluated tenders	Engineer	Prior to commencement of construction

2.3 Site Establishment

The Engineer’s Representative shall inspect and approve/disapprove contractor’s site establishment using Quality Procedure Form QC 01.

2.4 General

For all projects the ER must undertake the following general items as appropriate:

1	Confirm “Permission to Occupy” has been received from the relevant authority.
2	“Handover of Site” to Contractor to be confirmed in writing.
3	Inspect and approve Site Establishment (Form QC 01).
4	Setup Site Files/Filing System.
5	Ensure a copy of the Contract Document is retained on Site by the Contractor.
6	Ensure a full set/s of approved drawings is/are retained on Site by the

	Contractor.
7	Maintain a Drawing Register.
8	Ensure a copy of the latest Contract Program is clearly displayed on Site.
9	Establish Quality Assurance Procedures and carry out inspections as and when required.
10	Issue Site Instructions as and when required.
11	Ensure Safety File, including Dept. of Labour notification, is up to date and on Site and all relevant regulations, including issuing of PPE, are strictly adhered to.
12	Ensure all relevant information is recorded in a daily Site Diary and counter signed.
13	Hold regular Work Meetings with the Contractor.
14	Hold regular Site Meetings with the Client, Professional Team and the Contractor.
15	Maintain a copy of the Environmental Record of Decision on Site

3. SITE SPECIFIC QUALITY ASSURANCE PROCEDURES

Quality assurance inspections and testing will be used to verify the adequacy and effectiveness of the contractor's quality control program. The Engineer's Quality Assurance Personnel detailed above will provide inspection and supervision within the scope of work, which includes monitoring of the following construction activities:

- Manufacture of materials
- Transporting and off-loading and storage of construction materials
- Inspection of construction activities, including:
 - Pipework
 - uPVC
 - HDPE
 - Building Works

The Contractor will be required to formally request for inspection for any activity which he deems to be complete before proceeding to the next stage of the whole operation. Formal requests must be filled in the **relevant QC** Form.

3.1 Contractor Deficiency Correction

When material, performed work or installation is found to be deficient and/or does not meet the project specifications, the Engineer's QA personnel will assure deficiency correction is implemented. In addition to results of an inspection being recorded on the relevant **QC**

Form, in the event of inspection failure, the Engineer’s QA personnel will fill in **Form QC 008** “Failure Report”, to record the deficiencies. A copy of this report will be handed over to the Contractor’s Site Agent. The Contractor will implement corrective actions to remedy work that is not in accordance with the drawings and specifications. The corrective actions will include removal and replacement of deficient work using methods approved by the ER. Removal must be done in a manner that does not disturb work that meets QC/QA criteria; otherwise, the disturbed material must also be removed and replaced. Replacement must be done in accordance with the corresponding technical specifications. Replacement will be subjected to the same scope of QC/QA inspection and testing as the original work. If the replacement work is not in accordance with the drawings and specifications, the replacement work will be removed, replaced, re inspected and re-tested.

Activities which specifically require approval before the next stage can proceed are as detailed in this section.

3.1 Pipework

The following procedures will be used for pipework quality assurance:

3.1.1 uPVC Pipework

The ER is responsible for ensuring the following quality assurance procedure is followed, **as a minimum**:

1	Inspect & Approve Setting Out (Form QC 001).
2	Inspect & Approve Pipeline Trenches (Form QC 002).
3	Inspect & Approve Pipeline Bedding (Form QC 003).
4	Inspect & Approve Pipe Installation – PVC (Form QC 004B).
5	Inspect & Approve Pipeline Pressure Testing (Form QC 006).
6	Inspect & Approve Backfilling to Trenches (Form QC 007).

Copies of the QC’s forms are available for inspection at the offices of Impande Consulting Engineers.

3.1.2 Steel Pipework

The ER is responsible for ensuring the following quality assurance procedure is followed, **as a minimum**:

Copies of the QC's forms are available for inspection at the offices of Impande Consulting Engineers.

3.2

1	Inspect & Approve Setting Out (Form QC 001).
2	Inspect & Approve Pipeline Trenches (Form QC 002).
3	Inspect & Approve Pipeline Bedding (Form QC 003).
4	Inspect & Approve Pipe Installation – Steel (Form QC 004A).
5	Inspect & Approve Welding of Pipes (Form QC 005).
6	Inspect & Approve Pipeline Pressure Testing (Form QC 006).
7	Inspect & Approve Backfilling to Trenches (Form QC 007).

Reinforced Concrete Works

The ER is responsible for ensuring the following quality assurance procedure is followed, **as a minimum**:

1	Inspect & Approve Setting Out (Form QC 001).
2	Inspect & Approve Excavations (Form QC 008).
3	Inspect & Approve Backfilling to Excavations (Form QC 009).
4	Inspect & Approve Excavations prior to Blinding (Form QC 010).
5	Inspect & Approve Cast Concrete (Form QC 016).
6	Inspect & Approve Structure prior to Concreting (Form QC 015).
7	Inspect & Approve Cast Concrete (Form QC 016).
8	Inspect & Approve Backfilling to Excavations (Form QC 009).

Copies of the QC's forms are available for inspection at the offices of Impande Consulting Engineers.

3.3 Building Works

The ER is responsible for ensuring the following quality assurance procedure is followed, **as a minimum**:

1	Inspect & Approve Setting Out (Form QC 001).
2	Inspect & Approve Excavations (Form QC 008).
3	Inspect & Approve Backfilling to Excavations (Form QC 009).
4	Inspect & Approve Excavations prior to Blinding (Form QC 010).
5	Inspect & Approve Cast Concrete (Form QC 016).
6	Inspect & Approve Foundations prior to Concreting (Form QC 011).

7	Inspect & Approve Cast Concrete (Form QC 016).
8	Inspect & Approve Sub Structure Brickwork (Form QC 012).
9	Inspect & Approve Foundations prior to Surface Bed Concreting (Form QC 013).
10	Inspect & Approve Cast Concrete (Form QC 016).
11	Inspect & Approve Superstructure Brickwork (Form QC 014).
12	Ensure relevant Certificates are received/issued for the roof structure.

Copies of the QC's forms are available for inspection at the offices of Impande Consulting Engineers.

3.4 Roadworks

The ER is responsible for ensuring the following quality assurance procedure is followed, **as a minimum**:

1	Inspect & Approve Setting Out (Form QC 001).
2	Inspect & Approve Excavations (Form QC 008).
3	Inspect & Approve Backfilling to Excavations (Form QC 009).
4	Inspect & Approve Excavations prior to Blinding (Form QC 010).
5	Inspect & Approve Earthworks (Form QC 017).
6	Inspect & Approve Subgrade Construction (Form QC 018).
7	Inspect & Approve Pavement Layerworks/Subbase (Form QC 019).
8	Inspect & Approve Base Construction (Form QC 020).
9	Inspect & Approve Culvert Construction (Form QC 021).
10	Inspect & Approve Headwalls and Wing Walls (Form QC 024).
11	Inspect & Approve Subsoil Drainage (Form QC 023).
12	Record Site Measurement (Form QC 025)

Copies of the QC's forms are available for inspection at the offices of Impande Consulting Engineers.

4 DOCUMENTATION

4.1 Overview

An effective CQA Plan depends largely on recognition of all construction activities that should be monitored and on assigning responsibilities for the monitoring of each activity. This is most effectively accomplished and verified by the documentation of quality assurance activities. The ER will document that quality assurance requirements have been

addressed and satisfied. The ER will provide the Engineer with signed descriptive remarks, data sheets, and inspection reports to verify that monitoring activities have been carried out. The ER will also maintain, at the job site, a complete file of Drawings and Technical Specifications, a CQA Plan, test procedures, daily diaries, and other pertinent documents.

4.2 Daily Site Diary

A daily construction site diary will be prepared and signed by each Site Agent and the ER. The diary will include a summary of the contractor's daily construction activities. At a minimum, the daily construction diary will include the following information:

- Date, project name, location, and other identification
- Description of weather conditions, including temperature, cloud cover, and rainfall
- Reports on any meetings held and their results
- Record of visitors to site
- Locations of construction underway during that day
- Equipment and personnel working in each activity, including subcontractors
- Descriptions of work being inspected
- Decisions made regarding approval of units of material or of work, and corrective actions to be taken
- Description of problems or delays and resolution
- Communications with contractor staff
- Construction activities completed and/or in progress
- Signature of the diary preparer

The daily site diary will be routed on a daily basis to the project QC/QA files and will be maintained as part of the permanent project record.

4.3 Control of Quality Records

The ER verifies QA record accuracy and maintains copies of all quality-related documentation. This includes, but may not be limited to:

- Daily construction QA records;
- Inspection reports;
- Non-conformance (Failure) reports;
- Material receiving reports; and
- Monitoring and test data.

These records will be stored in files maintained in the project document control files. All original documents pertaining to QC information will be maintained in the project file located at the site. All records shall be available for inspection and audit, at any time, by the Engineer and the Employer.

CREIGHTON BULK WATER SUPPLY SCHEME

CONTRACT No. HGDM 813/HGDM/2023

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS

PART C4: SITE INFORMATION

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C4.1.1 ACCESS	2
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PART C4: SITE INFORMATION

C4.1 LOCALITY PLAN

The Locality of the site is as per the attached Locality Plan.

C4.1.1 Access

- 1.1 The Creighton Bulk Water Supply Scheme's Creighton is located on P8-3, Connected to the main road R612 via P122 at Mabelana area. The turn-off at Mabelana is located approximately 45-minutes South-West from Pietermaritzburg or, 15 minutes West of Ixopo. Co-ordinates:

30o01'53.5" S; 29o48'44.7" E [Creighton Town Reservoir]

30° 1'2.96"S; 29°43'22.99"E [Centocow Water Treatment Plant]

30°00'41.4" S; 29°43'47.5" E [Abstraction Works]

Creighton is a multi-year bulk water supply project whose main purpose is to supply Creighton Town, a small town with an already on-going recorded agri-industrial growth potential whose water demands have rendered current existing infrastructure insufficient. Project capacity has been augmented to also supply areas near Centocow.

C4.2 CONDITIONS ON SITE

A brief description of the site conditions is given under this section.

C4.2.1 Nature of Ground and Subsoil Conditions

No subsoil investigations have been carried out on this site. The employer will not be held accountable for any assumptions that tenderers may make in pricing based on their visual inspection of the site during the tender briefing meeting. Tenderers must satisfy themselves as to the nature of materials to be excavated under this contract.

C4.2.2 Weather Conditions

Table C4.2.1: Expected Number of Working Days Lost per Month due to Normal Rainfall

Month	Expected number of working days lost as result of normal rainfall - "n"
January	5
February	5
March	4
April	1
May	1
June	1
July	1

August	1
September	2
October	3
November	4
December	5
TOTAL	33 days

(The number of working days lost for December and January exclude the rain days for the annual year end shut down period as recommended by SAFCEC.

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

- if rain on site exceeded 10 mm over 24 hours.
- if no work was possible on the relevant working day on any item which is on the critical path according to the latest approved construction programme; or
- if less than 30% of the work force and plant on site could work during that specific working day.

Extension of time as a result of abnormal rainfall and adverse weather conditions shall be calculated monthly being equal to the number of working days certified by the Engineer's Representative as lost due to rainfall and adverse weather conditions, less the number of days allowed for as in Table C4.2.1, which could result in a negative figure for certain months. The total extension of time as a result of abnormal climatic conditions, for which the Contractor may apply, shall be the cumulative algebraic sum of the monthly extensions. Should the sum thus obtained be negative, the extension of time shall be taken as nil.

C4.2.3 Limitations

The following limitations characterise the site of the pipeline construction

- Extra care will have to be exercised with regards the activities of the Contractor's labour while they are on site to ensure that there is no undue damage to private property as a result of construction activities.
- The Contractor will be required to ensure that the insurances for the works cover any damage that may occur to private properties as a result of construction activities. Should there be any claims against the contractor resulting from construction activities, the Engineer will ensure that these have been addressed or the damages rectified prior to the release of the retention held on the contract.

C4.2 GEOTECHNICAL REPORT

Tenderers must satisfy themselves as to the nature of materials to be excavated under this contract.

No responsibility is accepted for any conclusions drawn by Tenderers from the results and information supplied (if any) and Tenderers must satisfy themselves as to the nature of materials to be excavated

under this contract. Tenderers are at liberty to excavate any further trial holes or to carry out other investigations to satisfy themselves as to the nature of the ground that will be encountered in carrying out the Works, provided that they advise the Engineer of their intention to carry out such further trial hole excavations or other investigations so that the necessary safety requirements can be ensured. Any trial hole excavated in areas close to pedestrian or vehicular traffic shall be barricaded and shall be backfilled immediately after inspection of the soil conditions.

The Tenderer shall be fully liable for any claims for losses, damage or injuries whatsoever arising out of, or as a consequence of, carrying out trial hole excavations for the purpose of his tender. Furthermore, the Engineer's authority for the carrying out of any exploratory excavations is subject to the Tenderer indemnifying the Employer and the Engineer against any such claims.

C4.3 ENVIRONMENTAL

The Contractor will be responsible for environmental control on site during construction and the maintenance period. The construction activities will be monitored by an independent environmental specialist.

HARRY GWALA DISTRICT MUNICIPALITY

CONSTRUCTION OF CENTOCOW – UMZIMKHULU RIVER ABSTRACTION WORKS: INTAKE CHAMBER, GALVANISED STEEL TANK SUMP, HIGH-LIFT PUMP STATION AND INSTALLATION OF ASSOCIATED MECHANICAL AND ELECTRICAL WORKS.

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PART C5: DRAWINGS

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PART C5: DRAWING.....D1