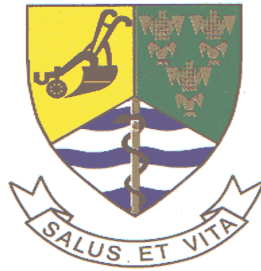


BELA-BELA LOCAL MUNICIPALITY



BID DOCUMENT

BID NO: 9/3/1/350

UPGRADING OF THE LESEDING SEWER PUMP STATION (WARD 6)

CLOSING DATE: 25 AUGUST 2023 AT 12:00PM

A BID FOR CATEGORY 6 CE or HIGHER CIDB REGISTERED CONTRACTORS

TECHNICAL ENQUIRIES	BIDDING RELATED ENQUIRIES
Senior Manager: Technical Services Ms. H.B Maswanganyi BELA-BELA LOCAL MUNICIPALITY 58 Chris Hani Drive BELA-BELA 0480 Tel: (014) 736 8041 Fax: (014) 736 3288 E-mail: Maswanganyih@belabela.gov.za	Manager: Supply Chain Management Ms. K.J Makgobela BELA-BELA LOCAL MUNICIPALITY 58 Chris Hani Drive BELA-BELA 0480 Tel: (014) 736 8201 Fax: (014) 736 3288 E-mail: MakgobelaKJ@belabela.gov.za

NAME OF BIDDER (BIDDING ENTITY) :

TEL NUMBER :

FAX NUMBER :

THE OFFERED TOTAL OF THE PRICES, INCLUDING VALUE ADDED TAX, IS:

R..... (In figures)



LIST OF PROJECT DOCUMENTS

The following documents are relevant to this Bid and Bidders are advised to obtain their own copies thereof:

- 1) "General Conditions of Contract for Construction Works, Third Edition 2015 (GCC 2015) issued by the South African Institution of Civil Engineering (Short title "General Conditions of Contract 2015").
- 2) "Standardized Specifications for Civil Engineering Construction" SANS 1200
- 3) "The Wiring of Premises – Part 1: Low-voltage installations" SANS 10142-1, "Low-voltage switchgear and control gear assemblies" SANS 1973, "Electrical apparatus for explosive gas atmospheres – Part 10: Classification of hazardous areas" SANS 60079-10/IEC 60079-10.
- 4) "Fire detection and fire alarm systems" SANS 50054
- 5) The Occupational Health and Safety Act No 85 and Amendment Act No 181 of 1993, and the Construction Regulation 2014/2014 (Government Gazette No 37305 of 07 February 2014, Notice No 10113, Vol 584).
- 6) In addition, Bidders are advised, in their own interest, to obtain their own copies of the following acts, regulations and standards referred to in this document as they are essential for the Bidder to get acquainted with the basics of construction management, the implementation of preferential construction procurement policies and participation of targeted enterprise and labour.
 - a) The Construction Industry Development Board Act No 38 of 2000 and the Regulations in terms of the CIDB Act 38/2000, Government Gazette No 42622 of 8 August 2019
 - b) SANS 1921:2004 Construction and Management
 - Part 1: General Engineering and Construction Works.
 - Part 2: Accommodation of Traffic on Public Roads occupied by the Contractor.
 - Part 5: Earthworks Activities which are to be performed by hand.
 - c) Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000) and its Regulations as published in the Government Gazette No. 47452 of 04 November 2022

The Project Document, containing the Bid Notice, Conditions of Tender, Bid Data, Returnable Schedules, General and Particular Conditions of Contract, Project Specifications, Pricing Schedule, Form of Offer and Site Information, is issued by the Employer. The Employer's Form of Acceptance and any correspondence from the selected Bidder, Performance Security and all Addenda issued during the period of bid will also form part of this document once a successful bidder has been appointed.

1) and 2) are available from the following organisations (as applicable):

- **CESA, PO Box 68482, Bryanston, 2021. Tel: (011) 463 2022 Fax: (011) 463 7383, E-mail: general@cesa.co.za**
- **SAICE, Private Bag X200, Halfway House, 1685. Tel: 011 805 5947/8, E-mail: civilinfo@saice.org.za**
- **SAFCEC**
- **South African Bureau of Standards**

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SUMMARY FOR BID OPENING PURPOSES

NAME OF BIDDING ENTITY:

PHYSICAL STREET ADDRESS:	POSTAL ADDRESS:

TELEPHONE NUMBER

FAX NUMBER :

E-MAIL ADDRESS :

CONTRACT PRICE : R

(Amount brought forward from the Form of Offer and Acceptance) *

Signed by authorised representative of the Bidding Entity:

DATE:

- Should any discrepancy occur between this figure and that stated in the Form of Offer and Acceptance, the latter shall take precedence and apply.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

VERY IMPORTANT NOTICE ON DISQUALIFICATION

A Bid not complying with the peremptory requirements stated hereunder will be regarded as being a not **“Acceptable Bid”** and as such will be rejected.

“Acceptable Bid” means any bid which, in all respects, complies with the conditions of the Bid and specifications as set out in the bid document, including conditions as specified in the Preferential Procurement Policy Framework Act No. 5 of 2000, Preferential Procurement Regulations as published in the Government Gazette No. 47452 of 04 November 2022 and related legislations:

1. Attend the compulsory briefing session as scheduled and advertised
2. Submit bid in the correct bid box
3. Submit bid before closing date and time
4. Fill in all the required information in all Forms/ Returnable Schedules (**See the “Returnable Document Checklist” section of this document**)
5. Complete all Forms/Schedules in ink. Do not use pencils or correction fluid to make corrections.
6. Make corrections, if necessary, only by placing a line across the words/numbers to be corrected and initial next to the amended text. Do not scratch out, write over rates, paint over rates or use correction fluid.
7. Do not remove pages from the bid document.
8. Ensure that witnesses sign where required.
9. Price the Bill of Quantities in full as required and not only provide lump sums.
10. Submit the applicable completed Authority of Signatory form and attach a certified copy of the members/ director’s resolution/ power of attorney.
11. Only the person authorised to do so may sign the bid offer.
12. Attach to the bid document a copy of a signed Joint Venture agreement (if applicable), with contents as guided in the **Construction Industry Development Board (CIDB) Best Practice Guideline #D2, Joint Venture Arrangements**.
13. Submit written proof of registration with the CIDB, in an appropriate Contractor grading designation of **6 CE or Higher** (category), as required in the bid documentation. In the case of a joint venture bidders must submit a consolidated CIDB grading.
14. Submit Company registration documents.
15. Submit Certified Copies of Identity Documents for the Director(s) of the Company.
16. Submit proof of the Tax Compliance Status (verification Pin) issued by the South African Revenue Services (SARS) or Proof that necessary arrangements have been made to meet outstanding tax obligations. In the case of the Joint venture, such documents must be attached for all parties.
17. The Form of offer (**Part C1.1**) must be completed and signed by the authorised signatory.

 Contractor

 Witness 1

 Witness 2

 Employer

 Witness 1

 Witness 2

18. Submit a certified copy of the valid letter of good standing for Workmen's compensation with the Department of Labour in terms of Compensation for Occupational Injuries and Diseases Amendment Act, No.61 of 1997 (as amended).
19. Submit Municipal Rates and Taxes Accounts of both the Director(s) and the Company not older than ninety (90) days from the date of tender closure.

A lease agreement may be submitted where applicable but must also be accompanied by a Municipal Rates and Taxes Account of the leased property where the Lessee is responsible for such an account. If the Lessee is not responsible for the Municipal Rates and Taxes account, then a statement of account must be submitted as evidence that the Lessee has met their obligations.

If Municipal Rates & Taxes Account submitted is not in the name of the Company and/or any of the Directors, a written affidavit stating how the Account relates to the said Company and/or Director must be submitted.

20. Submit proof of registration with the **Central Data Base** (CSD) of the National Treasury.

Furthermore, the bid will be considered as not acceptable if:

21. The bidder does not have key staff that satisfy EPWP requirements for Labour Intensive Construction methods/ skills.
22. The bidder fails to attach Annual Financial Statements (AFS) of the past three (3) financial years for projects exceeding R10 million.
23. The bidder attempts to influence or has in fact influenced the evaluation of the bid and/or the awarding of the contract.
24. The bidder during the last 5 years has failed to perform satisfactorily on a previous contract with the municipality, municipal entity or any other organ of state after written notice was given to that bidder that performance was unsatisfactory.
25. The bidder or any of his directors is listed on the Register of Bid 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.
26. The bidder has abused the Bela-Bela LM's Supply Chain Management System.
27. The bidder and any of its directors are in arrears for more than ninety (90) days for any municipal rates and taxes owed to the Bela-Bela LM or any other Municipality.
28. Irrespective of the procurement process followed, no award may be given to a person-
 - a) who is in the service of the state, or

- b) if that person is not a natural person, of which any director, manager, principal shareholder or stakeholder is a person in the service of the state; or
 - c) who is an advisor or consultant contracted with the municipality in respect of contract that would cause a conflict of interest.
29. The bidder may only submit a bid on the original documentation provided by the Bela-Bela LM.
30. The Bidder cannot submit more than one bid for the same project.

PLEASE NOTE:

1. **Section 217 of the constitution of the Republic of South Africa requires an organ of state to contract for goods and services in accordance with a system which is fair, equitable, transparent, competitive and cost effective.**
2. **The lowest bid / proposal will not necessarily be accepted, and the Municipality reserves the right to accept where applicable a part or portion of any bid or where possible accepts bids or proposals from multiple bidders.**
3. **Municipal Supply Chain Management policy and Preferential Procurement Policy Framework Act No 5 of 2000 and its regulations will be applied.**
4. **In this document and other documents referred to but not attached, the following words are synonymous with each other:**
 - a) **Client, Employer, Bela-Bela Local Municipality**
 - b) **Bidder, Contractor, Service Provider**
 - c) **Bid and Tender and Variations Thereof**
 - d) **Joint Venture / Consortium**

APPROVED BY:

Mr T.G RAMAGAGA
Municipal Manager
Bela-Bela Local Municipality

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Contractor

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Witness 1

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Witness 2

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Employer

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Witness 1

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Witness 2

RETURNABLE DOCUMENT CHECKLIST

Bidders to complete this checklist to ensure that all information in the Bid Document is completed, included and read by the Bidder.

DESCRIPTION	OUTCOME IF NOT COMPLIED WITH	COMPLETED/ INCLUDED/ READ
All pages requiring signatures signed by the Bidder (Authorized Person)	Non-responsive, bid eliminated	☐
Correct bid offer amount on BOQ carried forward to Bid Summary and the Form of offer	Non-responsive, bid eliminated	☐
Part 2: Data provided by the Contractor completed (Section C1.2 Contract Data)	Non-responsive, bid eliminated	☐

RETURNABLE SCHEDULES (T2.1)

Record of Addenda to Bid Document – Form A	Non-responsive, bid eliminated	☐
Schedule of Amendments, Qualifications and Alterations – Form B	Non-responsive, bid eliminated	☐
Certificate of Authority for Signatory – Form C	Non-responsive, bid eliminated	☐
Compulsory Declaration – Form D	Non-responsive, bid eliminated	☐
Declaration of Good Standing Regarding Tax (MBD 2) – Form E	Non-responsive, bid eliminated	☐
Declaration of Interest (MBD 4) – Form F	Non-responsive, bid eliminated	☐
Municipal Declaration and returnable documents (MBD 5.1) – Form G	Non-responsive, bid eliminated	☐
Audited Annual Financial Statements for the past three (3) years (MBD 5.2) – Form H	Non-responsive, bid eliminated	☐
Municipal Utility account (MBD 5.3) – Form I	Non-responsive, bid eliminated	☐
Preference Points Claim Form in terms of the Preferential Procurement Regulations 2022 (MBD 6.1) – Form J	Non-responsive, bid eliminated	☐

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

DESCRIPTION	OUTCOME IF NOT COMPLIED WITH	COMPLETED/ INCLUDED/ READ
Declaration of Bidder's Past Supply Chain Management Practices (MBD 8) – Form K	Non-responsive, bid eliminated	☐
Certificate of Independent Bid Determination (MBD 9) – Form L	Non-responsive, bid eliminated	☐
Financial References – Form M	Non-responsive, bid eliminated Information or bank history not available, possible risk	☐
Valid Letter of good standing for the Workmen's compensation with the Department of Labour – Form N	Non-responsive, bid eliminated	☐
Proposed key Personnel – Form O	Non-responsive, bid eliminated No designated personnel, possible risk on experience to carry out the works.	☐
Schedule of Works Previously Executed – Form P	Non-responsive, bid eliminated Regarded as Bidder with no experience	☐
Schedule of Present Commitments – Form Q	Non-responsive, bid eliminated	☐
Schedule of Plant and Equipment – Form R	Non-responsive, bid eliminated Regarded as Bidder with limited resources to carry out the works.	☐
Functionality Criteria and Points claimed by Bidder – Form S	Non-responsive, bid eliminated Regarded as Bidder with limited resources and less experience to carry out the works.	☐
Schedule of Labour Content – Form T	Non-responsive, bid eliminated	☐
CONTRACT DATA (SECTION C1.1 AND C1.2)		
Form of offer not signed	Non-responsive, bid eliminated	☐

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

DESCRIPTION	OUTCOME IF NOT COMPLIED WITH	COMPLETED/ INCLUDED/ READ
Contract Data (Part 2: Data provided by the Contractor)	Non-responsive, bid eliminated	☐
PRICING DATA (SECTIONS C2.1 – C2.3)		
Schedule of Quantities (All items in black ink)	Refer to pricing Instructions	☐
Calculation of Bid Sum	Refer to pricing Instructions	☐
REASON FOR NON-COMPLIANCE		
CONTACT DETAILS		
Office Phone No.		
Office Fax No.		
Cell Phone No.		
SIGNED ON BEHALF OF BIDDER		DATE

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

BELA-BELA LOCAL MUNICIPALITY



BID NO: 9/3/1/350

UPGRADING OF THE LESEDING SEWER PUMP STATION (WARD 6)

PORTION 1: THE TENDER

PART T1

TENDERING PROCEDURES

T1.1 Tender notice and invitation to tender

T1.2 Tender Data

PART T2

RETURNABLE DOCUMENTS

T2.1 List of returnable documents

T2.2 Returnable documents

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

BELA-BELA LOCAL MUNICIPALITY



BID NO: 9/3/1/350

UPGRADING OF THE LESEDING SEWER PUMP STATION (WARD 6)

PART T1: TENDERING PROCEDURES

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



Bela-Bela Local Municipality
58 Chris Hani Drive, Bela-Bela
Private Bag X1609, Bela-Bela, 0480

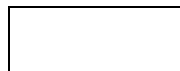


T1.1 TENDER NOTICE AND INVITATION TO BID

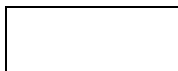
Suitably qualified Service Providers are hereby invited to submit bids for the following:

TENDER NUMBER	DESCRIPTION	EVALUATION CRITERIA	PRICE PER DOCUMENT (Non-Refundable)	CIDB GRADING	COMPULSORY BRIEFING SESSION	CONTACT PERSON	CLOSING DATE AND TIME
9/3/1/350	UPGRADING OF THE LESEDING SEWER PUMP STATION (WARD 6)	80/20 • Price • Specific goals	R 1 500.00	6 CE or Higher	Date: 28 July 2023 Time: 10:00am Venue: Entrance of the Municipal Office, 59 Chris Hani Drive, Bela-Bela	Ms. H. Maswanganyi Tel: 014 736 8041 e-mail: Maswanganyih@belabela.gov.za and Mr. N. Mashita Tel: 072 806 2089 e-mail: nokom@romh.co.za	25 August 2023 at 12:00pm
Documents are available from: Records Offices 1st floor Room F58 59 Chris Hani Drive Bela-Bela, 0480		All Applications must be submitted at: Bela-Bela Local Municipality In the Tender Box placed at the Records Office Room F58 Chris Hani Drive Bela-Bela, 0480					
All Tender documents are available from 28 July 2023							
All Supply Chain Management (SCM) queries must be directed to: Ms. K.J Makgobela Tel: (014) 736 8082 e-mail: MakgobelaKJ@belabela.gov.za							

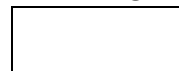
13



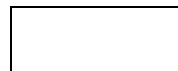
Contractor



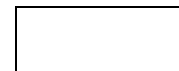
Witness 1



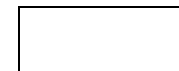
Witness 2



Employer



Witness 1



Witness 2

Minimum Requirements:

1. Bidders must submit a Tax compliance verification pin on a SARS letterhead.
2. In the case of the Joint venture the Tax Compliance Verification Pin of all parties must be attached.
3. A certified copy of a Company Registration Certificate reflecting names and identity numbers of active shareholding must be attached (except for Sole Traders and Partnerships).
4. A copy of a JV agreement (in case of JV) must be attached.
5. Municipal Rates & Taxes Account of the Director(s) and the Company not older than 90 days from the closing date of the tender must be attached.
The Bidder will be disqualified if any of the attached Municipal Rates and Taxes Accounts are in arrears for more than 90 days.
6. All supplementary / compulsory forms contained in the bid document must be completed and signed in full.
7. Bidders must attach three (3) years audited Annual Financial Statements (AFS).
8. Bidders must attach full report of the **Central Supplier Database** (CSD) of the National Treasury, in case of Joint Venture bidders must submit full report of the Central Data Base (CSD) of the National Treasury for both partners.
9. Bidders must attach certified copies of qualifications for key personnel to demonstrate compliance with EPWP requirements for experience in Labour Intensive Construction methods/ skills.
10. Bids received will be evaluated in terms of the 80/20 Price/Specific goals as prescribed in the amended Preferential Procurement Policy Framework Act (No 5 of 2000). The specific goals will be allocated as indicated in the table below:

Category of persons	100% Youth owned = 5 points, more than 51% Youth owned = 3 points, No Youth in shareholding = 1 point, Maximum of 5 points
Gender	100% Woman owned = 5 points, more than 51% Woman owned = 3 points, less than 50 % Woman owned = 1 point, Maximum points of 5 points
Race	100% Black owned = 5 points, more than 51% black owned = 3 points, less 50 % youth owned = 1 point, Maximum points of 5 points
Disability	100% people with disability owned = 5 points, more than 51% people with disability owned = 3 points, less 50% people with disability owned = 1 point, Maximum points of 5 points

11. Failure to comply with the above-mentioned conditions may invalidate your Bid.

14
 Contractor

 Witness 1

 Witness 2

 Employer

 Witness 1

 Witness 2

Please Note:

1. Section 217 of the constitution of the Republic of South Africa requires an organ of state to contract for goods and services in accordance with a system which is fair, equitable, transparent, competitive, and cost effective.
2. No application(s) will be accepted from a person in the service of the state.
3. No telegraphic, telefax and late applications will be accepted.
4. The lowest bid / proposal will not necessarily be accepted, and the Municipality reserves the right to accept where applicable a part or portion of any bid or where possible accepts bids or proposals from multiple bidders.
5. The Municipal Supply Chain Management Policy and Preferential Procurement Policy Framework Act No 5 of 2000 and its regulations will be applied.

Mr. TG RAMAGAGA
MUNICIPAL MANAGER

Notice Number: 42/23

15

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

MBD 1**INVITATION TO BID**

YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF THE BELA-BELA LOCAL MUNICIPALITY					
BID NUMBER:	9/3/1/350	CLOSING DATE:	25 AUGUST 2023	CLOSING TIME:	12:00PM
DESCRIPTION	UPGRADING OF THE LESEDING SEWER PUMP STATION (WARD 6)				
THE SUCCESSFUL BIDDER WILL BE REQUIRED TO CONCLUDE A WRITTEN CONTRACT WITH THE CLIENT.					

BID RESPONSE DOCUMENTS MAY BE DEPOSITED IN THE BID BOX SITUATED AT (STREET ADDRESS):

Bela-Bela Municipal Offices: 59 Chris Hani Drive,
Bela-Bela
0480

Bidders should ensure that bids are delivered timeously to the correct address. If the bid is late, it will not be accepted for consideration.

The bid box is generally open from 7:30 – 15:00pm, Monday - Fridays a week.

SUPPLIER INFORMATION					
NAME OF BIDDER					
POSTAL ADDRESS					
STREET ADDRESS					
TELEPHONE NUMBER	CODE		NUMBER		
CELLPHONE NUMBER					
FACSIMILE NUMBER	CODE		NUMBER		
E-MAIL ADDRESS					
VAT REGISTRATION NUMBER					
TAX COMPLIANCE STATUS	TCS PIN:		OR	CSD No:	

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Contractor

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Witness 1

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Witness 2

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Employer

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Witness 1

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Witness 2

ARE YOU THE ACCREDITED REPRESENTATIVE IN SOUTH AFRICA FOR THE GOODS /SERVICES OFFERED?	☐ Yes ☐ No [IF YES ENCLOSE PROOF]	ARE YOU A FOREIGN BASED SUPPLIER FOR THE GOODS /SERVICES OFFERED?	☐ Yes ☐ No [IF YES, ANSWER PART B:3]
TOTAL NUMBER OF ITEMS OFFERED		TOTAL BID PRICE	R
SIGNATURE OF BIDDER		DATE	
CAPACITY UNDER WHICH THIS BID IS SIGNED			
BIDDING PROCEDURE ENQUIRIES MAY BE DIRECTED TO:		TECHNICAL INFORMATION MAY BE DIRECTED TO:	
DEPARTMENT	Supply Chain Management	Technical Services	
CONTACT PERSON	Ms. K.J Ketlana	Ms. H.B Maswanganyi	
TELEPHONE NUMBER	(014) 736 8201	(014) 736 8041	
FACSIMILE NUMBER	(014) 736 3288	N/A	
E-MAIL ADDRESS	MakgobelaKJ@belabela.gov.za	Maswanganyih@belabela.gov.za	

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

TERMS AND CONDITIONS FOR BIDDING

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

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

☐ YES ☐ NO

3.5. IS THE ENTITY LIABLE IN THE RSA FOR ANY FORM OF TAXATION?

☐ YES ☐ NO

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

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

SIGNATURE OF BIDDER:

.....

CAPACITY UNDER WHICH THIS BID IS SIGNED:

.....

DATE:

.....

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

T1.2 TENDER DATA

The Conditions of Tender applicable to this contract are the Standard Conditions of Tender as contained in Annexure C of the CIDB Standard for Uniformity in Construction Procurement (8 August 2019) as published in Government Gazette No. 42622, Board Notice 423 of 2019.

The Standard Conditions of Tender make several references to the Tender/ Bid Data for details that apply specifically to this Bid. 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 Bid Data given below is cross-referenced to the relevant clause in the Standard Conditions of Tender to which it mainly applies.

CLAUSE	SUB-TITLE	ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER
1.1	Actions	The Employer is: Bela-Bela Local Municipality Private Bag x 1609 Bela-Bela 0480 The term "bid" in the context of this standard is synonymous with the term "tender".
1.1.1	Actions	The Employer and each Bidder 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 Clauses 2 and 3, timeously and with integrity, and behave equitably, honestly and transparently, comply with all legal obligations and not engage in anticompetitive practices.
1.2	Bid Document	The Bid Document issued by the Employer comprises of one (01) volume. The volume consists of the following: THE TENDER Part T1: Tendering Procedures T1.1 Tender Notice and invitation to bid T1.2 Tender Data Part T2: Returnable Documents T2.1 List of Returnable documents T2.2 Returnable schedules forms C1.1 Form of Offer and Acceptance (Yellow) C1.2 Contract Data (White) C2.2 Bill of Quantities (Yellow) THE CONTRACT Part C1: Agreements and Contract Data C1.1 Form of Offer and Acceptance (Yellow) C1.2 Contract Data (White) C1.3 Performance Guarantee (White)

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

CLAUSE	SUB-TITLE	ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER
		Part C2: Pricing Data C2.1 Pricing Instructions (Yellow) C2.2 Bill of Quantities (Yellow) Part C3: Scope of Work C3 Scope of Work Part C4: Site Information, specifications and special conditions C4.1 Site Information C4.2 Specification C4.3 Special Conditions
1.3.2	Interpretation	The Standard Conditions of Tender, the Bid Data, List of Returnable Documents and Returnable Schedules which are required for the bid evaluation purposes, shall also form part of the Contract arising from the invitation to Tender.
1.3.4	Add the following new clause 1.3.4 on Interpretation.	The Bid Documents have been drafted in English. The Contract arising from the invitation of tender shall be interpreted and constructed in English.
1.4	Communication and Employer's Agent	Communication and Employer's Agent (also known as the Engineer): ROMH Consulting 14 Steve Lekalakala Street Nylpark Ext.12, Mokopane, Postal Code: 0600 Tel No: (+27) (10) 035 1460 Tel No: (+27) (72) 806 2089 Contact person: Mr. N. Mashita e-mail: nokom@romh.co.za / info@romh.co.za Each communication between the employer and a bidder shall be to or from the employer's agent only, and in a form that can be read, copied and recorded, and in the language stated in the tender data. The employer shall not take any responsibility for non-receipt of communications from or by a bidder. The name and contact details of the employer's agent are stated in the tender data. The language for communications is English
1.5.1	Cancellation and Re-invitation of Tenders	The employer may, prior to the award of the tender, cancel a tender if: (a) due to changed circumstances, there is no longer a need for the services, works or goods requested; or (b) funds are no longer available to cover the total envisaged expenditure; or (c) no acceptable tenders are received. (d) there is material irregularity in the tender process

 Contractor

 Witness 1

 Witness 2

 Employer

 Witness 1

 Witness 2

CLAUSE	SUB-TITLE	ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER
1.5.4	Add the following new clause 1.5.4 on Cancellation.	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 Bidder for such cancellation and rejection but shall give written reasons for such action upon written request to do so.
1.6.1	Procurement procedures: General	Unless otherwise stated in the tender data, a contract shall, subject to 3.13, be concluded with the Bidder who, in terms of 3.11, is the highest ranked or the Bidder scoring the highest number of tender evaluation points, as relevant, based on the tender submissions that are received at the closing time for tenders.
1.6.2	Procurement procedures: Competitive Negotiation Procedure	Replace the contents of the clause with the following: The Municipal Manager may negotiate the final terms of a contract with an identified Bidder through a competitive bidding process as a preferred Bidder provided that such negotiation; - Does not allow any preferred Bidder a second or unfair opportunity, - It is not to the detriment of any other Bidder, and - Does not lead to a higher price than the bid as submitted. Minutes of such negotiation will be kept for record purposes.
2.1	Tenderer's obligations: Eligibility	Submit a tender offer only if the tenderer satisfies the criteria stated in the tender data and the tenderer, or any of his principals, is not under any restriction to do business with employer. Only those Bidders who satisfy the following criteria are eligible to submit bids: - Only Bidders who employ staff which satisfy EPWP requirements are eligible to submit bids. The Bidder must have a staff member who has completed, or, is registered for training towards, the NQF level 5-unit standards "Manage Labour Intensive Construction" - Only those Bidders who are registered with the National Treasury Central Service Provider Data Base (CSD), and - Only those Bidders who are registered with the CIDB, in a Contractor Grading equal to 6 CE or higher than a Contractor Grading designation determined in accordance with the sum offered, or a value determined in accordance with Regulation 25 (1B) or 25 (7A) of the Construction Industry Development Regulations, for a 6 CE or Higher Class of construction work, are eligible to submit Bids. Joint Ventures are eligible to submit bids provided that: - Every member of a Joint Venture is registered with the CIDB within 10 days from the closing date of Bids; - The lead partner has a Contractor Grading Designation in the 6 CE or Higher class of construction work; and,

 Contractor

 Witness 1

 Witness 2

 Employer

 Witness 1

 Witness 2

CLAUSE	SUB-TITLE	ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER
		The combined Contractor Grading Designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a Contractor designation determined in accordance with the sum offered for a 6 CE or Higher class of construction work, is eligible to submit Bids.
2.2.1	Tenderer's obligations: Cost of tendering	Accept that, unless otherwise stated in the tender data, the employer will not compensate the tenderer for any costs incurred in the preparation and submission of a tender offer, including the costs of any testing necessary to demonstrate that aspects of the offer comply with requirements.
2.2.3	Add the following to the clause 2.2.3 of the Tenderer's obligations: Cost of tendering	A non-refundable Bid deposit of R1 500.00 payable in cash or by bank guaranteed cheque made out in favour of the Bela-Bela Local Municipality, is required on collection of the Bid documents. Accept that the Employer will not compensate the Bidder for any costs incurred in attending interviews in the office of the employer or the Employer's agent (if required).
2.3	Check documents	Check the tender documents on receipt for completeness and notify the employer of any discrepancy or omission.
2.4	Confidentiality and copyright of documents	Treat as confidential all matters arising in connection with the tender. Use and copy the documents issued by the employer only for the purpose of preparing and submitting a tender offer in response to the invitation.
2.5	Reference Documents	The document "General Conditions of Contract for Construction Works, Third Edition 2015 (GCC 2015)" of the South African Institute of Civil Engineers. Bidders, Contractors and Sub-Contractors shall obtain their own copies of this document for Bidding purposes and for use for the duration of the Contract from: The Secretary South African Institution of Civil Engineering Private Bag X200 Halfway House 1685 or SAICE House Block 19 Thornhill Office Park Becker Street Midrand Tel. 011 805 5947 and shall bear all expenses in this regard.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

CLAUSE	SUB-TITLE	ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER
2.6	Acknowledge addenda	Acknowledge receipt of addenda to the tender documents, which the Employer may issue, and if necessary, apply for an extension to the closing time stated in the tender data, in order to take the addenda into account.
2.7	Site Visit and Clarification Meeting	A compulsory site visit and clarification meeting will be held as follows: Location: Entrance of the municipal offices, 59 Chris Hani Drive, Bela-Bela Date: 28 July 2023 Starting time: 10h00am Bidders must sign the attendance list in the name of the bidding entity. Addenda will be issued to and Bids will be received only from those Bidding entities appearing on the attendance list of the compulsory briefing session.
2.8	Seeking Clarification	Replace the contents of the clause with the following: Request clarification of the Bid Documents, if necessary, by notifying the Employer's Official or the Employer's Agent indicated in the Bid Notice and Invitation to Bid (Section T1.1) in writing at least five (5) working days before the closing time stated in clause 2.15.
2.11	Alterations to Document	Do not make any alterations or additions to the tender documents, except to comply with instructions issued by the Employer or to correct errors made by the Bidder. To correct errors made, draw a line through the incorrect entry and write the alteration above in black ink and write the initials of the authorised signatories next to the alteration. Do not make erasures using masking fluid.
2.12.1	Alternative Bid Offers	No alternative offers will be accepted
2.13	Submitting of Bid Offer	Add the following to the clause: No claim will be entertained for faults in the Offer Price resulting from any discrepancies, omissions or indistinct figures.
2.13.1		Each Bidder is required to return the complete set of documents as listed in the Tender Data with all the required information supplied and completed in all respects.
2.13.3		Parts of each Bid Offer communicated on paper shall be submitted as an original plus zero copies.

Contractor

Witness 1

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Employer

Witness 1

Witness 2

CLAUSE	SUB-TITLE	ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER
2.13.4		Add the following to the clause: “Only authorised signatories may sign the original and all copies of the Bid Offer where required in terms of 2.13.3. In the case of a ONE-PERSON CONCERN submitting a Bid, this shall be clearly stated. In case of a COMPANY submitting a Bid, include a copy of a resolution by its board of directors authorising a director or other official of the company to sign the documents on behalf of the company. In the case of a CLOSED CORPORATION submitting a Bid, include a copy of a resolution by its members authorising a member or other official of the corporation to sign the documents on each member’s behalf. In the case of a PARTNERSHIP submitting a Bid, all the partners shall sign the documents, unless one partner or a group of partners has been authorised to sign on behalf of each partner, in which case proof of such authorisation shall be included in the Bid. In the case of a JOINT VENTURE submitting a Bid, include a resolution of each company of the Joint Venture together with a resolution by its members authorising a member of the Joint Venture to sign the documents on behalf of the Joint Venture.” Accept that failure to submit proof of authorisation to sign the Bid shall result in a Bid offer being regarded as non-responsive.
2.13.5	Delivery of Bid	Replace the contents of the clause with the following: The Employer's address for delivery of tender offers and identification details to be shown on each tender offer package are: Location of tender box: Records Office F58 Physical address: Bela-Bela Local Municipality, 59 Chris Hani Drive, Bela-Bela, 0480 Postal address: Private Bag X1609, Bela-Bela, 0480 Identification details: “UPGRADING OF THE LESEDING SEWER PUMP STATION (WARD 6)”
2.13.6	Two-envelope procedure	A two-envelope procedure will not be followed.
2.13.9		Telephonic, telegraphic, telex, facsimile, electronic or e-mailed Bids will not be accepted.

Contractor

Witness 1

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Employer

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CLAUSE	SUB-TITLE	ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER
		Accept that a tender submitted to the Employer cannot be withdrawn or substituted. No substitute tenders will be considered. All tenders received by the Bela-Bela Local Municipality will remain in the Municipality's possession until after the stipulated closing date and time.
2.14	Information and Data to be completed in all respects	Add the following to the clause: "Accept that the Employer shall in the evaluation of Bid Offers take due account of the Bidder's past performance in the execution of similar engineering works of comparable magnitude, and the degree to which he possesses the necessary technical, financial and other resources to enable him to complete the Works successfully within the contract period. Satisfy the Employer and the Engineer as to his ability to perform and complete the Works timeously, safely and with satisfactory quality, and furnish details in section T2.2 of contracts of a similar nature and magnitude which they have successfully executed in the past." Accept that the Employer is restricted in accordance with clause 4(4) of the Construction Regulations 2003, to only appoint a Contractor whom he is satisfied has the necessary competencies and resources to carry out the work safely. Accept that submitting inferior and inadequate information relating to Health & Safety (as required in clause 2.23) shall be regarded as justifiable and compelling reasons not to award a Contract to a Bidder."
2.15.1	Closing time	The closing time and location for the submission of Bid Offers are: Closing date: 04 August 2023 Closing Time: 12h00pm Location: In the Tender Box placed at the Records office Room F58 59 Chris Hani Drive Bela-Bela 0480
2.16.1	Tender offer validity	The bid offer validity period is 90 days. Add the following to the clause: If the Bid validity expires on a Saturday, Sunday or public holiday, the Bid shall remain valid and open for acceptance until the closure of business on the following working day.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

CLAUSE	SUB-TITLE	ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER
2.17	Clarification of Bid offer after Submission	Replace the contents of the clause with the following clause: “Provide clarification of a Bid offer in response to a request to do so from the Employer during the evaluation of Bid offers. This may include providing a breakdown of rates or prices and correction of arithmetical errors resulting from the product of the unit rate and the quantity by the adjustment of certain line-item totals. No change in the unit rate or prices or substance of the Bid Offer is sought, offered, or permitted. The total of the prices shall be adjusted to reflect the arithmetically correct summation of corrected line-item totals and shall be binding upon the Bidder. Therefore, no change in the competitive position of tenderers or substance of the tender offer is sought, offered or permitted”
2.18	Provide other material	The Bidder shall, when requested by the Employer to do so, submit the names of all Management and Supervisory staff that will be employed to supervise the labour-intensive portion of the works together with satisfactory evidence that such staff members satisfy the eligibility requirements.
2.19	Inspections, tests and analysis	The Bidder must provide access during working hours to his premises for inspections on request.
2.22	Return of Bid Documents	Where a Bidder who received a Bid, Document does not submit a Bid, the Bid Documents issued to him must be returned to the Employer within 14 days after the closing date for submission of Bids.
2.23	Certificates	The following certified certificates / information/ documents must be provided with the Bid Offer (any Bid not complying with the below stipulations, listed a. to n. will be regarded as non-responsive and will therefore not be considered for further evaluation): - Authority for signature on an original company letterhead. - Copies of Company / CC / Trust / Partnership registration certificates as well as signed agreements and power of attorney for Joint Venture / Consortium if applicable. - Joint Venture Agreement and the power of attorney in case of Joint Ventures. - A tax compliance verification pin on a SARS letterhead. - Audited Annual Financial Statements of the company for the recent past three (3) financial years. - Proof of registration with the Central Data Base (CSD) of the National Treasury. - Certificate of Contractor Registration with CIDB Grading of 6 CE or higher issued by the Construction Industry Development Board. Certificates of Registration in respect of each partner, where a bidder satisfied the CIDB Contractor grading designation requirements through the formation of a joint venture.

 Contractor

 Witness 1

 Witness 2

 Employer

 Witness 1

 Witness 2

CLAUSE	SUB-TITLE	ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER
		h. Evidence of registration and proof of good standing with the Department of Labour in terms of section 80 of the compensation for injury and Disease Act (COIDA) (Act No 130 of 1993). i. Copy of Identity Documents j. Copy of Deed of Trust (if a trust is involved) k. Copy of the curriculum vitae of the person who prepares the Contractor's Health and Safety Plan. l. Copy of curriculum vitae of the Health and Safety officer the successful bid intends appointing in accordance with the Occupational and Safety Act. m. Municipal Rates and Taxes Accounts of both the Director(s) and the Company not older than ninety (90) days from the date of tender closure. A lease agreement may be submitted where applicable but must also be accompanied by a Municipal Rates and Taxes Account of the leased property where the Lessee is responsible for such an account. If the Lessee is not responsible for the Municipal Rates and Taxes account, then a statement of account must be submitted as evidence that the Lessee has met their obligations. If Municipal Rates & Taxes Account submitted is not in the name of the Company and/or any of the Directors, a written affidavit stating how the Account relates to the said Company and/or Director must be submitted. n. Proof of Bank Account Note: Failure to provide these documents will result in the tender not being evaluated further in terms of Method 2 (Functionality, Price and Specific goals)
2.24 (Add the following new Clause)	Canvassing and obtaining of additional information by Bidder's	Accept that no Bidder shall make any attempt either directly or indirectly to canvass any of the Employers officials or the Employer's agent in respect of his Bid, after the opening of the Bids but prior to the Employer arriving at a decision thereon. No Bidder shall make any attempt to obtain particulars of any relevant information, other than that disclosed at the opening of Bids."
2.25 (Add the following new Clause)	Awards to close family members of persons in the service of the state	Accept that the notes to the Employer's annual financial statements must disclose particulars of any award of more than R 2 000.00 to a person who is a spouse, child or parent of a person in the service of the state (defined in clause 2.25), or has been in the service of the state in the previous twelve months, including – a) the name of that person. b) the capacity in which that person is in the service of the state; and c) the amount of the award. In order to give effect to the above, the questionnaire for the declaration of interests in the bid of persons in service of state must be completed.

Contractor

Witness 1

Witness 2

Employer

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Witness 2

CLAUSE	SUB-TITLE	ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER																				
2.26 (Add the following new Clause)	Tax compliance pin	Submission of a Tax Compliance Verification Pin on a SARS letterhead is compulsory.” “Bidders should note, that in accordance with legislation, no contract may be awarded to a / a person / entity who has failed to submit a Tax Compliance Verification Pin on a SARS letterhead from the South African revenue Service (SARS)																				
2.27 (Add the following new Clause)	Tender Disputes	Disputes on the tendering procedure will be settled by means of mutual consultation, mediation (with or without legal representation), or when unsuccessful in procedures as per the applicable laws in the Court of Law of the Republic of South Africa.																				
2.28 (Add the following new Clause)	Eligibility	Only those tenderers who can demonstrate that they will have in their employ, management and supervisory staff satisfying the requirements of the scope of work for labour-intensive competencies for supervisory and management staff during the validity of the contract are eligible to submit tenders. Tender Qualification: Labour Intensive Contracts To qualify for award of the Contract, tenderers shall meet the following minimum qualifying criteria: a) Having participated in and graduated with fully satisfactory results from the relevant national qualification framework training organized under EPWP (or other similar project) and applying trained supervisory staff on a full-time basis for the execution of the works. LIC NQF Level 5. b) Proposals for timely acquisition (own, lease, hire, etc.) of the essential minimum equipment. c) The contractor will carry out the works using labour based work methods as described in Section 3 of the Scope of Work. The tenderer must submit to the Employer, names of all management and supervisory staff that will be employed to supervise the labour-intensive portion of the works together with satisfactory evidence that such staff members satisfy the eligibility requirement. The contractor shall ensure that the minimum supervisor to worker ratio of 1:10 for effective supervision of Labour intensive works for all LI activities																				
2.29 (Add the following new Clause)	Schedule of Labour Content	The minimum Labour Content for this Project shall be 4%calculated as the amount spend on labour wage divided by the total value of the project. The minimum job creation targets on the project shall be: <table><tr><th>Description</th><th>Total</th><th>Women</th><th>Youth</th><th>Disabled</th></tr><tr><td>Work Opportunities</td><td>15</td><td>8</td><td>6</td><td>1</td></tr><tr><td>Person Days</td><td>3150</td><td>1680</td><td>1260</td><td>210</td></tr><tr><td>Training Days</td><td>TBC</td><td>TBC</td><td>TBC</td><td>TBC</td></tr></table>	Description	Total	Women	Youth	Disabled	Work Opportunities	15	8	6	1	Person Days	3150	1680	1260	210	Training Days	TBC	TBC	TBC	TBC
Description	Total	Women	Youth	Disabled																		
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Training Days	TBC	TBC	TBC	TBC																		

 Contractor

 Witness 1

 Witness 2

 Employer

 Witness 1

 Witness 2

CLAUSE	SUB-TITLE	ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER
2.30 (Add the following new Clause)	Additional Conditions of Bid	The additional Conditions of Bid are: 1. Bela-Bela Local Municipality may also request the Bidder to provide written evidence that his financial, labour and resources are adequate for carrying out project. 2. The Bela-Bela Local Municipality reserves the right to appoint a firm of chartered accountants and auditors and / or execute any other financial investigations on the financial resources of any Bidder. The Bidder shall provide all reasonable assistance in such investigations. 3. The Bela-Bela Local Municipality reserves the right to appoint a different Service Provider for each project. The Bidder shall be required to complete the Form of Offer and the Bill of Quantities for each project. 4. The bid document shall be submitted and shall not be taken apart. 5. List of Returnable Documents (PART T2) must be completed in full. A bidder's company profile will not be used by the Bela-Bela Local Municipality to complete PART T2 on behalf of the Bidder. PLEASE NOTE: If PART T2 is not completed in full by the Bidder, this offer will be rejected.
3.1	Respond to clarification	Replace the contents of the clause with the following: Respond to a request for clarification received via email as per the details on the invitation to bid, up to three (3) working before closing of the bid.
3.4	Opening of Bid submissions	Bids will be opened immediately after the closing time for bid.
3.5	Two-envelope system	The two-envelope system shall not apply.
3.8.1	Test for responsiveness	Determine, after opening and before detailed evaluation, whether each tender offer properly received: a) complies with the requirements of these Conditions of Tender, b) has been properly and fully completed and signed, and c) is responsive to the other requirements of the tender documents.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

CLAUSE	SUB-TITLE	ADDITION OR VARIATION TO STANDARD CONDITIONS OF TENDER
3.8.2	Responsive Tender	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, - significantly 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.
3.9	Arithmetical Errors	Check the highest ranked tender or tenderer with the highest number of tender evaluation points after the evaluation of tender offers in accordance with 3.11 for: - the gross misplacement of the decimal point in any unit rate; - omissions made in completing the pricing schedule or bills of quantities; or - arithmetic errors in: - line item totals resulting from the product of a unit rate and a quantity in bills of quantities or schedules of prices; or - the summation of the prices. The Employer must correct the arithmetical errors in the following manner: - Where there is a discrepancy between the amounts in words and amounts in figures, the amount in words shall govern. - If bills of quantities or pricing schedules apply and there is an error in the line item total resulting from the product of the unit rate and the quantity, the line item total shall govern, and the rate shall be corrected. Where there is an obviously gross misplacement of the decimal point in the unit rate, the line item total as quoted shall govern, and the unit rate shall be corrected. - Where there is an error in the total of the prices either as a result of other corrections required by this checking process or in the tenderer's addition of prices, the total of the prices shall govern, and the tenderer will be asked to revise selected item prices (and their rates if bills of quantities apply) to achieve the tendered total of the prices. Consider the rejection of a tender offer if the tenderer does not correct or accept the correction of the arithmetical error in the manner described above.
3.11	Evaluation of Bids	The procedure for the evaluation of responsive Bids is Method 2 (Functionality, Price and Specific goals) .

 Contractor

 Witness 1

 Witness 2

 Employer

 Witness 1

 Witness 2

3.11.1	General	Evaluation of Bid Offers Scoring Functionality Functionality of responsive bids submitted will be evaluated according to the predetermined criteria described below, considering, among other factors, the quality, reliability and the technical capacity and ability of a Bidder. A Bid will not be evaluated further if it fails to meet the minimum threshold of total 70 points out of maximum 100 points for functionality as prescribed in the following tables: <table border="1"> <thead> <tr> <th>CATEGORY</th> <th>FUNCTIONAL CRITERIA</th> <th>POINTS ALLOCATION</th> </tr> </thead> <tbody> <tr> <td>(i)</td> <td>Experience of the bidder</td> <td>50</td> </tr> <tr> <td>(ii)</td> <td>Key personnel qualifications and experience</td> <td>40</td> </tr> <tr> <td>(iii)</td> <td>List of Plant</td> <td>10</td> </tr> <tr> <td>TOTAL</td> <td></td> <td>100</td> </tr> </tbody> </table> (i) EXPERIENCE OF THE BIDDER (50 POINTS) The Bidder must submit proof of successfully completed similar projects, i.e. construction works. (Certified Copies of Appointment Letters and Completion Certificates must be attached). <table border="1"> <thead> <tr> <th>TARGETED GOALS</th> <th>POINTS ALLOCATION</th> </tr> </thead> <tbody> <tr> <td>Bidder has submitted no information or inadequate information to determine scoring levels</td> <td>0</td> </tr> <tr> <td>Bidder has successfully completed at least 1 similar project with a project value of R10 000 000.00 or more</td> <td>20</td> </tr> <tr> <td>Bidder has successfully completed at least 2 similar projects with a project value of R10 000 000.00 or more</td> <td>35</td> </tr> <tr> <td>Bidder has successfully completed at least 3 similar projects with a project value of R10 000 000.00 or more</td> <td>50</td> </tr> </tbody> </table> (ii) KEY PERSONNEL QUALIFICATIONS AND EXPERIENCE (40 POINTS) The Bidder must submit the Proposed Team Structure, identifying Site Agent, Site Foreman and Safety Officer as key personnel. (Copies of CVs and Certified Copies of Qualifications Certificates must be attached).	CATEGORY	FUNCTIONAL CRITERIA	POINTS ALLOCATION	(i)	Experience of the bidder	50	(ii)	Key personnel qualifications and experience	40	(iii)	List of Plant	10	TOTAL		100	TARGETED GOALS	POINTS ALLOCATION	Bidder has submitted no information or inadequate information to determine scoring levels	0	Bidder has successfully completed at least 1 similar project with a project value of R10 000 000.00 or more	20	Bidder has successfully completed at least 2 similar projects with a project value of R10 000 000.00 or more	35	Bidder has successfully completed at least 3 similar projects with a project value of R10 000 000.00 or more	50
CATEGORY	FUNCTIONAL CRITERIA	POINTS ALLOCATION																									
(i)	Experience of the bidder	50																									
(ii)	Key personnel qualifications and experience	40																									
(iii)	List of Plant	10																									
TOTAL		100																									
TARGETED GOALS	POINTS ALLOCATION																										
Bidder has submitted no information or inadequate information to determine scoring levels	0																										
Bidder has successfully completed at least 1 similar project with a project value of R10 000 000.00 or more	20																										
Bidder has successfully completed at least 2 similar projects with a project value of R10 000 000.00 or more	35																										
Bidder has successfully completed at least 3 similar projects with a project value of R10 000 000.00 or more	50																										

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

 Contractor

 Witness 1

 Witness 2

 Employer

 Witness 1

 Witness 2

			Site Foreman with more than 3 years of relevant construction experience	7	
		KEY-PERSONNEL	TARGETED GOALS	POINTS ALLOCATION	TOTAL POINTS
		Safety officer	No information or inadequate information submitted to determine scoring level	0	
			Safety officer with NQF Level 6 qualification in Health and Safety	2	5
			Safety officer with 1 – 3 years of relevant construction experience	3	
			Safety officer with NQF Level 6 qualification in Health and Safety	2	10
			Safety officer with more than 3 years of relevant construction experience	8	

(iii) LIST OF PLANT (10)

Bidders are expected to have the following minimum plant:

Excavator, Grader, TLB, Tipper Truck and LDV (**Registration documents of plant owned or letter of intent to rent the relevant plant with registration documents must be attached**)

TARGETED GOALS	POINTS ALLOCATIONS
No relevant documents attached	0
Excavator	2
Grader	2
TLB	2
2x Tipper Trucks	2
2x LDV	2

All responsive bids that qualify by meeting the minimum thresholds for functionality will then be evaluated on price and specific goals in accordance with the Preferential Procurement Regulations 2022 (Government Gazette No. 47452 dated 04 November 2022). The points scored for functionality are not carried over or considered in the calculation of the Financial and Preference evaluation.

For bids with a Rand Value equal to or below R50 million (80/20)

- (1) The following formula will be used to calculate the points out of 80 for price in respect of an invitation with a Rand value equal to or below R50 million, inclusive of all applicable taxes.

The financial offer will be scored using the following formula:

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

Where-

Ps = Points scored for price of tender under consideration.

Pt = Price of tender under consideration; and

Pmin = Price of lowest acceptable tender.

- (2) Subject to sub-regulation (4) below, points for specific goals must be awarded to a Bidder in accordance with the table below

SPECIFIC GOALS CATEGORIES	NUMBER OF POINTS 20 POINTS BREAKDOWN
1. Category of persons	• 100% Youth owned – 5 points • More than 51% Youth owned – 3 points • No Youth in shareholding – 1 point Maximum points = 5 points
2. Gender	• 100% Woman owned – 5 points • More than 51% Woman owned – 3 points • Less 50% Woman owned – 1 point Maximum points = 5 points
3. Race	• 100% Black owned – 5 points • More than 51% Black owned – 3 points • Less 50% Black owned – 1 points Maximum points = 5 points
4. Disability	• 100% people with disability owned – 5 points • More than 51% people with disability owned – 3 points • Less 50% people with disability owned – 1 point Maximum points = 5 points

- (3) A maximum of 20 points may be awarded to a tenderer for the specific goal specified for the tender.
- (4) The points scored for the specific goal must be added to the points scored for price and the total must be rounded off to the nearest two decimal places.
- (5) Subject to section 2(1)(f) of the Act, the contract must be awarded to the tenderer scoring the highest points.

3.13.1	Acceptance of Bid Offer	A Bid Offer will only be accepted on condition that such acceptance is not prohibited in terms of clause 44 of the Municipal Supply Chain Management Regulations published in terms of the Municipal Finance Management Act, 2003.
3.17	Copies of Contract	The successful Bidder shall receive ONE (01) copy of the signed Contract.

Contractor

Witness 1

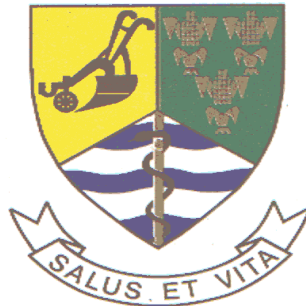
Witness 2

Employer

Witness 1

Witness 2

BELA-BELA LOCAL MUNICIPALITY



BID NO: 9/3/1/350

UPGRADING OF THE LESEDING SEWER PUMP STATION (WARD 6)

PART T2: RETURNABLE DOCUMENTS

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

T2.1 List of returnable documents

1. Documentation to demonstrate eligibility to have tenders evaluated

- (i) Certificate of authority for signatory
- (ii) Copies of Company / CC / Trust / Partnership registration certificates as well as signed agreements and power of attorney for Joint Venture / Consortium if applicable
- (iii) Copies of the identity documents of the Director(s)
- (iv) Joint Venture Agreement and Power of attorney in case of Joint Ventures
- (v) Valid proof of the Tax Compliance Status (Verification Pin) issued by the South African Revenue Services (SARS) or declaration by the South Africa Revenue Services (SARS) that tax matters of the Tendering company / association or Joint Venture parties are in order
- (vi) Copies of the audited Annual Financial Statements (AFS) of the past three (3) financial years if tender offer exceeds R10 million.
- (vii) Proof of registration with the **Central Data Base (CSD)** of the National Treasury.
- (viii) Copy of a valid letter of good standing for Workmen's compensation with the Department of Labour in terms of Compensation for Occupational Injuries and Diseases Amendment Act, No.61 of 1997 (as amended). This must be submitted for all members / partners in case of Joint Venture / Partnership.
- (ix) Copies of the Municipal Rates and Taxes Accounts of both the Director(s) and the Company not older than ninety (90) days from the date of tender closure.

A lease agreement may be submitted where applicable but must also be accompanied by a Municipal Rates and Taxes Account of the leased property where the Lessee is responsible for such an account. If the Lessee is not responsible for the Municipal Rates and Taxes account, then a statement of account must be submitted as evidence that the Lessee has met their obligations.

If Municipal Rates & Taxes Account submitted is not in the name of the Company and/or any of the Directors, a written affidavit stating how the Account relates to the said Company and/or Director must be submitted.

- (x) Proof of Registration with CIDB – **Grade 6 CE or higher**. In case of a joint venture, a calculated combined CIDB grading must be attached.

Note: Failure to provide these documents will result in the tender not being evaluated as per **Method 2 (Functionality, Price and Specific goals)**

2. Returnable Schedules required for tender evaluation purposes

The Bidder must complete the following returnable schedules as relevant:

Form A	RECORD OF ADDENDA TO TENDER DOCUMENTS
Form B	PROPOSED AMENDMENTS AND QUALIFICATIONS
Form C	AUTHORITY OF SIGNATORY
Form D	COMPULSORY DECLARATION
Form E	DECLARATION OF GOOD STANDING REGARDING TAX (MBD 2)
Form F	DECLARATION OF INTEREST (MBD 4)
Form G	MUNICIPAL DECLARATION AND RETURNABLE DOCUMENTS (MBD 5.1)
Form H	ANNUAL FINANCIAL STATEMENTS DECLARATION (MBD 5.2)
Form I	MUNICIPALITY UTILITY ACCOUNT (MBD 5.3)
Form J	PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2022 (MBD 6.1)
Form K	DECLARATION OF BIDDER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES (MBD 8)
Form L	CERTIFICATE OF INDEPENDENT BID DETERMINATION (MBD 9)
Form M	FINANCIAL REFERENCES /BIDDER'S CREDIT RATING AND BANK DETAILS

3. Other documents required for tender evaluation purposes

Form N	VALID LETTER OF GOOD STANDING WITH THE WORKMEN'S COMPENSATION WITH THE DEPARTMENT OF LABOUR
Form O	PROPOSED KEY PERSONNEL
Form P	SCHEDULE OF PREVIOUS EXPERIENCE
Form Q	SCHEDULE OF SIMILAR CURRENT PROJECTS
Form R	SCHEDULE OF INFRASTRUCTURE AND RESOURCES / PLANT AND EQUIPMENT
Form S	FUNCTIONALITY CRITERIA AND POINTS CLAIMED BY BIDDER
Form T	SCHEDULE OF LABOUR CONTENT

PLEASE NOTE:

- The Bidder is required to complete each schedule and form listed above to the best of his ability, as the evaluation of Bids and eventual Contract will be based on the information provided by the Bidder.
- Failure of a Bidder to complete the schedules and forms to the satisfaction of the Employer will inevitably prejudice the Bid and may lead to rejection on the basis that the Bid is non-responsive.
- Bidders shall note that their signatures appended to each returnable form represents a declaration that they vouch for the accuracy and correctness of the information provided, including the information provided by candidates proposed for the specified key positions.
- Notwithstanding any check or audit conducted by or on behalf of the Employer, the information provided in the returnable documents is accepted in good faith and as justification for entering into a contract with a bidder. If subsequently any information is found to be incorrect such discovery shall be taken as wilful misrepresentation by that bidder to induce the contract. In such event the Employer has the discretionary right to terminate the contract.

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Contractor

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Witness 1

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Witness 2

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Employer

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Witness 1

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Witness 2

T2.2 RETURNABLE DOCUMENTS

DRAFT

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Contractor

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Witness 1

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Witness 2

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Employer

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Witness 1

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Witness 2

FORM A: RECORD OF ADDENDA TO TENDER DOCUMENTS

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

Item no.	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

Bidder

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

FORM B: PROPOSED AMENDMENTS AND QUALIFICATIONS

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

The Bidder's attention is drawn to clause 5.8 of SANS 10845-3 regarding the Employer's handling of material deviations and qualifications.

Page	Clause or item	Proposal

Signed

Date

Name

Position

Bidder

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

FORM C: AUTHORITY OF SIGNATORY

Details of person responsible for tender process:

Name: _____

Contact number: _____

Office address: _____

Signatories for close corporations and companies shall confirm their authority by completing this form and submitting a **duly signed and dated original or certified copy on the Company Letterhead** of the relevant resolution of their members or their board of directors, as the case may be.

COMPANIES AND CLOSE CORPORATIONS:

"By resolution of the board of directors passed on (date)

Mr/ Ms

has been duly authorized to sign all documents in connection with the Bid Number

..... and any Contract which may arise there from on

behalf of

(COMPANY NAME IN BLOCK CAPITALS)

SIGNED ON BEHALF OF THE COMPANY

IN HIS CAPACITY AS

DATE

FULL NAMES OF SIGNATORY

AS WITNESSES: 1.

2.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

JOINT VENTURES:**Certificate of Authority for Joint Ventures**

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

NAME OF FIRM	ADDRESS	DULY AUTHORISED SIGNATORY
		SIGNATURE ON BEHALF OF BIDDER: Name: Designation:
		SIGNATURE ON BEHALF OF BIDDER: Name: Designation:
		SIGNATURE ON BEHALF OF BIDDER: Name: Designation:
		SIGNATURE ON BEHALF OF BIDDER: Name: Designation:

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

FORM D: COMPULSORY DECLARATION

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

Section 1: Enterprise Details

Name of enterprise:	
Contact person:	
Email:	
Telephone:	
Cell no	
Fax:	
Physical address	
Postal address	

Section 2: Particulars of companies and close corporations

Company / Close Corporation registration number	
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Section 3: SARS Information

Tax reference number	
VAT registration number:	<i>State Not Registered if not registered for VAT</i>

Section 4: CIDB registration number

CIDB Registration number (if applicable)	
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Section 5: National Treasury Central Supplier Database

Supplier number	
Unique registration reference number	

Section 6: Particulars of principals

principal: means a natural person who is a partner in a partnership, a sole proprietor, a director of a company established in terms of the Companies Act of 2008 (Act No. 71 of 2008) or a member of a close corporation registered in terms of the Close Corporation Act, 1984, (Act No. 69 of 1984).

Full name of principal	Identity number	Personal tax reference number

Attach separate page if necessary

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Section 7: Record in the service of the state

Indicate by marking the relevant boxes with a cross, if any principal is currently or has been within the last 12 months in the service of any of the following:

- | | |
|--|--|
| ☐ a member of any municipal council | ☐ an employee of any department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act of 1999 (Act No. 1 of 1999) |
| ☐ a member of any provincial legislature | ☐ a member of an accounting authority of any national or provincial public entity |
| ☐ a member of the National Assembly or the National Council of Province | ☐ an employee of Parliament or a provincial legislature |
| ☐ a member of the board of directors of any municipal entity | |
| ☐ an official of any municipality or municipal entity | |

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

Name of principal	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

Section 8: Record of family member in the service of the state

family member: a person's spouse, whether in a marriage or in a customary union according to indigenous law, domestic partner in a civil union, or child, parent, brother, sister, whether such a relationship results from birth, marriage or adoption

Indicate by marking the relevant boxes with a cross, if any family member of a principal as defined in section 5 is currently or has been within the last 12 months been in the service of any of the following:

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

Name of family member	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

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Section 9: Record of termination of previous contracts with an organ of state

Was any contract between the tendering entity including any of its joint venture partners terminated during the past 5 years for reasons other than the Employer no longer requiring such works or the Employer failing to make payment in terms of the contract.

☐ Yes ☐ No (Tick appropriate box)

If yes, provide particulars (interest separate page if necessary)

Section 10: Declaration

The undersigned, who warrants that he / she is duly authorised to do so on behalf of the tendering entity confirms that the contents of this Declaration are within my personal knowledge, and save where stated otherwise in an attachment hereto, are to the best of my belief both true and correct, and:

- i) neither the name of the tendering entity or any of its principals appears on:
 - a) the Register of Tender Defaulters established in terms of the Prevention and Combating of Corrupt Activities Act of 2004 (Act No. 12 of 2004)
 - b) National Treasury's Database of Restricted Suppliers (see www.treasury.gov.za)
- ii) neither the tendering entity or any of its principals has within the last five years been convicted of fraud or corruption by a court of law (including a court outside of the Republic of South Africa).
- iii) any principal who is presently employed by the state has the necessary permission to undertake remunerative work outside such employment (attach permission to this declaration)
- iv) the tendering entity is not associated, linked or involved with any other tendering entities submitting tender offers
- v) has not engaged in any prohibited restrictive horizontal practices including consultation, communication, agreement, or arrangement with any competing or potential tendering entity regarding prices, geographical areas in which goods and services will be rendered, approaches to determining prices or pricing parameters, intentions to submit a tender or not, the content of the submission (specification, timing, conditions of contract etc) or intention to not win a tender;
- vi) has no other relationship with any of the Bidders or those responsible for compiling the scope of work that could cause or be interpreted as a conflict of interest.
- vii) neither the Bidder or any of its principals owes municipal rates and taxes or municipal service charges to any municipality or a municipal entity and are not in arrears for more than 3 months.
- viii) SARS may, on an on-going basis during the term of the contract, disclose the Bidder's tax compliance status to the Employer and when called upon to do so, obtain the written consent of any Sub-Contractors who are subcontracted to execute a portion of the contract that is entered into in excess of the threshold prescribed by the National Treasury, for SARS to do likewise.

Signed

Date

Name

Position

Enterprise name

NOTE 1 The Standard Conditions of Tender contained in SANS 10845-3 prohibits anticompetitive practices (clause 3.1) and requires that Bidders avoid conflicts of interest, only submit a tender offer if the Bidder or any of his principals is not under any restriction to do business with Employer (4.1.1) and submit only one tender either as a single tendering entity or as a member in a joint venture (clause 4.13.1). Clause 5.7 also empowers the Employer to disqualify any Bidder who engages in fraudulent and corrupt practice. Clause 3.1 also requires Bidders to comply with all legal obligations.

NOTE 2: Section 30(1) of the Public Service Act, 1994, prohibits an employee (person who is employed in posts on the establishment of departments) from performing or engaging remunerative work outside his or her employment in the relevant department, except with the written permission of the executive authority of the department. When in operation, Section 8(2) of the Public Administration Management Act, 2014, will prohibit an employee of the public administration (i.e. organs of state and all national departments, national government components listed in Part A of Schedule 3 to the Public Service Act, provincial departments including the office of the premier listed in Schedule 1 of the Public Service Act and provincial departments listed in schedule 2 of the Public Service Act, and provincial government components listed in Part B of schedule 3 of the Public Service Act) or persons contracted to executive authorities in accordance with the provisions of section 12A of the Public Service Act of 1994 or persons performing similar functions in organs of state from conducting business with the State or to be a director of a public or private company conducting business with the State. The offence for doing so is a fine or imprisonment for a period not exceeding 5 years or both. It is also a serious misconduct which may result in the termination of employment by the Employer.

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

FORM E: DECLARATION OF GOOD STANDING REGARDING TAX (MBD 2)**ATTACH THE VALID SARS TAX COMPLIANCE STATUS (VERIFICATION PIN)**

The South Africa Revenue Services (SARS) Tax Compliance Status (Verification Pin or Declaration by The South Africa Revenue Services (SARS) confirming that tax matters of the Tendering company/ association or Joint Venture parties are in order must be submitted together with the Bid. Failure to submit the documents will result in the invalidation of the Bid.

DRAFT

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

FORM F: DECLARATION OF INTEREST (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.....

.....

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

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

.....

.....

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, Principal shareholders or stakeholders in service of the state? YES / NO

3.12.1 If yes, furnish particulars.

.....

.....

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

3.13.1 If yes, furnish particulars.

.....

.....

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

3.14.1 If yes, furnish particulars:

.....

.....

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

Full Name	Identity Number	State Employee Number

.....

SIGNATURE ON BEHALF OF BIDDER

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

FORM G: MUNICIPAL DECLARATION AND RETURNABLE DOCUMENTS (MBD 5.1)

The following particulars must be furnished in relation to tenders for municipalities and municipal entities where:

- a) consultancy services are required; and
- b) goods, services or a combination thereof where the estimated total of the prices exceeds R 10 million including VAT.

In the case of a joint venture, separate municipal declarations and returnable documents shall be submitted in respect of each partner.

Section 1: Enterprise Details

Name of enterprise:	
Contact person:	
Email:	
Telephone:	
Cell no	
Fax:	
Physical address	
Postal address	

Section 2: Declaration for consultancy services:

The enterprise has been awarded the following consultancy services by an organ of state during the last five years.

Name of organ of state	Estimated number of contracts	Nature of service, e.g, quantity surveying	Service similar to required service (yes / no) ?

Attach separate page as necessary

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Contractor

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Witness 1

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Witness 2

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Employer

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Witness 1

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Witness 2

Section 3 Goods, services or a combination thereof where the estimated total of the prices exceeds R 10 million including VAT

I / we certify that

- 1) annual financial statements:

(tick one of the boxes):

- ☐ the enterprise **is not** required by law to prepare annual financial statements for auditing
- ☐ the enterprise **is** required by law to have audited annual financial statements and attached the audited financial statements for the past three financial years, or since the establishment as the enterprise was established within the past three years

- 2) the enterprise and its directors have / 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 (
- i.e.: all municipal accounts are paid up to date*
-);

- 3) source of goods and / or services:

(tick one of the boxes and insert percentages if applicable):

- ☐ goods and / or services are sourced only from within the Republic of South Africa
- ☐ % of the total cost of goods and / or services will be sourced from outside the Republic of South Africa and the percentage of payment from the municipality or municipal entity which is expected to be transferred out of the Republic is %

I furthermore confirm that the following contracts were awarded to the enterprise by an organ of state during the last five years and attached particulars of any material non-compliance or dispute concerning the execution of such contracts:

Name of organ of state	Estimated number of contracts	Nature of contracts

Attach separate page as necessary

Dispute will be settled by means of mutual consultation, mediation (with or without legal representation) or, when unsuccessful in a South African court of law.

I, the undersigned who warrants that I am duly authorised on behalf of the tendering entity, hereby declare that the contents of this Declaration are within my personal knowledge, and save where stated otherwise are to the best of my belief both true and correct

Signed

Date

Name

Position

Enterprise name

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

FORM H: ANNUAL FINANCIAL STATEMENTS DECLARATION (MBD 5.2)

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

- 1) The enterprise's financial year end is
- 2) The enterprise's financial statements have been prepared in accordance with the provisions of the Companies Act of 2008 or the Close Corporation Act of 1984, as applicable
- 3) The enterprise has compiled its financial accounts [tick one box]:
☐ internally ☐ independently
- 4) The following statement applies to the enterprise [tick one box and provide relevant information]
☐ enterprise has had its financial statements audited;
name of auditor
☐ enterprise is required by law to have an independent review of its financial statements
name of independent reviewer
☐ enterprise has not had its financial statements audited and is not required by law to have an independent review or audit of such statements
- 5) The attached income statement and balance sheet is a true extract from the financial statements complying with applicable legislation for the preceding three (3) financial years within 12 months of the financial year end.
[Attach the income statement and the balance sheet contained in the financial statement]
- 6) The annual turnover for the last financial year is R
- 7) The total assets as at the end of the last financial year is R
- 8) The total liabilities as at the end of the financial year is R

I hereby declare that the contents of this Declaration are within my personal knowledge and save where stated otherwise are to the best of my belief both true and correct.

Signed

Date

Name

Position

Bidder

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

FORM I: MUNICIPAL UTILITY ACCOUNT (MBD 5.3)**DECLARATION BY THE BIDDER**

I the undersigned _____, has been duly

authorized to sign all documents with the Tender for Contract Number _____ on behalf of

_____ hereby make a declaration as follows:
(referred to herein as "the Bidder")

1. I declare that the bidder and any of its director(s) / member(s) does not owe the municipality, or any other municipality and/or municipal entity any amount which is in arrears in respect of any municipal rates and taxes or municipal service charges.
2. I understand and accept that in the event that this declaration is proved to be false, the bid shall be rejected forthwith. All other rights of the municipality (including but not limited to the right to claim damages where applicable) shall remain reserved in full.

SIGNED ON BEHALF OF THE COMPANY _____

IN HIS CAPACITY AS _____

DATE _____

FULL NAMES OF SIGNATORY _____

UTILITYACCOUNT NUMBER	NAME OF MUNICIPALITY	NAME OF OWNER

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

**ATTACH CERTIFIED COPY OR ORIGINAL UTILITY ACCOUNT
(NOT OLDER THAN THREE MONTHS FROM DATE OF TENDER CLOSURE)****Important: Note the following**

- List Account(s) registered in the name(s) of the Director(s) and the Company the declaration form attached hereto.
- Attach municipal Utility account(s) of the respective Director(s) not older than three (3) months from date of closure of the bid,
- Attach Municipal Utility account of Company registered office (if applicable) and in case of leased premises, attach lease agreement and the utility account of leased premises or statement of account for the lessee.
- In case of joint ventures – utility account(s) of each of the various directors must be attached to the bid document and the joint lease agreement should be attached.
- If Municipal Rates & Taxes Account is not in the name of the Company and/or any of the Directors, a written affidavit stating how the Account relates to the said Company and/or Director must be submitted.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

FORM J: PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2022 (MBD 6.1)

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

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

1. GENERAL CONDITIONS

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

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

1.2 To be completed by the organ of state

The applicable preference point system for this tender is the 80/20 preference point system.

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

- (a) Price; and
- (b) Specific Goals.

1.4 To be completed by the organ of state:

The maximum points for this tender are allocated as follows:

	POINTS
PRICE	80
SPECIFIC GOALS	20
Total points for Price and SPECIFIC GOALS	100

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

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

2. DEFINITIONS

- (a) **“tender”** means a written offer in the form determined by an organ of state in response to an invitation to provide goods or services through price quotations, competitive tendering process or any other method envisaged in legislation;
- (b) **“price”** means an amount of money tendered for goods or services, and includes all applicable taxes less all unconditional discounts;
- (c) **“rand value”** means the total estimated value of a contract in Rand, calculated at the time of bid invitation, and includes all applicable taxes;
- (d) **“tender for income-generating contracts”** means a written offer in the form determined by an organ of state in response to an invitation for the origination of income-generating contracts through any method envisaged in legislation that will result in a legal agreement between the organ of state and a third party that produces revenue for the organ of state, and includes, but is not limited to, leasing and disposal of assets and concession contracts, excluding direct sales and disposal of assets through public auctions; and
- (e) **“the Act”** means the Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000).

3. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES

3.1. POINTS AWARDED FOR PRICE

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

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

80/20	or	90/10
$Ps = 80 \left(1 - \frac{Pt - P_{min}}{P_{min}} \right)$	or	$Ps = 90 \left(1 - \frac{Pt - P_{min}}{P_{min}} \right)$

Where

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

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

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

3.2.1. POINTS AWARDED FOR PRICE

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

$$\begin{array}{ccc}
 \mathbf{80/20} & \mathbf{or} & \mathbf{90/10} \\
 \\
 Ps = 80 \left(1 + \frac{Pt - P_{max}}{P_{max}} \right) & \text{or} & Ps = 90 \left(1 + \frac{Pt - P_{max}}{P_{max}} \right)
 \end{array}$$

Where;

Ps = Points scored for price of tender under consideration

Pt = Price of tender under consideration

Pmax = Price of highest acceptable tender

4. POINTS AWARDED FOR SPECIFIC GOALS

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

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

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

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

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

Table 1: Specific goals for the tender and points claimed are indicated per the table below.

(Note to organs of state: Where either the 90/10 or 80/20 preference point system is applicable, corresponding points must also be indicated as such.)

Note to tenderers: The tenderer must indicate how they claim points for each preference point system.)

The specific goals allocated points in terms of this tender	Number of points allocated (80/20 system) (To be completed by the organ of state)	Number of points claimed. (80/20 system) (To be completed by the tenderer)	Means of Verification
100% Youth owned = 5 points, more than 51% Youth owned = 3 points, No Youth in shareholding = 1 point Maximum of 5 points	5		Copy of Central Suppliers Database
100% Woman owned = 5 points, more than 51% Woman owned = 3 points, less than 50 % Woman owned = 1 point Maximum of 5 points	5		Copy of Central Suppliers Database
100% Black owned = 5 points, more than 51% black owned = 3 points, less 50 % youth owned = 1 point, Maximum of 5 points	5		Copy of Central Suppliers Database
100% people with disability owned = 5 points, more than 51% people with disability owned = 3 points, less 50% people with disability owned = 1 point Maximum of 5 points	5		Certified copy of Doctor's Certificate with medical practice number

Suppliers are required to submit the documents listed in means of verification as per above table for points allocation during preference point system evaluation.

DECLARATION WITH REGARD TO COMPANY/FIRM

4.3. Name of company/firm.....

4.4. Company registration number:

4.5. TYPE OF COMPANY/ FIRM

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

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

- ☐ Non-Profit Company
☐ State Owned Company

[TICK APPLICABLE BOX]

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

- i) The information furnished is true and correct;
- ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;
- iii) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 1.4 and 4.2, the contractor may be required to furnish documentary proof to the satisfaction of the organ of state that the claims are correct;
- iv) If the specific goals have been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the organ of state may, in addition to any other remedy it may have –
 - (a) disqualify the person from the tendering process;
 - (b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;
 - (c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;
 - (d) recommend that the tenderer or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted from obtaining business from any organ of state for a period not exceeding 10 years, after the *audi alteram partem* (hear the other side) rule has been applied; and
 - (e) forward the matter for criminal prosecution, if deemed necessary.

Signed

Date

Name

Position

Bidder

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

FORM K: DECLARATION OF BIDDER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES (MBD 8)

1. This Municipal Bidding Document must form part of all bids invited.
2. It serves as a declaration to be used by municipalities and municipal entities in ensuring that when goods and services are being procured, all reasonable steps are taken to combat the abuse of the supply chain management system.
3. The bid of any bidder may be rejected if that bidder, or any of its directors have:
 - a. abused the municipality's / municipal entity's supply chain management system or committed any improper conduct in relation to such system;
 - b. been convicted for fraud or corruption during the past five years;
 - c. willfully neglected, reneged on or failed to comply with any government, municipal or other public sector contract during the past five years; or
 - d. been listed in the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004).
4. In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.

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

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

4.3	Was the bidder or any of its directors convicted by a court of law (including a court of law outside the Republic of South Africa) for fraud or corruption during the past five years?	Yes ☐	No ☐
4.3.1	If so, furnish particulars:		
4.4	Does the bidder or any of its directors owe any municipal rates and taxes or municipal charges to the municipality / municipal entity, or to any other municipality / municipal entity, that is in arrears for more than three months?	Yes ☐	No ☐
4.4.1	If so, furnish particulars:		
4.5	Was any contract between the bidder and the municipality / municipal entity or any other organ of state terminated during the past five years on account of failure to perform on or comply with the contract?	Yes ☐	No ☐
4.7.1	If so, furnish particulars:		

CERTIFICATION

I, THE UNDERSIGNED

(FULL NAME)

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

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

.....
SIGNATURE ON BEHALF OF BIDDER

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

FORM L: CERTIFICATE OF INDEPENDENT BID DETERMINATION (MDB 9)

This Municipal Bidding Document (MBD) must form part of all bids¹ invited.

1. Section 4 (1) (b) (iii) of the Competition Act No. 89 of 1998, as amended, prohibits an agreement between, or concerted practice by, firms, or a decision by an association of firms, if it is between parties in a horizontal relationship and if it involves collusive bidding (or bid rigging).² Collusive bidding is a *pe se* prohibition meaning that it cannot be justified under any grounds.
2. Municipal Supply Regulation 38 (1) prescribes that a supply chain management policy must provide measures for the combating of abuse of the supply chain management system, and must enable the accounting officer, among others, to:
 - a. Take all reasonable steps to prevent such abuse.
 - b. Reject the bid of any bidder if that bidder or any of its directors has abused the supply chain management system of the municipality or municipal entity or has committed any improper conduct in relation to such system; and
 - c. Cancel a contract awarded to a person if the person committed any corrupt or fraudulent act during the bidding process or the execution of the contract.
3. This MBD serves as a certificate of declaration that would be used by institutions to ensure that, when bids are considered, reasonable steps are taken to prevent any form of bid-rigging.
4. In order to give effect to the above, the attached Certificate of Bid Determination (MDB 9) must be completed and submitted with the bid:

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

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

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

CERTIFICATE OF INDEPENDENT BID DETERMINATION

I, the undersigned, in submitting the accompanying bid:

(Bid Number and Description)

in response to the invitation for the bid made by:

(Name of Municipality / Municipal Entity)

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

I certify, on behalf of: _____ that:

(Name of Bidder)

1. I have read, and I understand the contents of this Certificate;
2. I understand that the accompanying bid will be disqualified if this Certificate is found not to be true and complete in every respect;
3. I am authorized by the bidder to sign this Certificate, and to submit the accompanying bid, on behalf of the bidder;
4. Each person whose SIGNATURE ON BEHALF OF BIDDER appears on the accompanying bid has been authorized by the bidder to determine the terms of, and to sign, the bid, on behalf of the bidder;
5. For the purposes of this Certificate and the accompanying bid, I understand that the word "competitor" shall include any individual or organization, other than the bidder, whether or not affiliated with the bidder, who:
 - (a) has been requested to submit a bid in response to this bid invitation;
 - (b) could potentially submit a bid in response to this bid invitation, based on their qualifications, abilities or experience; and
 - (c) provides the same goods and services as the bidder and/or is in the same line of business as the bidder
6. The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However, communication between partners in a joint venture or consortium³ will not be construed as collusive bidding.

7. In particular, without limiting the generality of paragraphs 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
- prices;
 - geographical area where product or service will be rendered (market allocation)
 - methods, factors or formulas used to calculate prices;
 - the intention or decision to submit or not to submit, a bid;
 - the submission of a bid which does not meet the specifications and conditions of the bid; or
 - bidding with the intention not to win the bid.
8. In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the products or services to which this bid invitation relates.
9. The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.
10. I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to bids and contracts, bids that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No 89 of 1998 and or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and or may be restricted from conducting business with the public sector for a period not exceeding ten (10) years in terms of the Prevention and Combating of Corrupt Activities Act No 12 of 2004 or any other applicable legislation.

.....
Signature

.....
Date

.....
Position

.....
Name of Bidder

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

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

FORM M: FINANCIAL REFERENCES/ BIDDER'S CREDIT RATING AND BANK DETAILS**DETAILS OF BIDDERS BANKING INFORMATION****Notes to bidder:**

1. The bidder shall attach a certified copy or an original letter from the bank confirming the bank account and details which is not older than three months. The bidder's banking details as they appear below shall be completed.
2. In the event that the bidder is a joint venture enterprise, details of all the members of the joint venture shall be similarly provided and attached to this form.

BANK NAME:										
ACCOUNT NAME: (e.g. ABC Electrical Construction cc)										
ACCOUNT TYPE: (e.g. Savings, Cheque etc)										
ACCOUNT NO:										
ADDRESS OF BANK:										
CONTACT PERSON:										
TEL. NO. OF BANK / CONTACT:										
How long has this account been in existence:	<table border="1"> <tr> <td>0-6 months</td> <td></td> </tr> <tr> <td>7-12 months</td> <td></td> </tr> <tr> <td>13-24 months</td> <td></td> </tr> <tr> <td>More than 24 months</td> <td></td> </tr> </table>	0-6 months		7-12 months		13-24 months		More than 24 months		(Tick which is appropriate)
0-6 months										
7-12 months										
13-24 months										
More than 24 months										

SIGNATURE ON BEHALF OF BIDDER:

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Contractor

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Witness 1

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Witness 2

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Employer

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Witness 1

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Witness 2

**FORM N: LETTER OF GOOD STANDING FOR THE WORKMEN'S COMPENSATION WITH
THE DEPARTMENT OF LABOUR**

Attach a Certified Copy of the valid letter of Good Standing for the Workmen's Compensation with the Department of Labour in terms of Compensation for Occupational Injuries and Diseases Amendment Act, No.61 of 1997 (as amended)

DRAFT

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

FORM O: PROPOSED KEY PERSONNEL

The Bidder shall list below the key personnel whom he proposes to employ on the project should his Bid be accepted.

The experience of the Project Site Agent, Site Foreman and Safety Officer will be evaluated in relation to the scope of work from three different points of view:

- 1) General experience and qualifications in relation to the works
- 2) Adequacy for the Project
- 3) Knowledge of issues pertinent to the works.

The experience of the Tenderer in similar projects or similar areas and conditions in relation to the required service as described in the scope of work **over the last five years** will be evaluated.

A CV of the key person of **not** more than 3 pages should be attached to this schedule.

The CV should be structured under the following headings:

- 1 Personal particulars
 - name
 - date and place of birth
 - place (s) of tertiary education and dates associated therewith
 - professional awards
- 2 Qualifications (degrees, diplomas, grades of membership of professional societies and professional registrations) (Attach copies of each)
- 3 Name of current Employer and position in enterprise
- 4 Overview of work experience (year, organization and position)
- 5 Outline of recent experience that has a bearing on the scope of work

The scoring of the experience of the Project Site Agent, Site Foreman and Safety Officer will be in accordance to 3.11.1 (ii) of the Tender Data.

Name	Qualification	Designation	Project type	Value of Works	Year Completed

(Attach CV's and Certified copies of qualifications and other certificates)

SIGNED ON BEHALF OF BIDDER	DATE:
POSITION	NAME OF BIDDER

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Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

FORM P: SCHEDULE OF SIMILAR PREVIOUS EXPERIENCE

The following is a statement of major works successfully executed by myself / ourselves in recent years.

Failure to detail the required information shall signify that the Bid is submitted by an inexperienced Bidder.

Employer	Engineer / Consultant Firm	Nature of Works / Description of Works	Value of Construction Works	Duration and Completion Date
	Firm : Contact Name : Telephone no :			
	Firm : Contact Name : Telephone no :			
	Firm : Contact Name : Telephone no :			
	Firm : Contact Name : Telephone no :			

 Contractor

 Witness 1

 Witness 2

 Employer

 Witness 1

 Witness 2

NOTE:

TARGETED GOALS	POINTS ALLOCATION
Bidder has submitted no information or inadequate information to determine scoring levels	0
Bidder has successfully completed at least 1 similar project with a project value of R10 000 000.00 or more	20
Bidder has successfully completed at least 2 similar projects with a project value of R10 000 000.00 or more	35
Bidder has successfully completed at least 3 similar projects with a project value of R10 000 000.00 or more	50

The following information must be contained in each Completion Certificate for it to qualify for points as prescribed above:

- i. Name of Company/ Contractor
- ii. Description of work
- iii. Value of work
- iv. Contract Construction Period
- v. Date Completed

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SIGNED ON BEHALF OF BIDDER**DATE:**

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POSITION**NAME OF BIDDER**

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Contractor

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Witness 1

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Witness 2

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Employer

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Witness 1

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Witness 2

FORM Q: SCHEDULE OF SIMILAR CURRENT PROJECTS

Provide the following information on current projects

This information is material to the award of the Contract.

Employer	Engineer / Consultant Firm	Nature of Works / Description of Works	Value of Construction Works	Duration and Completion Date
	Firm: Contact Name: Telephone no:			
	Firm: Contact Name: Telephone no:			
	Firm: Contact Name: Telephone no:			

--	--

SIGNED ON BEHALF OF BIDDER

DATE:

--	--

POSITION

NAME OF BIDDER

68

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Contractor

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Witness 1

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Witness 2

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Employer

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Witness 1

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Witness 2

FORM R: SCHEDULE OF INFRASTRUCTURE AND RESOURCES

Provide information on the following:

Infrastructure and resources available for this project:

1. Major Plant and Equipment available for this Contract:

Quantity	Size, Description, Capacity, etc.

2. Major Plant and Equipment that will be hired or acquired for this contract if my / our Bid is accepted:

Quantity	Size, Description, Capacity, etc.	How Acquired	
		Hire / Buy	Source

3. Vehicles

Provide information on vehicles that you have available for this project.

Description:	Number of units	Registration Number

NOTE:

TARGETED GOALS	POINTS ALLOCATIONS
No relevant documents attached	0
Excavator	2
Grader	2
TLB	2
2x Tipper Trucks	2
2x LDV	2

- Proof must be provided that equipment is owned by the company.
- Proof must be provided (if available) from supplier if the bidder intends to hire and does not have his own plant.

4. Size of enterprise and current workload

What was your turnover in the previous financial year? -----

What is the estimated turnover for your current financial year? -----

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SIGNED ON BEHALF OF BIDDER**DATE:**

--	--

POSITION**NAME OF BIDDER**

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Contractor

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Witness 1

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Witness 2

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Employer

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Witness 1

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Witness 2

FORM S: FUNCTIONALITY CRITERIA AND POINTS CLAIMED BY BIDDER

A Bid will not be evaluated further if it fails to meet the minimum threshold of total **70 points** out of maximum 100 points for functionality as prescribed in the following tables:

Category	Functional Criteria	Points Allocation	Points Claimed by Bidder
1	Experience of the bidder	50	
2	Key personnel qualifications and experience	40	
3	List of Plant	10	
TOTAL		100	

CATEGORY 1: Experience of the Bidder

TARGETED GOALS Contractor has successfully completed similar and comparative projects	BID GOAL	MINIMUM POINTS	POINTS CLAIMED BY BIDDER
Bidder has submitted no information or inadequate information to determine scoring levels	0	20	
Bidder has successfully completed at least 1 similar project with a project value of R10 000 000.00 or more	20		
Bidder has successfully completed at least 2 similar projects with a project value of R10 000 000.00 or more	35		
Bidder has successfully completed at least 3 similar projects with a project value of R10 000 000.00 or more	50		
MINIMUM POINTS : Category 1	20		
MAXIMUM POINTS : Category 1	50		

The Bidder must submit proof of successfully completed similar and comparative projects, i.e. construction works (Certified Copies of Appointment Letters and Completion Certificates must be attached).

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

CATEGORY 2: Key personnel qualifications and experience

The Bidder must submit Proposed Team Structure, identifying Site Agent, Site Foreman and Safety Officer as key personnel (Copies of CV's and certified copies of certificates must be attached).

KEY-PERSONNEL	TARGETED GOALS	POINTS ALLOCATION	TOTAL POINTS	POINTS CLAIMED BY BIDDER
Site Agent	No information or inadequate information submitted to determine scoring level	0	0	
	Site Agent with NQF Level 6 qualification	5	15	
	NQF Level 5 certificate in “ <i>Manage Labour Intensive Construction</i> ” or similar	5		
	Site Agent with 1 – 3 years of relevant construction experience	5		
	Site Agent with NQF Level 6 qualification	5	20	
	NQF Level 5 certificate in “ <i>Manage Labour Intensive Construction</i> ” or similar	5		
	Site Agent with more than 3 years of relevant construction experience	10		
Site Foreman	No information or inadequate information submitted to determine scoring level	0	0	
	Site Foreman with NQF Level 4 qualification	2	5	
	NQF Level 4 certificate in “ <i>Apply Labour Intensive Construction</i> ” or similar	1		
	Site Foreman with 1 – 3 years of relevant construction experience	2		
	Site Foreman with NQF Level 4 qualification	2	10	
	NQF Level 4 certificate in “ <i>Apply Labour Intensive Construction</i> ” or similar	1		
	Site Foreman with more than 3 years of relevant construction experience	7		

KEY-PERSONNEL	TARGETED GOALS	POINTS ALLOCATION	TOTAL POINTS	POINTS CLAIMED BY BIDDER
Safety officer	No information or inadequate information submitted to determine scoring level	0	0	
	Safety officer with NQF Level 6 qualification in Health and Safety	2	5	
	Safety officer with 1 – 3 years of relevant construction experience	3		
	Safety officer with NQF Level 6 qualification in Health and Safety	2	10	
	Safety officer with more than 3 years of relevant construction experience	8		
MINIMUM POINTS : Category 2			25	
MAXIMUM POINTS : Category 2			40	

CATEGORY 3: List of plant

Bidders are expected to have the following minimum plant: Excavator, Grader, TLB, Tipper Truck and LDV (**Registration documents of plant owned or letter of intent to rent the relevant plant with registration documents must be attached**)

TARGETED GOALS	POINTS ALLOCATIONS	POINTS CLAIMED BY BIDDER
No relevant documents attached	0	
Excavator	2	
Grader	2	
TLB	2	
2x Tipper Trucks	2	
2x LDV	2	

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Bid Evaluation Points

Description	Section Number	No of Points	
		Maximum	Claimed
Bid Amount (VAT Inclusive) – From Pricing Data	C1.1		
Price Points { $80 \times (1 - Pt - PM / Pm)$ }		80	
Specific Goals (See Tender Data)	T2.2	20	
Total Points		100	

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SIGNED ON BEHALF OF BIDDER**DATE :**

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POSITION**NAME OF BIDDER**

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Contractor

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Witness 1

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Witness 2

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Employer

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Witness 1

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Witness 2

FORM T: SCHEDULE OF LABOUR CONTENT

The tenderer must complete a standard table reflecting the labour force anticipated to be employed on this contract, including labour employed by sub-contractors. The Specified target value is **4%**

Type of Labour	Man-Days	Minimum Wage Rate per unit	Total Wage Cost (Excl VAT)
Permanent Staff			
Temporary Staff			
SMME/HDEs Labour			
Total Percentage			

Notes to Tenderer:

- (1) Labour is defined as hourly paid personal
- (2) The penalty for non-compliance during the contract or fraudulent disclosure is discussed in the contract data.

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SIGNED ON BEHALF OF BIDDER**DATE :**

--	--

POSITION**NAME OF BIDDER**

--

Contractor

--

Witness 1

--

Witness 2

--

Employer

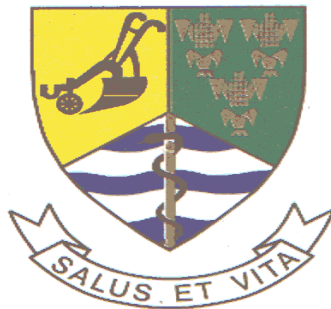
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Witness 1

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Witness 2

BELA-BELA LOCAL MUNICIPALITY



BID NO: 9/3/1/350

UPGRADING OF THE LESEDING SEWER PUMP STATION (WARD 6)

PART 2: THE CONTRACT

Part C1: Agreements and Contract Data

- C1.1 Form of Offer and Acceptance
- C1.2 Contract Data
- C1.3 Form of Guarantee
- C1.4 OHS

Part C2: Pricing Data

- C2.1 Pricing Instructions
- C2.2 Bills of quantities

Part C3: Scope of Work

- C3 Scope of Work

Part C4: Site Information

- C4 Site Information

Contractor

Witness 1

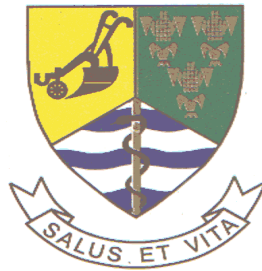
Witness 2

Employer

Witness 1

Witness 2

BELA-BELA LOCAL MUNICIPALITY



BID NO: 9/3/1/350

UPGRADING OF THE LESEDING SEWER PUMP STATION (WARD 6)

C1 AGREEMENTS AND CONTRACT DATA

C1.1 Form of Offer and Acceptance

C1.2 Contract Data

C1.3 Form of Guarantee

C1.4 OHS

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

C1.1 FORM OF OFFER AND ACCEPTANCE

OFFER

The Employer, identified in the Acceptance signature block, has solicited offers to enter into a contract in respect of the following works:

PROJECT NO: 9/3/1/350

PROJECT DESCRIPTION: UPGRADING OF THE LESEDING SEWER PUMP STATION (WARD 6)

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

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

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

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

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

Signature(s) _____

Name(s) _____

Capacity _____

For the Bidder _____
 (Name and address of organisation)

Name & Signature of Witness

 Name

 Date

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

ACCEPTANCE

By signing this part of this Form of Offer and Acceptance, the Employer identified below accepts the Bidder'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 Bidder's Offer shall form an agreement between the Employer and the Bidder upon the terms and conditions contained in this Agreement and in the Contract that is the subject of this Agreement.

The terms of the contract are contained in:

- Part 1 Agreements and Contract Data (which includes this Agreement)
- Part 2 Pricing Data
- Part 3 Scope of Work
- Part 4 Site information

and drawings and documents or parts thereof, which may be incorporated by reference into Parts 1 to 4 above.

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

The Bidder shall within two weeks after receiving a completed copy of this Agreement, including the Schedule of Deviations (if any), contact the Employer's agent (whose details are given in the Contract Data) to arrange the delivery of any bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the Conditions of Contract identified in the Contract Data at or just after the date this Agreement comes into effect. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this Agreement.

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

Signature(s) _____

Name(s) _____

Capacity _____

For the Employer _____

(Name and address of organisation)

Name & Signature of Witness

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

DRAFT

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

SCHEDULE OF DEVIATIONS

Notes:

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

1 Subject _____

Details _____

2 Subject _____

Details _____

3 Subject _____

Details _____

4 Subject _____

Details _____

5 Subject _____

Details _____

DRAFT

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

By the duly authorised representatives signing this Schedule of Deviations, the Employer and the Bidder agree to and accept the foregoing Schedule of Deviations as the only deviations from and amendments to the documents listed in the Tender Data and addenda thereto as listed in the Tender Schedules, as well as any confirmation, clarification or change to the terms of the Offer agreed by the Bidder 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 Bidder of a completed signed copy of this Agreement shall have any meaning or effect in the contract between the parties arising from this Agreement.

Signature(s) _____

Name(s) _____

Capacity _____

For the Bidder _____
(Name and address of organisation)

Name & Signature of Witness

Name Date

FOR THE EMPLOYER

Signature(s) _____

Name(s) _____

Capacity _____

For the Employer _____
(Name and address of organisation)

Name & Signature of Witness

Name Date

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

C1.2 CONTRACT DATA

CONDITIONS OF CONTRACT

The Conditions of Contract are the General Conditions of Contract for Construction Works Third Edition (2015), published by the South African Institute of Civil Engineers, is applicable to this contract and is obtainable from www.saice.org.za.

Copies of these Conditions of Contract may also be obtained from the South African Institute of Civil Engineers. SAICE House, Block 19, Thornhill Office Park, 94 Bekker Road, Vorna Valley, Midrand, 1686. Tel: (011) 805 5947/ 48/ 53.

CONTRACT SPECIFIC DATA

The following contract specific data are applicable to this contract:

Part 1: Data Provided by the Employer

Compulsory Data:

Clause	Description		
1.1.1.5	Clause 1.1.1.5 of the GCC is replaced by the following: The "Commencement date" shall be the date the site is handed over to the Contractor.		
1.1.1.13	The Defects Liability Period is twelve (12) months from the date of issuing a completion certificate.		
1.1.1.14	The time for achieving Practical Completion is Ten (10) months.		
1.1.1.15	The Employer is the Bela-Bela Local Municipality.		
1.1.1.16	The Engineer is Royal Mndawe Holdings t/a ROMH Consulting		
1.1.1.26	Pricing Strategy is Re-measurable Contract.		
1.2.1.2	The Employer's address for receipt of communication is: <table> <tr> <td> <u>Physical Address</u> 59 Chris Hani Drive Bela-Bela 0480 Tel no: 014 736 8041 Fax no: N/A e-mail: Maswanganyih@belabela.gov.za </td><td> <u>Postal Address</u> Private Bag x 1609 Bela-Bela 0480 </td></tr> </table>	<u>Physical Address</u> 59 Chris Hani Drive Bela-Bela 0480 Tel no: 014 736 8041 Fax no: N/A e-mail: Maswanganyih@belabela.gov.za	<u>Postal Address</u> Private Bag x 1609 Bela-Bela 0480
<u>Physical Address</u> 59 Chris Hani Drive Bela-Bela 0480 Tel no: 014 736 8041 Fax no: N/A e-mail: Maswanganyih@belabela.gov.za	<u>Postal Address</u> Private Bag x 1609 Bela-Bela 0480		

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Clause	Description
	The engineer's address is: <u>Physical Address & Postal Address</u> ROMH Consulting 14 Steve Lekalakala Street Nylpark Ext.12, Mokopane, Postal Code: 0600 Tel No: (+27) (10) 035 1460 Tel No: (+27) (72) 806 2089 Contact person: Mr. N. Mashita e-mail: nokom@romh.co.za / info@romh.co.za
1.3.3	The language of the Contract and for written communications is English
3.2.3	The Engineer shall obtain specific approval from the Employer before executing any of his functions or duties according to the following Clauses of the General Condition of Contract: - New Clause 3.2.3.1 "For expenditure on the Contract to exceed the Contract Price"; - Existing Clauses: 3.2.1 - Nomination of person as Engineer's Representative. 5.6 - Approval of the programme 5.7.2 - Work at night as well as by day 5.8 - Non-working times 5.12 - Granting of extension of time excluding Clause 5.12.2.2 (Abnormal climatic conditions) 5.13 - Reduction of penalty for delay. 5.14.2 - The issue of a Certificate of Practical Completion. 5.14.4 - The issue of a Certificate of Completion. 5.16.1 - The issue of a Final Approval Certificate. 6.3 - Variations in respect of Variations which are not small (R 20 000) 6.6 - Instruction to expend on Provisional and Prime Cost Sums 6.11 - Adjustment of General Items & Approval of Claims 8.2.2.2 - Order to repair and make good damage arising from any "excepted" risk.
3.2.4	Occupational Health, Safety & Wellness Sub Directorate – Public Health and the duly appointed H&S Officials has been appointed as Client Agents on this contract, in terms of Clause 4(5) of the Construction Regulations, 2003 as promulgated in terms of

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Clause	Description
	Section 43 of the Occupational Health and Safety Act, 1993. The Principal Contractor shall perform a preliminary assessment of the project generated H&S plan and submit such to Occupational Health, Safety & Wellness Sub Directorate – Public Health for legal compliance reassessment & verification / approval prior to any works commencing. The duly appointed H&S Officials will be responsible for further monitoring and the auditing of the approved H&S plan for legal compliance.
4.3.1	Add the following to the clause: “For conventional construction works the Basic Conditions of Employment Act of 1997 (Act No 75 of 1997) shall apply and the minimum employment conditions which will apply shall be guided by the latest Sectorial Determination: Civil & mechanical Engineering Sector published from time to time. Compliance with the National Environmental Management Act (NEMA), Act 107 of 1998. Basic Conditions of Employment Act of 1997 (Act No 75 of 1997) as per Government Notice R63 of 25 January 2002, shall apply to works described in the Scope of Work as being labour intensive and which are undertaken by unskilled or semi-skilled workers.” “The Contractor shall comply with the Occupational Health and Safety Specification prepared by the Employer in terms of the Construction Regulations, 2003 promulgated in terms of Section 43 of the Occupational Health and Safety Act (Act No. 85 of 1993). Without limiting the Contractor's obligations in terms of the Contract, the Contractor shall before commencement of the Works or any part thereof, be in the possession of an approved Health and Safety Plan.”
4.5	Add the following new sub-clauses: 4.5.5 On the request of the Contractor, the Employer may, at his sole discretion, provide a support service to the Contractor in the giving of notices and in obtaining requisite consents, permissions and permits. 4.5.6 On the request of the Contractor and certified by the Engineer as payable by the Contractor, the Employer may, in his sole discretion, advance funds to the Contractor in the form of a cheque in favour of the relevant institution or body, to facilitate the Contractor in complying with the provisions of this Clause. The Contractor shall provide proof to the Engineer of all payments effected by him. The Employer will deduct the sums advanced by the Employer and adjusted in accordance with the Contract Price Adjustment Formula or other rise-and-fall provision applicable to the Contract, from future payment certificates of the

 Contractor

 Witness 1

 Witness 2

 Employer

 Witness 1

 Witness 2

Clause	Description
	Contractor, if such sums are payable by the Contractor in the ordinary course of his business. The Employer will not advance funds in respect of cyclic sums payable by the Contractor in the ordinary course of his business.
4.11.3	Add the following to Clause 4.11: Notwithstanding the wording of this Clause, on request of the Contractor the Employer may at his sole discretion, provide trade-skills training to the Contractor's employees to improve their competency and efficiency commensurate with the requirements of the Works.
5.3.1	The Contractor is required, within 14 days before Commencement Date, to submit the documents listed below to the Engineer for his approval. Proof of Joint Venture Bank Account and registration with the South African Revenue Services (SARS) Where applicable, the Joint Venture entity (Contractor) shall deliver proof of a joint venture bank account and registration with SARS for VAT and other applicable Taxes. Health and Safety Plan The Contractor shall deliver his health and safety plan, in terms of Clause 5(1) of the Construction Regulations (07 February 2014). Initial Programme The Contractor shall deliver his Initial Programme of work in terms of Clause 5.6 Security Submit a guarantee of an Insurance Company or Bank to be jointly and severally bound with the Contractor for an amount equal to 10% of the Contract Price. The wording of the Guarantee shall be identical to the pro forma provided in this Bid Document or Surety of 10% of the value of the works from the first payment certificate upon application and approval. Insurance Submit copies of receipts of registration, or payment for the premiums for the following insurances, as required by the new Clause 8.6 in this Contact Data. (a) Proof of registration with the Department of Labour as an Employer, in terms of the Compensation for Occupational Injuries and Diseases Act 1993, as amended (b) Insurance on an all risks basis for construction plant, equipment and other things (except those intended to incorporation into the works) brought onto the site to the full value of such construction plant, equipment and other things.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Clause	Description
	(c) Where the Contract involves manufacturing and/or fabrication of the works or part thereof at premises other than the site, the Contractor shall satisfy the Employer that all materials and equipment for incorporation in the works are adequately insured during manufacture and/or fabrication. In the event of the Employer having an insurable interest in such works during manufacture or fabrication, then such interest shall be noted by endorsement to the Contractor's Policies of Insurance. (d) Imported equipment or component parts or materials to be supplied in terms of this Contract which require any process of assembly or finishing in South Africa prior to delivery to the site are to be insured by the Contractor up to the commencement of transit to site of the assembled or finished equipment, component parts or materials, unless special arrangements are made with the Employer. These insurances shall be maintained in force for the duration of the Contract, including any Defects Liability Period and in respect of Sub-Contractors, the Contractor shall be deemed to have complied with the provisions of the requirements relating to insurance by ensuring that the Sub-Contractors have affected such insurance.
5.8.1	The special non-working days are all Gazetted Public Holidays falling outside the year-end break, and the year-end break commencing on 15 December 2023 and ends on 17 January 2024.
5.12.2.2	Add the following to sub-clause 5.12.2.2: "Normal rainfall" is not regarded as "abnormal climatic conditions" which entitles the Contractor to extension of time. Allowance for normal rainfall shall be deemed to have been made in his offered rates, prices and programme. Extension of time for abnormal rainfall will be handled according to the formula below: $V = (N_w - N_n) + (R_w - R_n) / X$ Where: V = Extension of time in calendar days in respect of the calendar month under consideration. N_w = Actual number of days during the calendar month on which a rainfall of Y mm or more has been recorded. N_n = Average number of days, as derived from existing rainfall records, on which a rainfall of Y mm or more has been recorded for the calendar month. R_w = Actual rainfall in mm recorded for the calendar month under consideration.

 Contractor

 Witness 1

 Witness 2

 Employer

 Witness 1

 Witness 2

Clause	Description
	R_n = Average rainfall in mm for the calendar month as derived from existing rainfall records. The factor $(N_w - N_n)$ shall be considered to represent a fair allowance for variations from the average number of days during which rainfall exceeds Y mm. The factor $(R_w - R_n) / X$ shall be considered to represent a fair allowance for variations from the average in the number of days during which the rainfall did not exceed Y mm, but wet conditions prevented or disrupted work. For the purposes of the Contract N_n, R_n, X and Y shall have those values assigned to them in the Appendix and/or the Specifications. The total extension of time shall be the algebraic sum of all monthly totals for the period under consideration, but if the total be negative the time for completion shall not be reduced. Extension of time for part of a month shall be calculated using pro rata values of N_n and R_n. This formula does not take account of flood damage which could cause further or concurrent delays and will be treated separately as far as extension of time is concerned". The values of X, Y, N_n and R_n to be used in above-mentioned formula are as follows: X = 10 mm & Y = 4 mm Source of Information: Weather Bureau, Department of Environment Affairs RAINFALL STATION: BELA-BELA • Add the following to sub-clause 5.12.2.4: "Any disruption of labour on a regional or national level due to political unrest, organized mass action or related incidents which is considered to be beyond the Contractor's Control. Any strike within the confines of the Contractor's company, which may affect this project, will be deemed to be within the Contractor's control".
5.13.1	The Penalty for delay to achieve completion by the due completion date is 0,025% of the contract price per calendar day
5.16.3	The latent defect liability period is 60 months .
6.3	All variations shall be in writing, confirmed by the Contractor and finally approved by the Employer. The Contractor shall not perform any variation work until written approval is issued from the Employer.

 Contractor

 Witness 1

 Witness 2

 Employer

 Witness 1

 Witness 2

Clause	Description
6.8.2	No price adjustments
6.10.1.5	The percentage advance on materials not yet built into the Permanent Works is 80% .
6.10.3	The limit of retention money is 10% on interim payment certificates up to a maximum of 10% of the contract sum.
8.6.1.1.2	The value of plant and materials supplied by the Employer to be included in the insurance sum is Nil .
8.6.1.3	The limit of indemnity for liability insurance is R 20 000 000.00
8.6.5	The insurance shall be undertaken with an insurance company registered in South Africa.
10.5.1	Disputes are to be referred to mediation.
10.7.1	Disputes are to be referred for final settlement to arbitration.

Additional Data:

Clause	Description
1.1.1.2	“Definitions” Add the following new sub-clause 1.1.1.2: “For this Contract “Schedule of Quantities” will have the same meaning as “Bill of Quantities” and will form part of the Pricing Data as defined in the General Conditions of Contract.”
1.1.1.35	“Definitions” Add the following new sub-clause 1.1.1.35: “Drawings” means all drawings, calculations and technical information forming part of the Contract Documents and any modifications thereof or additions thereto from time to time approved in writing by the Engineer or delivered to the Contractor by the Engineer.
1.2.1	“Interpretations” Add the following new sub-clauses: 1.2.1.3 Sent by facsimile, electronic or any like communication irrespective of it being during office hours or otherwise. 1.2.1.4 Posted to the Contractor’s address and delivered by the postal authorities. 1.2.1.5 Delivered by a courier service and signed for by the recipient or his representative.”

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Clause	Description
1.3.7	“General Provisions” Add the following new sub-clause 1.3.7: The copyright in all documents, drawing and records (prepared by the Engineer) related in any manner to the Works shall vest in the Employer or the Engineer or both (according to the details of the Contract that has been entered into by the Engineer and the Employer for the Works), and the Contractor shall not furnish any information in connection with the Works to any person or organization without the prior approval of the Employer to this effect.
4.1.2	“Extent of obligations and liability” Add the following to the clauses: The Contractor shall provide the following to the Engineer for retention by the Employer or his assignee in respect of all works designed by the Contractor: 4.1.2.1 A Certificate of Stability of the Works signed by a registered Professional Engineer confirming that all such works have been designed in accordance with the appropriate codes of practice. 4.1.2.2 Proof of registration and of adequate and current professional indemnity insurance cover held by the designer(s). 4.1.2.3 Design calculations should the Engineer request a copy thereof. 4.1.2.4 Engineering drawings and workshop details (both signed by the relevant professional engineer), in order to allow the Engineer to compare the design with the specified requirements and to record any comments he may have with respect thereto. 4.1.2.5 “As-Built” drawings in PDF or DWG electronic format after completion of the Works. The Contractor shall be responsible for the design of the Temporary Works.
4.5	“Notices and fees” Clause 4.5.4: Contractor to be compensated The fees, taxes, levies and other charges to be paid by the Contractor in terms of sub-clause 4.5 will not be refunded by the Employer. The cost thereof shall be deemed to be included in the prices offered for relevant items in the Bill of Quantities.
5.12.2.4	“Extension of time for Practical Completion” Add the following new sub-clause 5.12.2.4: Any disruption of labour on a regional or national level due to political unrest, organized mass action or related incidents which is considered to be beyond the Contractor’s Control. Any strike within the confines of the Contractor’s company, which may affect this project, will be deemed to be within the Contractor’s control.

 Contractor

 Witness 1

 Witness 2

 Employer

 Witness 1

 Witness 2

Clause	Description
5.12.3	“Extension of tie for Practical Completion” Add the following additional sub-clause: Any additional statutory holidays proclaimed after the closing date of Bids over and above the statutory holidays which existed at the time of Bidding. In the case of an additional public holiday declared by the State President, a claim for the cost of temporary or hourly-paid workers who would have been actively engaged in the construction work had the day not been declared a public holiday, will be considered by the Employer. Except for proven extra cost, claims for standing time of plant and equipment will not be considered as the cost thereof is deemed to be included in the Contractor’s provisional and general items.
6.10.4	“Delivery, dissatisfaction with and payment of payment certificate” Add the following additional sub-clause: Notwithstanding the above, the Engineer shall be empowered to withhold the delivery of the payment certificate until the Contractor has complied with his obligations to report in terms of Clause 4.10.2 and as described in the Scope of Work.”
9.2.1.3	“Termination by Employer” Add the following new sub-clauses: 9.2.1.3.9 The Contractor committed a corrupt or fraudulent act during the procurement process or the execution of the contract. 9.2.1.3.10 An official or other role player committed any corrupt or fraudulent act during the procurement process or in the execution of the contract that benefitted the Contractor.”
10.1.1.1	“Contractor’s claims” Add the following new sub-clause: 10.1.1.1.5 Discussions of claims during site meetings and minutes of such discussions shall not be regarded as a claim or notice by the Contractor of his intention to make a claim unless it is supported by a written submission in terms of Clause 10.1.1.1.

 Contractor

 Witness 1

 Witness 2

 Employer

 Witness 1

 Witness 2

Part 2: Data Provided by the Contractor

Clause	Description								
1.1.1.9	The name of the Contractor is:								
1.2.1.2	The Contractor's address for receipt of communication is: <u>Physical Address:</u> Tel no: Fax no: e-mail: <u>Postal Address:</u> 								
1.1.1.14	The time for achieving Practical Completion as set out in the Scope of Works are Weeks								
6.2.1	The security provided by the company should be one of the following: <table border="1"> <thead> <tr> <th>Type of Security</th><th>Contractor's choice indicate "YES" or "NO"</th></tr> </thead> <tbody> <tr> <td>Cash deposit of 10% of the Contract Sum plus Retention of 10% of the value of the Works</td><td></td></tr> <tr> <td>Performance guarantee of 10% of the Contract Sum plus Retention of 10% of the value of the Works</td><td></td></tr> <tr> <td>Deduction of 10% of the contract price from the Contractor's first payment certificate plus Retention of 10% of the value of the works</td><td></td></tr> </tbody> </table> Note: Value Added Tax is included in the Contract Sum for calculating the percentages.	Type of Security	Contractor's choice indicate "YES" or "NO"	Cash deposit of 10% of the Contract Sum plus Retention of 10% of the value of the Works		Performance guarantee of 10% of the Contract Sum plus Retention of 10% of the value of the Works		Deduction of 10% of the contract price from the Contractor's first payment certificate plus Retention of 10% of the value of the works	
Type of Security	Contractor's choice indicate "YES" or "NO"								
Cash deposit of 10% of the Contract Sum plus Retention of 10% of the value of the Works									
Performance guarantee of 10% of the Contract Sum plus Retention of 10% of the value of the Works									
Deduction of 10% of the contract price from the Contractor's first payment certificate plus Retention of 10% of the value of the works									
6.5.1.2.3	The percentage allowance to cover overhead charges on day work is %.								

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

C1.3 FORM OF GUARANTEE

WHEREAS

at
(Hereinafter referred to as "the Employer")

entered into, on the Day of20..., at

a Contract with

at
(Hereinafter called "The Contractor")

for the construction of

AND WHEREAS it is provided by such Contract that the Contractor shall provide the Employer with security by way of suretyship for the due and faithful fulfilment of such Contract by the Contractor.

AND WHEREAS
Has/have at the request of the Contractor, agreed to give such security.

NOW THEREFORE WE,
do hereby guarantee and bind ourselves jointly and severally as Sureties and Co-principal Debtors to the Employer under renunciation of the benefits of division and exclusion for the due and faithful performance by the Contractor of all the terms and conditions of the said Contract, subject to the following conditions.

1. The Employer shall, without reference and/or notice to us, have complete liberty of action to act in any manner authorised and/or contemplated by the terms of the said contract, and/or to agree to any modifications, variations, alterations, directions or extensions of the Due Completion Date of the Works under the said Contract, and that its rights under this guarantee shall in no way be prejudiced nor our liability hereunder be affected by reason of any steps which the Employer may take under such Contract, or of any modification, variation, alterations of the Due Completion Date which the Employer may make, give, concede or agree to under the said Contract.
2. The Employer shall be entitled, without reference to us, to release any securities held by it, and to give time to or compound or make any other arrangement with the Contractor.
3. This guarantee shall remain in full force and effect until the issue of the Certificate of Completion in terms of the Contract, unless we are advised in writing by the Employer

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

before the issue of the said Certificate of his intention to institute claims, and the particulars thereof, in which event this guarantee shall remain in full force and effect until all such claims have been paid or liquidated.

4. Our total liability hereunder shall not exceed the sum of (R.....).

5. We hereby choose domicilium citandi et executandi for all purposes arising hereof at

.....

IN WITNESS WHEREOF this guarantee has been executed by us at on

this..... day of 20.....

As witnesses:

1.....

Signature.....

2.....

Duly authorised to
sign on behalf of

Address

.....

.....

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

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

THIS AGREEMENT made at _____

on this the _____ day of _____ in the year _____
between THE BELA-BELA LOCAL MUNICIPALITY (hereinafter called "the Employer") of the one part, herein represented by _____

in his capacity as _____ and
 (herein after called "the Mandatory") of the other part, herein represented by _____

in his capacity as _____

WHEREAS the Employer is desirous that certain works be constructed, viz,

BID NO: 9/3/1/350

UPGRADING OF THE LESEDING SEWER PUMP STATION (WARD 6)

and has accepted a Bid by the Mandatory for the construction, completion and maintenance of such Works and whereas the Employer and the Mandatory have agreed to certain arrangements and procedures to be followed in order to ensure compliance by the Mandatory with the provisions of the Occupational Health and Safety Act, 1993 (Act 85 of 1993);

NOW THEREFORE THIS AGREEMENT WITNESSETH AS FOLLOWS:

- 1 The Mandatory 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 of a written notice from the Employer or Engineer requiring him to commence the execution of the Works, to either
 - (a) the date of the Final Approval Certificate issued in terms of Clause 5.16.1 of the General Conditions of Contract (hereinafter referred to as "the GCC"),
 - (b) the date of termination of the Contract in terms of Clauses 9.1 of the GCC.
- 3 The Mandatory 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), hereinafter referred to as "The Act", together with its amendments and with special reference to the following Sections of The Act:

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

- (i) Section 8 : General duties of Employers to their employees.
 - (ii) Section 9 : General duties of Employers and self-employed persons to persons other than employees.
 - (iii) Section 37 : Acts or omissions by employees or mandatories, and
 - (iv) Subsection 37(2) relating to the purpose and meaning of this Agreement.
- (b) The procedures and safety rules of the Employer as pertaining to the Mandatory and to all his Sub-Contractors.
- 4 In addition to the requirements of Clause 8 of the GCC and all relevant requirements of the above-mentioned Volume 3, the Mandatory agrees to execute all the Works forming part of this Contract and to operate and utilise all machinery, plant and equipment in accordance with the Act.
- 5 The Mandatory is responsible for the compliance with the Act by all his Sub-Contractors, whether or not selected and/or approved by the Employer.
- 6 The Mandatory warrants that all his and his Sub-Contractors' workmen are covered in terms of the Compensation for Occupational Injuries and Diseases Act, 1993 which cover shall remain in force whilst any such workmen are present on site. A valid letter of good standing from the Compensation Commissioner to this effect must be produced to the Employer upon signature of the agreement.
- 7 The Mandatory undertakes to ensure that he and/or Sub-Contractors and/or their respective Employers will at all times comply with the following conditions:
- (a) The Mandatory shall assume the responsibility in terms of Section 16.1 of the Occupational Health and Safety Act. The Mandatory shall not delegate any duty in terms of Section 16.2 of this Act without the prior written approval of the Employer. If the Mandatory 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 Employer.
 - (b) All incidents referred to in the Occupational Health and Safety Act shall be reported by the Mandatory to the Department of Labour as well as to the Employer. The Employer will further be provided with copies of all written documentation relating to any incident.
 - (c) The Employer hereby obtains an interest in the issue of any formal inquiry conducted in terms of section 32 of the Occupational Health and Safety Act into any incident involving the Mandatory and/or his employees and/or his Sub-Contractors.

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 EMPLOYER:

WITNESS 1 NAME 1
(IN CAPITALS)

SIGNED FOR AND ON BEHALF OF THE MANDATORY:

WITNESS 1 NAME 1
(IN CAPITALS)

Contractor

Witness 1

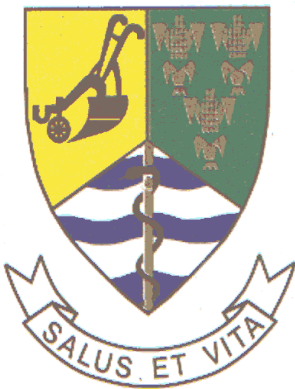
Witness 2

Employer

Witness 1

Witness 2

BELA-BELA LOCAL MUNICIPALITY



BID NO: 9/3/1/350

UPGRADING OF THE LESEDING SEWER PUMP STATION (WARD 6)

C2 PRICING DATA

- C2.1 Pricing Instructions
- C2.2 Bill of Quantities

Contractor

Witness 1

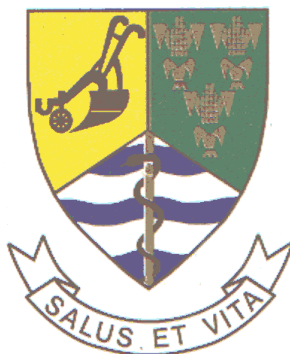
Witness 2

Employer

Witness 1

Witness 2

BELA-BELA LOCAL MUNICIPALITY



BID NO: 9/3/1/350

UPGRADING OF THE LESEDING SEWER PUMP STATION (WARD 6)

C2.1 PRICING INSTRUCTIONS

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

C2.1 PRICING INSTRUCTIONS

1. The General Conditions of Contract, the Contract Data and the Drawings shall be read in conjunction with the Bill of Quantities.
2.
 - a. The Schedule comprises items covering the Contractor's profit and costs of general liabilities and of the construction of temporary and permanent Works.
 - b. Although the Bidder is at liberty to insert a rate of his own choosing for each item in the Schedule, his attention is drawn to the fact that the Contractor has the right, under various circumstances, to payment for additional works carried out and that the Engineer is obliged to base his assessment of the payment to be paid for such additional work on the rates inserted in the Schedule by the Contractor.
 - c. Clause 8 of each Standardized Specification and the measurement and payment clause of each Particular Specification, read together with the relevant clause of the Project Specification, set out what ancillary or associated activities are included in the rate for the operations specified.
3. Unless otherwise stated, items are measured net in accordance with the Drawings, and no allowance has been made for waste.
4. The prices and rates to be inserted in the Schedule of Quantities are to be the full inclusive prices to the Employer for the work described under the several items. The prices and rates shall be exclusive of Value Added Tax. Such prices shall cover all costs and expenses that may be required in and for the construction of the work described, and shall cover the cost of all general risks, liabilities, and obligations set forth or implied in the documents on which the tender is based.
5. A price or rate is to be entered, in **BLACK INK**, against each item in the Schedule of Quantities.
6. In the event of the Bidder failing to price any item it will be held that the Bidder has made adequate allowance under other items for all labour, material and costs required for the execution, not only of the quantum of work covered by the unpriced item but also for any increase in the said quantum which may have to be undertaken during the course of the Contract.
7. The quantities set out in the schedule of quantities are only approximate quantities. The quantities of work finally accepted and certified for payment, and not the quantities given in the schedule of quantities, will be used to determine payments to the Contractor.
8. 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.
9. The Bidder 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 bidden rates shall apply should work under these items actually be required.
10. Should the Bidder group a number of items together and bid one sum for such group of items, the single bided sum shall apply to that group of items and not to each individual item, or

100

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Contractor

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Witness 1

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Witness 2

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Employer

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Witness 1

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Witness 2

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.

11. The bid 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.
12. 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.
13. Ordering of materials are not to be based on the Bill of Quantities, but only on information issued for construction purposes.
14. 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.
15. Where minimum labour intensity is specified in the design, the Bidder 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.
16. 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.
17. 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

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

14. 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 Bidder bids to do the work
Amount	:	The quantity of an item multiplied by the bided rate of the (same) item
Sum	:	An amount bided 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

15. 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

Contractor

Witness 1

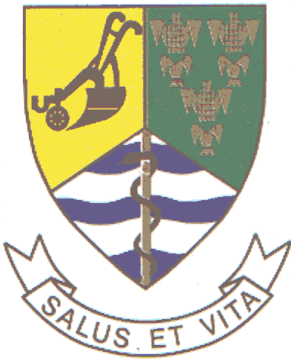
Witness 2

Employer

Witness 1

Witness 2

BELA-BELA LOCAL MUNICIPALITY



BID NO: 9/3/1/350

UPGRADING OF THE LESEDING SEWER PUMP STATION (WARD 6)

C2.2 BILL OF QUANTITIES

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

ITEM NO	PAYMENT REFERS TO	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
1	SANS 1200A	<u>SECTION A : PRELIMINARY AND GENERAL</u>				
1.1	8.3	SCHEDULED FIXED-CHARGE ITEMS				
1.1.1	8.3.1	Contractual requirements	Sum	1		
1.1.2	8.3.2	Establish facilities on the site :				
1.1.2.1	8.3.2.1	Facilities for Engineer (SABS 1200 AB):				
		a) Furnished offices (3 furnished rooms)	Sum	1		
		b) Telephone	Sum	1		
		c) Nameboard (1 No.)	Sum	1		
1.1.2.2	8.3.2.2	Facilities for Contractor:				
		a) Offices and storage sheds	Sum	1		
		b) Ablution and latrine facilities	Sum	1		
		c) Tools and equipment	Sum	1		
		d) Water supplies, electric power and communications	Sum	1		
		e) Dealing with water	Sum	1		
		f) Access	Sum	1		
		g) Plant	Sum	1		
1.1.3	8.3.3	Other Fixed-charge obligations:				
1.1.3.1		Health and Safety Obligations	Sum	1		
1.1.3.2		Risk Assessments	Sum	1		
1.1.3.3		Provision for the Preparation of a Project Specific OH&S Plan	Sum	1		
1.1.3.4		Health and Safety File	Sum	1		
1.1.3.5		Medical Assessment of Employees	Sum	1		
1.1.3.6		Operation and maintenance of Quality Assurance System	Sum	1		
1.1.3.7		General Safety Obligations	Sum	1		
1.1.3.8		Compliance with Requirements of Environmental	Sum	1		
1.1.4	8.3.4	Remove Engineer's and Contractor's Site establishment on completion	Sum	1		
1.2	8.4	SCHEDULED TIME-RELATED ITEMS				
1.2.1	8.4.1	Contractual requirements				
		Operate and maintain facilities on site	Sum	1		
1.2.2	8.4.2	Operation and Maintenance of Facilities on Site, for Duration of Construction, except where otherwise stated				
1.2.2.1	8.4.2.1	Facilities for Engineer:				
		a) Furnished offices (3 furnished rooms)	Month	10		
		b) Telephone	Month	10		
		c) Nameboard (1 No.)	Month	10		
TOTAL SECTION 1200 A CARRIED FORWARD						
1						

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

TOTAL SECTION 1200 A BROUGHT FORWARD					
	SANS 1200A	<u>SECTION A : PRELIMINARY AND GENERAL</u>			
1.2.2.2	8.4.2.2	Facilities for Contractor: a) Offices and storage sheds b) Ablution and latrine facilities c) Tools and equipment d) Water supplies, electric power and communications e) Dealing with water f) Access g) Plant	Month Month Month Month Month Month Month	10 10 10 10 10 10 10	
1.2.3	8.4.3	Supervision for Duration of Construction	Month	10	
1.2.4	8.4.4	Company and Head Office Overhead Costs for the Duration of the Contract	Month	10	
1.2.5	8.4.5	Other Time-related Obligations	Sum	1	
1.3	8.5	SUMS STATED PROVISIONALLY BY ENGINEER			
1.3.1		Provision for additional testing/specialist services required by the Engineer	P/sum	1	R170 000.00 170 000.00
1.3.2		Overheads, charges and Profit on Item 1.3.1 above	%	170 000	10% 17 000.00
1.3.3		Community Liaison Officer (CLO) Remuneration	P/sum	1	R55 000.00 55 000.00
1.3.4		Overheads, charges and Profit on Item 1.3.3 above	%	55 000	10% 5 500.00
TOTAL SECTION 1200 A CARRIED FORWARD					

2

105

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

TOTAL SECTION 1200 A BROUGHT FORWARD					
1.5	SANS 1200A	SECTION A : PRELIMINARY AND GENERAL			
	8.7	DAYWORKS			
1.6		LABOUR			
		a) Contractor's Representative	h	RATE ONLY	RATE ONLY
		b) Surveyor	h	RATE ONLY	RATE ONLY
		c) Qualified artisan	h	RATE ONLY	RATE ONLY
		d) Foreman, leader-hand	h	RATE ONLY	RATE ONLY
		e) Unskilled Labourer	h	RATE ONLY	RATE ONLY
		f) Semi-skilled labourer	h	RATE ONLY	RATE ONLY
		g) Skilled Labourer	h	RATE ONLY	RATE ONLY
		h) Ganger	h	RATE ONLY	RATE ONLY
		i) Flagmen	h	RATE ONLY	RATE ONLY
		PLANT HIRE			
		a) Tipper truck			
		i) 6 m ³	h	RATE ONLY	RATE ONLY
		ii) 10 m ³	h	RATE ONLY	RATE ONLY
		b) Flatbed truck			
		i) 5 ton	h	RATE ONLY	RATE ONLY
		ii) LDV	h	RATE ONLY	RATE ONLY
		c) TLB (Tractor Loader Backhoe)			
		1 m ³ bucket	h	RATE ONLY	RATE ONLY
		d) Excavator	h	RATE ONLY	RATE ONLY
		e) Smooth Drum Roller	h	RATE ONLY	RATE ONLY
		f) Water Bowser	h	RATE ONLY	RATE ONLY
		g) Generator	h	RATE ONLY	RATE ONLY
	8.8	TEMPORARY WORKS			
	8.8.2	Accommodation of traffic	Sum	1	
	8.8.3	Protection of existing infrastructure	Sum	1	
	8.8.4	Existing services	Sum	1	
	8.8.5	Land Surveyor Act			
		Search for and record trigonometrical survey beacons, benchmarks and plot boundary pegs and expose mark on completion of Works	Sum	1	
		Protect beacons, etc locate under item 1.4.1 and reposition or re-establish as order, the same by Registered Land Surveyor on completion of the Works	Sum	1	
TOTAL SECTION 1200 A CARRIED TO SUMMARY					

Contractor

Witness 1

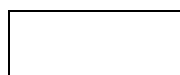
Witness 2

Employer

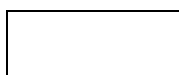
Witness 1

Witness 2

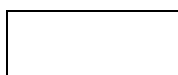
ITEM NO	PAYMENT REFERS TO	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
2.1		SECTION 2.1: MECHANICAL WORKS				
2.1.1		SELF-PRIMING PUMPING PLANT AND SCREENINGS HANDLING PLANT				
		MECHANICAL EQUIPMENT				
		Supply & delivery to site of the following mechanical equipment including quality assurance, factory testing and temporary storage pending installation:				
2.1.1.1		Self-priming Centrifugal Pump (PC-101/102), GORMAN RUPP T6B-B-1 or similar approved, to deliver a duty of 40 l/s @ 8.43 m fitted with Premium efficiency WEG Motor, Belt Drive Arrangement, All mounted on a common heavy duty fabricated frame, galvanised. The estimated motor size is 11 kW. The motors shall be supplied fitted with PT1000 or thermistors and anti-condensation heaters.	No.	2		
2.1.1.2		Self-priming Centrifugal Pump (PC-101/102), GORMAN RUPP T6B-B-1 or similar approved: Lining of all internal wearing surfaces of pumps with "ARC Coated with SD 4 I" or similar approved abrasion resistant coating - Volute Casing, Large Internal Nozzles, Impeller.	No.	RATE ONLY		RATE ONLY
2.1.1.3		SCN-101: Incline Bar Coarse Screen (IBCS), 15mm Screenfield Opening, Materials of Construction according to the technical datasheet.	No.	1		
2.1.1.4		SP-101: Impact Screw Compactor, 304L Stainless Steel C/W Spray system in the compaction zone, according to the technical datasheet.	No.	1		
2.1.1.5		SCN-102: Manually Raked Inclined Bar Screen, 304L Stainless Steel C/W Drip Tray and 2No. Rakes, according to the datasheet.	Sum	1		
2.1.1.6		CG-101/102: Channel Gate, 304L Stainless Steel, Hand Wheel Operated, according to technical datasheet, C/W Anchors.	No.	2		
2.1.1.7		SG-101/102: Wall Mounted Sluice Gate, 304L Stainless Steel, Hand Wheel Operated, according to datasheet, C/W Anchors.	No.	2		
2.1.1.8		SG-103: Wall Mounted Sluice Gate, 304L Stainless Steel, Hand Wheel Operated, according to datasheet, C/W Anchors.	No.	1		
2.1.1.9		PC-103: High Pressure Close-coupled Water Pump for the Washing of the Screenings, to deliver a duty of 5 l/s @ 60 m	No.	1		
2.1.1.10		FT-101: Double length PVC Bag Filter with 50 mm Flanged connections, supplied C/W 20No. 800 micron Filter Bags Pressure Gauge & Isolation Ball Valve and Drain Valve	Sum	1		
2.1.1.11		TK-101: 2.5 Kl LDPE Water Storage Tank, SG 1 C/W Ball Float Valve	Sum	1		
2.1.1.12		Provisional Sum for uPVC Piping and Valves for the Connection of the Washwater System	Psum	1	R20 000.00	R20 000.00
2.1.1.13		Overheads, charges and profit over Item 2.1.1.11	%	10%	R20 000.00	R2 000.00
2.1.1.14		LE-101: Hoist & Trolley, Manually Operated, 2 Tonne	Sum	1		
2.1.1.15		WS-101: Waste Skip, 3m3, Mild Steel Painted, in accordance with the technical datasheet	No.	1		
TOTAL SECTION 200 CARRIED FORWARD						



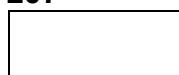
Contractor



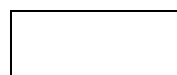
Witness 1



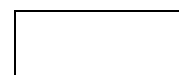
Witness 2



Employer



Witness 1



Witness 2

TOTAL SECTION 200 BROUGHT FORWARD					
2.1.1.16		SECTION 2.1: MECHANICAL WORKS_Continued			
		Waste Skip Trailer suitable for a 3m3 Skip supplied under item 2.1.6 C/W all hydraulic hoses and cylinders for the trailer to move a waste skip. To supplied fully licensed & registered.			
2.1.2		SUBMERSIBLE PUMPING PLANT _ EXISTING			
		New Submersible Pumps for the existing pumpstation per datasheet	Sum	2	
2.1.3		PIPING MATERIAL			
		The P&ID and Arrangement Drawings Refer. Supply & delivery to site of the following piping material and temporary storage pending installation:			
2.1.3.1		PC-101 Suction (SS-200-PN10-101): 200NB Suction pipe, 304L Stainless Steel, SCH 10S C/W Puddle Flanges, Inlet Bellmouth, Galvanised Bolt set & Gaskets. Battery Limits: Inlet Bellmouth & Pump Suction Connection. Fully Welded & Certified, as Applicable.	Sum	1	
2.1.3.2		PC-102 Suction (SS-200-PN10-102): 200NB Suction pipe, 304L Stainless Steel, SCH 10S C/W Puddle Flanges, Inlet Bellmouth, Galvanised Bolt set & Gaskets. Battery Limits: Inlet Bellmouth & Pump Suction Connection. Fully Welded & Certified, as Applicable.	Sum	1	
2.1.3.3		PC-101 Discharge (SS-200-PN10-103): 200NB Delivery pipe, 304L Stainless Steel, SCH 10S C/W Galvanised Bolt set & Gaskets. Battery Limits: Discharge Flange & Tee Connection to SS250-PN10-105. Fully Welded & Certified, as Applicable.	Sum	1	
2.1.3.4		PC-102 Discharge (SS-200-PN10-104): 200NB Delivery pipe, 304L Stainless Steel, SCH 10S C/W Galvanised Bolt set & Gaskets. Battery Limits: Discharge Flange & Tee Connection to PE-250-PN10-105. Fully Welded & Certified, as Applicable.	Sum	1	
2.1.3.5		Common Discharge to Civil Battery Limit (SS-200-PN10-105): 200NB Delivery pipe, 304L Stainless Steel, SCH 10S, Galvanised Bolt set & Gaskets. Battery Limits: Tee Connection & Reducer at Civil Battery Limit. Fully Welded & Certified, as Applicable.	Sum	1	
2.1.3.6		PC-101 Casing Drain (SS-25-PN10-106): 25NB Casing Drain pipe, 304L Stainless Steel, Screwed Connections.	Sum	1	
TOTAL SECTION 200 CARRIED FORWARD					

5

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

TOTAL SECTION 200 BROUGHT FORWARD					
		SECTION 2.1: MECHANICAL WORKS_Continued			
2.1.3.7		PC-102 Casing Drain (SS-25-PN10-107): 25NB Casing Drain pipe, 304L Stainless Steel, Screwed Connections.	Sum	1	
2.1.3.8		Pipe supports, galvanised	Kg	100	
2.1.4		PIPING EQUIPMENT_VALVES			
		The P&ID and Valve List Refer. Supply & delivery to site of the following Valves and temporary storage pending installation:			
2.1.4.1		HV-101/102: RSV gate valve, Handwheel, 200NB, PN16, flanged, ductile iron FBE C/W Gasket Set and Galvanised Fasteners	No.	2	
2.1.4.2		CV-101/102: Swing check valve, resilient seated C/W lever and weight, 200NB, PN16, flanged, ductile iron FBE C/W Gasket Set and Galvanised Fasteners	No.	2	
2.1.4.3		Ball Valve Lever Operated, 25NB, PN16, 316L stainless steel	No.	4	
2.1.4.4		Air release valve, Vent-O-Mat or similar, 25NB, PN16, 304L stainless steel, suitable for wastewater application	No.	1	
2.1.5		PLANT INSTALLATION			
		Taking delivery, handling, erection, installation and testing of the following plant and equipment including all testing up to "RFC":			
2.1.5.1		Install Pumps (PC-101/102) supplied under Section 2.1.1.1	No.	2	
2.1.5.2		Install Bar Coarse Screen (SCN-101) supplied under Section 2.1.1.3	No.	1	
2.1.5.3		Install Screw Compactor (SP-101) supplied under Section 2.1.1.4	No.	1	
2.1.5.4		Install Manually Raked Screen supplied under Section 2.1.1.5	No.	1	
2.1.5.5		Install Channel Gates supplied under Section 2.1.1.6	No.	2	
2.1.5.6		Install Wall Mounted Sluice Gates supplied under Section 2.1.1.7	No.	2	
2.1.5.7		Install Wall Mounted Sluice Gate supplied under Section 2.1.1.8	No.	1	
2.1.5.8		Install Washwater System Complete per P&ID	Sum	1	
2.1.5.9		Install Hoist & Trolley supplied under Section 2.1.1.14	Sum	1	
2.1.5.10		Install Pump 1 (PC-101) Suction Piping (SS-200-PN10-101) C/W Supports and Valves	Sum	1	
2.1.5.11		Install Pump 2 (PC-102) Suction Piping (SS-200-PN10-101) C/W Supports and Valves	Sum	1	
2.1.5.12		Install Pump 1 (PC-101) Discharge Piping (SS-200-PN10-103) C/W Valves & Supports	Sum	1	
TOTAL SECTION 200 CARRIED FORWARD					

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

TOTAL SECTION 200 BROUGHT FORWARD					
	SECTION 2.1: MECHANICAL WORKS_Continued				
2.1.5.13	Install Pump 2 (PC-102) Discharge Piping (SS-200-PN10-104)C/W Valves & Supports	Sum	1		
2.1.5.14	Install Common Discharge Piping (SS-200-PN10-105) C/W Valves & Supports	Sum	1		
2.1.5.15	Install Pump 1 Casing Drain piping (SS-25-PN10-106)	Sum	1		
2.1.5.16	Install Pump 2 Casing Drain piping (SS-25-PN10-107)	Sum	1		
2.1.6	COMMISSIONING				
	Commissioning and adjusting and testing the plant and equipment supplied and installed under this section of the Contact after completion of erection and installation, including training Employer's staff as specified				
2.1.6.1	Pumps	Sum	1		
2.1.6.2	Screening System	Sum	1		
2.1.6.3	Inspections and reporting during the Defect Liability Period	No.	6		
2.1.6.4	Tuition and training of Employer's staff in operation and maintenance of the Plant	Sum	1		
2.1.7	DOCUMENTATION AND DRAWINGS				
2.1.7.1	Installation QC Test Packs	Sum	1		
2.1.8	GENERAL				
2.1.8.1	Final cleaning and painting of all plant and equipment in accordance with the Employer's colour coding	Sum	1		
TOTAL SECTION 1200 A CARRIED TO SUMMARY					

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

ITEM NO	PAYMENT REFERS TO	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
3.1		<u>SECTION 3.1: ELECTRICAL WORKS</u> DISTRIBUTION TRANSFORMER Design, supply & delivery to site of the following plant and equipment including quality assurance, factory testing and temporary storage pending installation: Supply: 100kVA Power Transformer Sum 1 Install: 100kVA Power Transformer Sum 1 Testing and Commissioning: 100kVA Power Transformer Sum 1 Connection between MCC and DB Supply PVC/SWA/PVC/PVC cable - 25mm ² , 4core m 100 Supply 25mm ² ICEW m 100 Supply DB Board, Deliver and Store (if required) No. 1 Install DB Board No. 1 Install LV Cable , including termination, testing and labelling m 100 LV SWITCHGEAR AND CONTROL GEAR ASSEMBLIES Complete including all metal work (including the PLC & Telemetry Section, Genset Change-over), busbars, motor starters, ACB to suit the mechanical equipment offered and in accordance with the Single Line Diagram, GA & Technical Datasheet. Supply No. 1 Factory Acceptance Testing Sum 1 Deliver and Store (if required) No. 1 Install Sum 1 Motor Control Reticulation Self-Priming Sewer Pumps Supply PVC/SWA/PVC/PVC Cu Power cable - 4c/6mm ² m 60 Install PVC/SWA/PVC/PVC Cu Power cable - 4c/6mm ² m 60 Supply PVC/SWA/PVC/PVC Cu Control cable - 4c/2.5mm ² m 60 Install PVC/SWA/PVC/PVC Cu Control cable - 4c/2.5mm ² m 60 Termination, Testing, Labelling, Put into Service Sum 2 Supply and Install Field Isolator Panel C/W Pedestal Sum 2 Mechanical Screen Supply PVC/SWA/PVC/PVC Cu Power cable - 4c/6mm ² m 100 Install PVC/SWA/PVC/PVC Cu Power cable - 4c/6mm ² m 100 Supply PVC/SWA/PVC/PVC Cu Control cable - 4c/2.5mm ² m 100 Install PVC/SWA/PVC/PVC Cu Control cable - 4c/2.5mm ² m 100 Termination, Testing, Labelling, Put into Service Sum 1 Supply and Install Field Isolator Panel C/W Pedestal Sum 1				
TOTAL SECTION 300 CARRIED FORWARD				8		

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

TOTAL SECTION 300 BROUGHT FORWARD							
3.1.5		SECTION 3.1: ELECTRICAL WORKS CONTINUED					
		Screenings Compactor					
		Supply PVC/SWA/PVC/PVC Cu Power cable - 4c/6mm ²					
		Install PVC/SWA/PVC/PVC Cu Power cable - 4c/6mm ²					
		Supply PVC/SWA/PVC/PVC Cu Control cable - 4c/2.5mm ²					
		Install PVC/SWA/PVC/PVC Cu Control cable - 4c/2.5mm ²					
		Termination, Testing, Labelling, Put into Service					
		Supply and Install Field Isolator Panel C/W Pedestal					
		Washwater Pump					
		Supply PVC/SWA/PVC/PVC Cu Power cable - 4c/6mm ²					
		Install PVC/SWA/PVC/PVC Cu Power cable - 4c/6mm ²					
		Supply PVC/SWA/PVC/PVC Cu Control cable - 4c/2.5mm ²					
		Install PVC/SWA/PVC/PVC Cu Control cable - 4c/2.5mm ²					
		Termination, Testing, Labelling, Put into Service					
		Supply and Install Field Isolator Panel C/W Pedestal					
		CABLE TRENCH EXCAVATIONS					
		<i>Excavations for cables and sleeves including bedding, temporary support of sides, keeping excavations dry, backfilling, compacting and removing of surplus material: (750mm deep, 450mm wide)</i>					
		3.1.5.1	Pickable material	m ₃	100		
		3.1.5.2	For soft rock	m ₃	100		
		3.1.5.3	For hard rock	m ₃	20		
			Bedding (300mm)	m ₃	131		
		CABLE SLEEVES					
			Supply and install 110mm diameter PVC sleeve with drawwires	m	200		
		PVC DANGER TAPE					
			Supply and install of PVC danger tape above the cables	m	220		
		AREA LIGHTING					
		Installation to include the required conduit, installation of conduit, final connections, couplings, glands, terminals, cover plates					
		5m Gum Pole Mounted Street Light with 2x 162 W LED "Street Light" (4000K - 48 x LEDs)					
			Supply Pole, mounting bracket and light	No	10		
			Deliver and Store (if required)	No	10		
	Install Street Light Units	No	10				
	Supply PVC/SWA/PVC/PVC Cu Power cable - 4c/16mm ²	m	100				
	Install Power Cable	m	100				
	Termination, Testing, Labelling, Put into Service	Su	1				
TOTAL SECTION 300 CARRIED FORWARD							

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

TOTAL SECTION 300 BROUGHT FORWARD						
		<u>SECTION 3.1: ELECTRICAL WORKS CONTINUED</u>				
		EARTHING AND LIGHTNING PROTECTION				
		Supply and install electrical earthing and lightning protection				
		Earthing design by specialist	Psum	1	R80 000.00	R80 000.00
		Overheads, charges and profit over Item 2.1.1.11	%	10%	R80 000.00	R8 000.00
		Supply and Installation of Earthing System	Psum	1	R120 000.00	R120 000.00
		Overheads, charges and profit over Item 2.1.1.11	%	10%	R120 000.00	R12 000.00
		GALVANISED CABLE SUPPORTS				
		200 mm wide straight cable ladder	m	60		
		200 mm wide riser / dropper	No.	10		
		200 mm wide 90° elbow	No.	8		
		200 mm wide T-piece	No.	6		
		Accessories required for installation of 400 mm width cable ladder, incl. all, supports, Unistrut, fasteners, splices, etc.	Sum	1		
		GENERAL ITEMS				
3.1.12.5		Danger signs and notices (sets)	Sum	1		
3.1.12.6		9kg DCP Fire extinguishers	No.	2		
3.1.12.7		First aid kits	No.	1		
3.1.12.8		Supply and Install Substation Cabinets	Sum	1		
3.1.10		TESTING, CERTIFICATION & COMMISSIONING				
		LV Bulk supply - From Transformer outgoing terminals, generator, change-over panel and MCC Incoming terminals				
3.1.10.1		Commissioning & Testing of System(in the presence of the Engineer) and issue Test Certificates / Compliance Certificates. (By Others)	Sum	1		
3.1.10.2		Motor Control centre and motor circuits				
		Commissioning & Testing of System (in the presence of the Engineer) and issue Test Certificates / Compliance Certificates	Sum	1		
3.1.10.3		DB and outgoing circuits				
3.1.10.4		Commissioning & Testing of System (in the presence of the Engineer) and issue Test Certificates / Compliance Certificates	Sum	1		
TOTAL SECTION 300 CARRIED TO SUMMARY						

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

ITEM NO	PAYMENT REFERS TO	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
4.1		SECTION 4.1: ELECTRICAL BUILDING SERVICES				
		PUMPSTATION & SCREENING HOUSE				
4.1.1		CONDUITS/ WIREWAYS_PVC_SUPPLY				
		Conduit, Wireways and Outlets (rates are to include for casting into concrete and/or chasing into brickwork):				
4.1.1.1		Supply - 20 mm	m	50		
4.1.1.2		Install - 20 mm	m	50		
4.1.1.3		Supply - 25 mm	m	50		
4.1.1.4		Install - 25 mm	m	50		
		Bosal				
4.1.1.9		Supply - 20 mm	m	50		
4.1.1.10		Install - 20 mm	m	50		
4.1.1.11		Supply - 25 mm	m	50		
4.1.1.12		Install - 25 mm	m	50		
		Surface				
4.1.1.13		Install - 20 mm	m	50		
4.1.1.14		Install - 25 mm	m	50		
4.1.2		OUTLET BOXES_PVC				
4.1.2.1		Supply - Lighting 50 x 100 mm	No.	4		
4.1.2.2		Install - Lighting 50 x 100 mm	No.	4		
4.1.2.3		Supply - Lighting 60 mm round	No.	4		
4.1.2.4		Install - Lighting 60 mm round	No.	4		
4.1.2.5		Supply - Power 100 x 100 mm	No.	4		
4.1.2.6		Install - Power 100 x 100 mm	No.	4		
4.1.3		WIRING				
		PVC insulated copper conductors drawn into conduit or trunking, including L, N and E.				
4.1.3.1		Supply - 2,5 mm ²	m	300		
4.1.3.2		Install - 2,5 mm ²	m	300		
4.1.3.3		Supply - 4 mm ²	m	200		
4.1.3.4		Install - 4 mm ²	m	200		
TOTAL SECTION 400 CARRIED FORWARD						

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

TOTAL SECTION 400 BROUGHT FORWARD					
4.1.4		SECTION 4.1: Eletrical Building Services_Continued			
		LIGHT SWITCHES			
		Light switch unit with white cover plate and Galvanised steel screws.			
		Supply - Light switch : 16 A, 1 way, 1 lever	No.	8	
		Install - Light switch : 16 A, 1 way, 1 lever	No.	8	
		Supply - Photo cell	No.	4	
		Install - Photo cell	No.	4	
		SWITCHED SOCKET OUTLETS AND ISOLATORS			
		Switched socket outlets and isolators including white cover plates and installation in outlet boxes.			
		Supply - 16A Twin	No.	4	
		Install - 16A Twin	No.	4	
		Supply - 32A IP65 Welding socket	No.	1	
		Install - 32A IP65 Welding socket	No.	1	
		LUMINAIRES			
		Supply and deliver, accept, store, erect, fix and connect the following luminaires:			
		Supply - Type B	No.	10	
		Install - Type B	No.	10	
TOTAL SECTION 400 CARRIED FORWARD					

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

TOTAL SECTION 400 BROUGHT FORWARD					
4.1.8		FIRE AND INTRUDER DETECTION			
		Supply and deliver, accept, store, erect, fix and connect the following equipment:			
4.1.8.1		Supply - Fire detection control panel	No	1	
4.1.8.2		Install - Fire detection control panel	No	1	
4.1.8.3		Supply - Open area smoke detectors, IP65 including (Technoswitch Osid detector with 80° horizontal and 48° vertical field of view or approved equivalent)	No	4	
4.1.8.4		Install - Open area smoke detectors, supplied under 4.1.8.3	No	4	
4.1.8.5		Supply - Key resettable break glass units	No	1	
4.1.8.6		Install - Key resettable break glass units	No	1	
4.1.8.7		Supply - IP65 Strobe and Siren Combination	No	1	
4.1.8.8		Install - IP65 Strobe and Siren Combination	No	1	
4.1.8.9		Supply - Fire detection Conduit (25 mm Galvanised)	m	30	
4.1.8.10		Install - Fire detection Conduit (25 mm Galvanised)	m	30	
4.1.8.11		Supply - Fire detection wiring	m	100	
4.1.8.12		Install - Fire detection wiring	m	100	
4.1.8.13		Testing and Commissioning of fire detection system including CoC	Sum	1	
4.1.8.14		Supply - Alarm System Control panel	No	1	
4.1.8.15		Install - Alarm System Control panel	No	1	
4.1.8.16		Supply - PIR sensor (indoor)	No	2	
4.1.8.17		Install - PIR sensor (indoor)	No	2	
4.1.8.18		Supply - Strobe Siren Combination	No	1	
TOTAL SECTION 400 CARRIED FORWARD					

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

TOTAL SECTION 400 BROUGHT FORWARD					
		SECTION 4.1: SELF-PRIMING PUMPING PLANT _ PUMPSTATION 1_Continued			
4.1.8.19		Install - Strobe Siren Combination	No	1	
4.1.8.20		Supply - Radio Transmitter to alert local authority	No	1	
4.1.8.21		Install - Radio Transmitter to alert local authority	No	1	
4.1.8.22		Testing and Commissioning of Alarm System	Sum	1	
4.1.9		TESTING AND COMMISSIONING			
4.1.9.1		Testing and Commissioning and issuing of CoC to SANS 10142-1	Sum	1	
4.1.9.2		Testing and Commissioning and issuing of CoC to SANS 10142-2	Sum	1	
4.1.9.3		Testing and Commissioning and issuing of the Lightning protection system installation safety report for the complete installation (SANS 10313 & 62305 1-4).	Sum	1	
TOTAL SECTION 400 CARRIED TO SUMMARY					

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Contractor

Witness 1

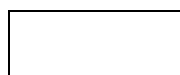
Witness 2

Employer

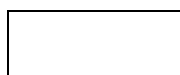
Witness 1

Witness 2

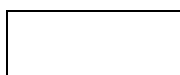
ITEM NO	PAYMENT REFERS TO	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
5.4		<u>SECTION 5.4: ELECTRONIC WORKS</u>				
5.4.1		CONTROL - Programmable Logic Controllers				
		Design, supply and installation of PLC hardware and all associated panels and components to equip the PLC compartments/tiers/panels and temporary storage pending installation:				
5.4.1.1		PLC with all components (Power supply, CPU, IO cards, communication cards)	Sum	1		
5.4.1.2		Control system Functional Design Specification	Sum	1		
5.4.1.3		PLC Programming	Sum	1		
5.4.1.4		PLC Configuration Software and cable, including PLC software licenses	Sum	1		
5.4.2.5		PLC FAT, simulation and SAT	Sum	1		
5.4.1.6		Uninterruptible Power Supply (UPS), complete with required enclosure	Sum	1		
5.4.2		VISUALISATION - Human Machine Interface (HMI)				
5.4.2.1		HMI unit including communication cable, all peripherals and mounting accessories	Sum	1		
5.4.2.2		HMI Programming and configuration	Sum	1		
5.4.2.3		HMI Programming software and cable, including all required software licenses	Sum	1		
5.4.2.4		HMI FAT, simulation and SAT	Sum	1		
5.4.3		FIELD INSTRUMENTATION				
5.4.3.1		Supply, installation, connection (incl. all panels, mounting brackets and posts where necessary) of field instrumentation as detailed in the P&ID and Instrument List:				
		Ultrasonic Flow Meter				
		Flanged magnetic type Flowmeter Meter, DN200.				
5.4.3.2		Supply Instrument	No	1		
		Deliver and Store (If Required)	No	1		
		Install Instrument	No	1		
		Supply Instrument Cable - 2P x 1.0mm ²	m	50		
		XLPE/OS/PVC/APL/PVC CU - SANS 1411, 300/500V	m	50		
		Install Instrument Cable	Sum	1		
		Terminate Control Cable	Sum	1		
		Supply Instr. Power Cable: 3C x 2.5mm ² PVC(FR)/SWA/PVC CU - SANS 1507-3, 600/1000V	m	50		
		Install Power Cable	m	50		
		Terminate Power Cable	Sum	1		
		Labelling of the cables, terminals and associated equipment	Sum	1		
TOTAL SECTION 500 CARRIED FORWARD						



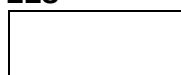
Contractor



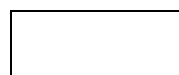
Witness 1



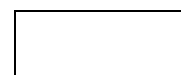
Witness 2



Employer



Witness 1



Witness 2

TOTAL SECTION 500 BROUGHT FORWARD						
		Ultrasonic Level Transmitter Level, radar, contactless. FMR10-AAQBMWDEWFE2+R7 Micropilot FMR10 Or Similar Approved				
5.4.3.2		Supply Instrument	No.	2		
		Deliver and Store (If Required)	No.	1		
		Install Instrument	No.	2		
5.4.3.5		Supply and Install Swivelling mounting bracket, sewer. For installation in manhole, above sewer. Usage: FMR10	No.	2		
		Supply Instrument Cable - 2P x 1.0mm² XLPE/OS/PVC/APL/PVC CU - SANS 1411, 300/500V	m	120		
		Install Instrument Cable	m	120		
		Terminate Control Cable	Sum	2		
		Supply Instr. Power Cable: 3C x 2.5mm² PVC(FR)/SWA/PVC CU - SANS 1507-3, 600/1000V	m	120		
		Install Power Cable	m	120		
		Terminate Power Cable	Sum	2		
		Labelling of the cables, terminals and associated equipment	Sum	2		
		High Level Switch Float Switches Liquifloat T FTS20 AC/DC PP/PVC, 20m. Point level switch, float or Similar Approved				
	5.4.3.2		Supply Instrument	No.	4	
		Deliver and Store (If Required)	No.	1		
		Install Instrument	No.	1		
		Supply Instrument Cable - 2 Core O/All Scr 1.5mm²	m	60		
		Supply Instrument Cable - 4 Core O/All Scr 1.5mm²	m	60		
		Install Instrument Cable	m	120		
		Terminate Control Cable	Sum	1		
		Labelling of the cables, terminals and associated equipment	Sum	1		
5.4.3.2		Low Level Switch Float Switches Low Level Switch Float Switches. Liquifloat T FTS20 AC/DC PP/PVC, 20m. Point level switch, float.				
		Supply Instrument	No.	4		
		Deliver and Store (If Required)	No.	1		
		Install Instrument	No.	1		
		Supply Instrument Cable - 2 Core O/All Scr 1.5mm²	m	60		
		Supply Instrument Cable - 4 Core O/All Scr 1.5mm²	m	60		
		Install Instrument Cable	m	120		
		Terminate Control Cable	Sum	1		
		Labelling of the cables, terminals and associated equipment	Sum	1		
	5.4.3.2		Pressure transmitter Supply Instrument	No.	2	
		Deliver and Store (If Required)	Sum	1		
		Install Instrument	No.	2		
		Supply Instrument Cable - 2P x 1.0mm² XLPE/OS/PVC/APL/PVC CU - SANS 1411, 300/500V	m	30		
		Install Instrument Cable	m	30		
		Terminate Control Cable	Sum	1		
		Supply Instr. Power Cable: 3C x 2.5mm² PVC(FR)/SWA/PVC CU - SANS 1507-3, 600/1000V	m	30		
		Install Power Cable	m	30		
		Terminate Power Cable	Sum	1		
		Labelling of the cables, terminals and associated equipment	Sum	1		
		Pressure Gauge Price to include supply and installation of 304L isolation ball valve				
		Supply Instrument	No.	1		
		Deliver and Store (If Required)	No.	1		
		Install Instrument	No.	1		
TOTAL SECTION 500 CARRIED TO SUMMARY						

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

ITEM NO	PAYMENT REFERS TO	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
6	SANS 1200C	<u>SITE CLEARANCE</u>				
6.1	8.2.1	Clear and grub: I Areas II Strips, up to 1.0 m wide	ha m	0.13 105		
6.2	8.2.2	Remove and grub large trees and tree stumps of girth I over 1 m and up to and including 2 m II over 2 m and up to and including 3 m III over 3 in, in steps of 1 m	No. No. No.	RATE ONLY RATE ONLY 1		RATE ONLY RATE ONLY
6.3	8.2.5	Take down existing fences	m			
6.4	8.2.7	Dismantle and remove pipelines, electricity Transmission lines, cables, etc	m	42		
6.5	8.2.9	Transport materials and debris to unspecified Site and dump	m ³ -km	1460		
6.6	8.2.10	Remove Topsoil to Nominal Depth of 150mm an	m ³	212.51		
TOTAL SECTION 1200 C CARRIED TO SUMMARY						

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

ITEM NO	PAYMENT REFERS TO	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
7	SANS 1200D	<u>EARTHWORKS</u>				
7.1	8.3.2	Bulk Excavations				
	a)	Excavate in a II materials and use for embankment or backfill or dispose, as ordered				
		sub-clause a) All materials	m ³	795		
	b)	Extra over item 8.3.2 a) above for:				
		sub-clause b) Intermediate excavation	m ³	80.00		
		sub-clause c) Hard rock excavation	m ³	40.00		
7.2	8.3.4	Importing of Materials				
	a)	Extra-over for Importation of Materials from Commercial				
7.2.1		150 mm G7 Granular Soil compacted to 90% Mod AASHTO	m ³	120		
7.2.2		150 mm G5 Granular soil compacted to 93% Mod AASHTO	m ³	120		
7.2.3		125 mm C4 Cement-Stabilised Layer	m ³	100		
7.2.4		20 mm Bedding Sand	m ³	16		
7.3	8.3.5	Extra Excavation in all Materials to provide Working Space around proposed Pump Station	m ²	205		
7.4	8.3.7	Additional Lateral Support	Sum	1		
7.5	8.3.9	Extra-over for Fill Material G7 Granular Soil compacted to 90% Mod AASHTO in 300 mm Layers	m ³	700		
7.6	8.3.10	Topsoiling	m ²	205		
7.7	8.3.11	Grassing or other Vegetation	m ²	205		
TOTAL SECTION 1200 D CARRIED TO SUMMARY						

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

ITEM NO	PAYMENT REFERS TO	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
8	SANS 1200DB	<u>EARTHWORKS (PIPE TRENCHES)</u>				
8.1	8.3.2	<u>TRENCHES FOR WATER PIPES</u>				
8.1.1	8.3.2 a)	Excavate in all materials for trenches, backfill, compact to 90% Mod AASHTO, and dispose of surplus material:				
8.1.1.2		Pipes of diameter 125 mm to 700 mm for depths:				
		Over 1,0 m up to 2,0 m	m	45		
		Over 2,0 m up to 3,0 m	m	60		
8.2	8.3.3	Excavation Ancillaries				
8.2.1	8.3.3.1	Make up deficiency in Backfill Material				
	8.3.3.1 a)	By Importation of G7 Granular Soil compacted to 90% Mod AASHTO in 300 mm Layers from Commercial Sources	m ³	190		
8.3	8.3.5 a)	Existing Services that intersect a Trench	No	3		
TOTAL SECTION 1200 DB CARRIED TO SUMMARY						

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

ITEM No.	PAYMENT REF	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
11	SABS 1200 G	CONCRETE WORKS (STRUCTURAL)				
11.1	8.1.3	CONCRETE				
11.2	8.4.3	Strength concrete: 35 MPa/19 mm:				
11.2.1		75 mm minimum thickness	m ²	370		
11.2.2		Walls	m ³	300		
11.2.3		Ground floor slab / bases	m ³	120		
11.2.4		Suspended slabs	m ³	70		
11.2.5		Distribution chambers / splitter boxes	m ³	80		
11.2.6		Columns	m ³	3		
11.3	8.1.1	FORMWORK				
11.4	8.2.1	Rough walls below ground				
11.4.1		Vertical plane	m ²	200		
11.4.2		Vertical curved	m ²			
11.5	8.2.2	Smooth vertical plane to:				
11.5.1		walls	m ²	1000		
11.5.2		columns	m ²	30		
11.5.3		beams	m ²	10		
11.5.4		slabs and bases	m ²	90		
11.6	8.2.5	Vertical narrow widths up to 300 mm wide	m ²	300		
11.7	8.2.2	Smooth horizontal plane to:				
11.7.1		slabs	m ²	370		
11.7.2		beams	m ²	10		
11.8	8.2.2	Smooth battered to:				
11.8.1		Walls	m ²	200		
11.9	8.2.6	Box out holes/form voids				
11.9.1		900mm x 900mm and less	No.	4		
11.9.2		1000mm x 1000mm	No.	1		
11.9.3		1500mm x 900mm	No.	1		
11.1	8.1.2	REINFORCEMENT				
		Mild steel bars				
11.1.1	8.1.2.2	Diameter 10 mm : Basic price	t	10		
11.1.2	8.1.2.3	Extra-over item for bars of diameter				
		a) 8 mm	t	1		
		b) 10 mm	t	1		
		c) 12 mm	t	1		
		d) 16 mm	t	1		
11.1.2	8.3.1	High-tensile steel bars				
11.1.3	8.1.2.2	Diameter 25 mm : Basic Price	t	60		
11.1.4	8.1.2.3	Extra-over item for bars of diameter				
11.1.5		a) 8 mm	t	1		
11.1.6		b) 10 mm	t	1		
11.1.7		c) 12 mm	t	5		
11.1.8		d) 16 mm	t	5		
11.1.9		e) 20 mm	t	4		
11.1.10		f) 32 mm	t	2		
11.1.11		g) 40 mm	t	2		
11.1.12	8.3.2	High-tensile welded mesh reinforcement				
11.1.13		Type reference 193	m ²	10		
11.1.14		Type reference 395	m ²	10		
11.2	8.4.4	UNFORMED SURFACE FINISHES				
11.2.1		Wood-floated finish (see PSG 7.1)				
11.2.2		Roof slabs	m ²	180		
11.2.3		Steel-floated finish (see PSG 7.2)				
11.2.4		Floor of reservoir	m ²	120		
11.2.5		Power-floated finish (see PSG 7.3)	m ²	50		
11.2.6		Special surface finish (see PSG 7.4)				
11.2.7		Pumproom floors	m ²	50		
TOTAL SECTION 1200 G CARRIED TO FORWARD						

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

TOTAL SECTION 1200 G BROUGHT FORWARD					
	SABS 1200 G	<u>CONCRETE WORKS (STRUCTURAL)</u>			
11.3	8.5	JOINTS Waterstops to comply with ASTM D 5385-93 (hydrostatic) and ASTM G 154-16 (UV)			
11.3.1		Type A: Floor joint: Centre bulb waterstop	m	100	
11.3.2		Type B: Floor joint: Slab bottom waterstop	m	100	
11.3.3		Type C: Wall joint: Centre bulb waterstop	m	100	
11.3.4		Type D: Wall/roof joint	m	50	
11.4		Water proofing to concrete roofs			
11.4.1		Substrate preparation. The substrate shall be to falls and cross falls of 1:80 to outlets. If no falls and cross falls exist (not recommended) a dual layer system must be used. The substrate shall be surface dry, clean and smooth; free of voids, protrusions and contaminants. The area is then to be primed using a bituminous primer. Internal corners shall be filleted and external corners rounded.	m ²	255	
11.4.2		One layer Derbigum SP4 waterproofing membrane, with 75mm side laps and 100mm end laps, sealed to primed surface to falls and crossfalls by "torch-fusion" including protection of 50mm thick layer clean 19-25mm crushed stone on interdek separation layer. Waterproofing to be installed by an Approved Derbigum Contractor under a ten-year guarantee.	m ²	255	
11.4.3		150mm layer of 19mm stone above wet sump roof	m ²	120	
11.5		TIMBER ROOF Timber roof to ITC-SA requirements and contractor to issue fabrication and roof inspection certificate			
11.5.1		Roof over the headworks	Sum	1	
11.6		BUILDING WORKS			
11.6.1		280mm cavity filled brickwork	m ²	100	
11.6.2		Galvanised steel pump room door complete with frame and lock approx 1500mm x 3000m	No	3	
TOTAL SECTION 1200 G CARRIED TO SUMMARY					

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

ITEM NO	PAYMENT REFERS TO	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
12	SANS 1200 LB	BEDDING (PIPES)				
12.1	8.2.2	Supply only of bedding by importation:				
12.1.1	8.2.2.3	From commercial sources:				
		I Selected granular material	m³	95.00		
		II Selected fill material	m³	45.00		
TOTAL SECTION 1200 LB CARRIED TO SUMMARY						

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

ITEM NO	PAYMENT REFERS TO	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
13	SANS 1200LD	<u>SEWERS</u>				
13.1	8.2.1	Supply, Lay, Joint, Bed and Test Sewer Pipes with Joints				
13.1.1		HDPE PE100 PN12.5 (SANS 4427)				
		I 315 mm dia	m	60		
13.1.2		uPVC Heavy Duty Class 34 (SANS 791 or SANS 1601)				
		I 315 mm dia	m	45		
13.2	8.2.2	Extra over items 13.1.1 for the supplying, laying, and bedding of HDPE specials complete with couplings :				
13.2.1	8.2.2	90° bends:				
		I 315 mm dia	No.	1		
13.3	8.2.2	Extra over items 13.1.2 for the supplying, laying, and bedding of PVC-U specials complete with couplings :				
13.3.1	8.2.2	45° bends:				
		I 315 mm dia	No.	1		
13.4	8.2.3	Manholes				
13.4.1		Brick Manholes for Sewers				
		I Manhole(Depth less than 2,25m)	No.	RATE ONLY		RATE ONLY
13.5	8.2.5	Diversion Chamber	No	2		
13.6	8.2.8	Anchor/thrust blocks and pedestals:				
		Concrete:				
		Class 15 MPa/19 mm	No.	1		
13.7	8.2.11	Connection to Existing Sewer at....MH2-A18	No.	1		
13.8	8.2.12	Raising or Lowering of Existing Manholes	No.	RATE ONLY		RATE ONLY
TOTAL SECTION 1200 LD CARRIED TO SUMMARY						

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

ITEM No.	PAYMENT REF	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
15	SABS 1200HA	STEELWORK (MINOR WORKS)				
15.1	8.3.1	SECTION : STRUCTURAL STEELWORK STRUCTURES				
15.1.1		Supply, fabricate, and deliver structural steelwork for				
15.1.1.1		a) Pumproom crawl beams (254x146x37 UB)	m	15		
15.1.1.2		b) Columns (203x203x46.1H) ±3m high	No	8		
15.1.1.3		c) Manhole frame, cover and lock				
15.1.1.3.1		900mm x 900mm	No	4		
15.1.1.3.2		1200mm x 1200mm	No	1		
15.1.1.3.3		1500mm x 900mm	No	1		
15.1.2		SUNDRIES				
15.1.2.1		1200mm wide galvanised steel staircase complete with handrails and landings to connect to connect floor to floor height of 4m. Shop drawings to be submitted and accepted prior to fabrication	No	1		
15.1.2.2		Handrails complete with toe boards, stantions and bends around roof slabs	m	30		
15.1.2.3		HD bolts	Sets	4		
TOTAL SECTION 1200 HA CARRIED TO SUMMARY						

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

ITEM No.	PAYMENT REF	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
16	SABS 1200MJ	<u>SEGMENTED PAVING</u>				
16.1	8.2.1	Provision of Edge Restraints				
	SANS1200MK	Fig 10 concrete kerb:				
	8.2.1	a) Straight section	m	105		
		b) Curved section	m	14		
16.2	8.2.2	Construction of Paving Complete				
		80 mm Interlocking Concrete Block	m ²	415		
16.3	8.2.3	Cutting Units to Fit Edge Restraints	m	15		
16.4	8.2.5	Trial Section, not Part of Permanent Work	m ²	25		
16.5		Supply, deliver and install 1.8m concrete palisade fence with razor mesh	m	260		
16.6		Supply, deliver and install heavy duty steel fabricated palisade fence entrance gate	No	1		
TOTAL SECTION 1200 MJ CARRIED TO SUMMARY						

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

SUMMARY TO THE SCHEDULE OF QUANTITIES

DESCRIPTION	AMOUNT
1 SECTION 1200 A : GENERAL	
2 SECTION 200 : MECHANICAL WORKS	
3 SECTION 300 : ELECTRICAL WORKS	
4 SECTION 400 : ELECTRICAL BUILDING SERVICES	
5 SECTION 500 : ELECTRONIC WORKS	
6 SECTION 1200 C : SITE CLEARANCE	
7 SECTION 1200 D : EARTHWORKS	
8 SECTION 1200 DB : EARTHWORKS (PIPE TRENCHES)	
9 SECTION 1200 G : CONCRETE WORKS (STRUCTURAL)	
10 SECTION 1200 LB : BEDDING (PIPES)	
11 SECTION 1200 LD : SEWERS	
12 SECTION 1200 HA : STEELWORK (MINOR WORKS)	
13 SECTION 1200 MJ : SEGMENTED PAVING	
TOTAL OF SCHEDULE OF QUANTITIES	
<u>CALCULATION OF TENDER SUM</u>	
TOTAL OF SCHEDULE OF QUANTITIES	
CONTINGENCIES (@ 10%) The Sum provided here is under the sole control of the Engineer and may be deducted in whole or in part	
SUBTOTAL	
VALUE-ADDED TAX (VAT) The tenderer shall add 15% of the subtotal for value added tax	
TENDER SUM CARRIED TO FORM OF TENDER	

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SIGNATURE OF TENDERER:

NAME IN BLOCKLETTERS:

DATE:

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Contractor

Witness 1

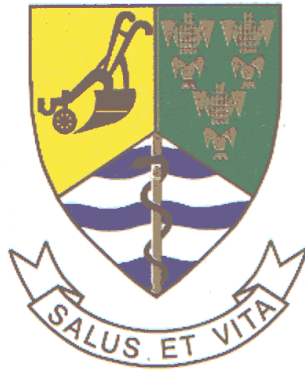
Witness 2

Employer

Witness 1

Witness 2

BELA-BELA LOCAL MUNICIPALITY



BID NO: 9/3/1/350

UPGRADING OF THE LESEDING SEWER PUMP STATION (WARD 6)

C3 SCOPE OF WORK

C3.1 Description of the Works

C3.2 Engineering

C3.3 Procurement

C3.4 Construction

C3.5 Management

C3.1 DESCRIPTION OF WORKS

C3.1.1 General Description of the project.

Project description is the **UPGRADING OF THE LESEDING SEWER PUMP STATION (WARD 6)**

The project entails the design and implementation as described by ECSA guideline scope of services, and including all ancillary works, for the upgrading of the Leseding Sewer Pump Station in the Bela-Bela Local Municipality. Including, but not limited to:

3.1.1.1 Civil and Building Works

- Providing methods for a safe construction sequence to enable continued safe operation of the pump station.
- Construction of new pump house adjacent and connecting to existing infrastructure
- Upgrade of screening system and inlet works.
- Installation and fitting of pumps.
- Refurbishment of pump station facilities.
- Refurbishment of fence.
- Construction of wet and dry well sump.
- Stormwater interventions
- And other considerations that are made complex by the existing station and the need to keep the existing station operational at all times.

3.1.1.2 Mechanical Works

- Installation of 2 sets of duty and standby Pump Sets at Leseding Pump Station
- Installation of mechanical front rake screen including screenings compactor.
- Testing and Commissioning of the works for acceptance control until the Take-Over

3.1.1.3 Electrical Works

- Replacement of motor control panel, with metering, incomer breakers
- Electrification of pump station facilities which may include construction of new transformer.
- Installation of spotlights.
- Supply and install new equipment including PLC for the control of the pump station motors and equipment.
- PLC and HMI programming
- Rationalize the power supply and install cable network.
- Testing and Commissioning of the electrical system

This description of the Works is not necessarily complete and shall not limit the work to be carried out by the Contractor under this Contract.

Approximate quantities of each type of work are given in the Schedule of Quantities.

C3.1.1 Employer's Objectives.

The Employer's objective is:

- To deliver public infrastructure and services using labour-intensive methods in accordance with EPWP Guidelines;
- To improve flow of sewerage in Bela-Bela Leseding Sewer Pump Station (Ward 6) and promotion of good health;
- To improve quality of life;
- To create entrepreneurial opportunities during the construction phase of the project; and
- To create short-term employment opportunities through the use of Labour-Intensive construction methodologies.

It is a specific goal of this project that the labour component be maximised where it is economically feasible, and that the use of this labour goes hand in hand with on the job training of the labour force. The project is thus process and product orientated, and it is expected that the Contractor will pursue these goals in the execution of the project.

Labour-intensive works comprise the activities described in the labour-intensive specification. Such works shall be constructed using local workers who are temporarily employed in terms of this Specification Data.

Labour-intensive works.

Labour-intensive works comprise the activities described in SANS 1921-5, Earthworks activities which are to be performed by hand, and its associated specification data. Such works shall be constructed using local labour to be temporarily employed in terms of this Scope of Work.

C3.1.2 Overview of the works.

This project entails UPGRADING OF THE LESEDING SEWER PUMP STATION (WARD 6). The existing sewer pump station experiences sewage inflows exceeding its operational capacity which leads to it overflowing regularly, causing a constant settlement of dump materials across the project site, exposing residents to health hazards and odour pollution.

C3.1.3 Extent of Works.

The Leseding Sewer Pump Station is responsible for pumping the effluent from Extensions 2, 4 and 5 of the Bela-Bela Township to the Warmbath Waste-Water Treatment Works. The upgrade also caters for effluent from the possible future development of a waterborne sanitation system in the adjacent Jacob Zuma informal settlement. The project extents will therefore entail works within the pump station only. This excludes any upgrades to the rising main from the pump station to the treatment plant.

C3.1.4 Location of the Works.

The Bela-Bela Local Municipal area is situated on the southern side of the Waterberg District Municipality in the Limpopo Province. It borders the Gauteng Province on the south and south-east, the Northwest Province on the west and Modimolle Local Municipality on the northern side. The Municipality is located 105km north of Pretoria and 8km to the west of the N1 North. Elevation is 700m – 1000m above sea level.

The Leseding Sewer Pump Station is located in Extension 2 of the Bela-Bela township, within the jurisdiction of the Bela-Bela Local Municipality. Consequently, this project will have an impact on Ward 6.

- The pump station is centred at the following coordinates:

LATITUDE	LONGITUDE
24°53'0.70"S	28°18'24.67"E

C3.1.5 Access to the Site

Without limiting any of the Contractor's obligations or responsibilities under this contract, the Contractor will be deemed to have obtained all the necessary information pertaining to and have complied with all the regulations and procedures governing the use of international, national, regional and local facilities such as site access, transport, handling and storage facilities including public and private roads, railways, airports, airways, border crossing and the like for the fulfilment of the contract.

C3.1.6 Supplying of Materials

The Contractor shall secure and supply all material required for the contract. The Contractor shall also ensure that no delay is caused due to a shortage of material at any stage and shall secure and order the required materials well in advance.

The Contractor shall further check the quality and quantity of that required material before ordering. No claims for payment in excess incorrect material ordered due to this shall be considered.

C3.1.7 Access and Accommodation of traffic to site

The Contractor shall be responsible for and obligated under this contract to grant reasonable access to the residents during construction.

Temporary deviations will be made along the portions of the road where the works will be implemented. The deviations will accommodate the traffic off the working areas by way of detours in order to provide access especially to the local destination points. All deviation and detours will be clearly indicated and controlled by way of temporary road signage as well as flagmen however access must be given to the residents.

Where temporary deviations are not possible, access will be provided to local residents during box cutting stage.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

C3.1.8 Temporary Works.

The temporary works will be identified during construction.

C3.1.9 General Information.**C3.1.9.1 Drawings.**

The reduced drawings contained in **Annexure C5.1** that form part of the tender document shall be used for tender purposes only. Further drawings are to be provided on an on-going basis by the Engineer during construction.

Any information in the possession of the Contractor, which the resident engineer requires to complete the as-built drawings, shall be supplied to the resident Engineer before a certificate of completion will be issued.

Only figured dimensions shall be used and drawings shall not be scaled unless so instructed by the Engineer. The Engineer will supply all figured dimensions omitted from the drawings.

C3.1.9.2 Power, Water Supply and Other Services.

The Contractor shall make his own arrangements concerning the supply of electrical power and all other services. No direct payment will be made for the provision of electrical and other services. The cost of providing these services will be deemed to be included in the rates and amounts tendered for the various items of work for which these services are required.

C3.1.9.3 Contractor's Camp Site and Security.

The Contractor shall make his own arrangements regarding the establishment of a camp site and housing for his construction personnel and all regulations stipulated by the local authority shall be adhered to.

It is anticipated that the Contractor's choice of a camp site will be influenced by the availability of telephone and electrical connections as well as the supply of potable water.

Provision is made in these specifications for the erection of a security fence around the site offices. The Contractor shall be responsible for the security of his personnel and constructional plant on and around the site of the works and for the security of his camp, and the Employer will consider no claims in this regard.

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Contractor

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Witness 1

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Witness 2

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Employer

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Witness 1

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Witness 2

C3.1.9.4 Additional Requirements for Construction Activities:

C3.1.9.4.1 The Contractor may not commence constructional activities before adequate provision has been made to accommodate traffic in accordance with the requirements of this document and the South African Road Traffic Signs Manual.

C3.1.9.4.2 The Contractor shall submit proposals in connection with directional signs to the Engineer for approval.

C3.1.9.5 Programme Requirements for Construction Activities

The Contractor shall programme his activities to be suitable in terms of his resources to complete the contract inside the stipulated time period.

C3.1.9.6 Construction in Confined Areas

It may be necessary for the Contractor to work in confined areas. In certain areas the width of the fill material and pavement layers may reduce to zero and the working space may be confined. The method of construction in these confined areas depends on the Contractor's construction plant. However, the Contractor must note that measurement and payment will be in accordance with the specified cross-sections and dimensions, irrespective of the method used to achieve these cross-sections and dimensions, and that the rates and amounts tendered will be deemed to include full compensation for any special equipment or construction methods or for any difficulty encountered in working in confined areas and narrow widths, and at or around obstructions, and that no extra payment will be made nor will any claim for payment be considered on account of these difficulties.

C3.1.10 Labour Regulations**A27 Payment for the labour-intensive component of the works.**

Payment for works identified in clause 3.1.3 "the Extent of the Project" in the Project Specifications as being labour-intensive shall only be made in accordance with the provisions of the Contract if the works are constructed strictly in accordance with the provisions of the scope of work. Any non-payment for such works shall not relieve the Contractor in any way from his obligations either in contract or in delict.

A28 Applicable labour laws.

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

A29 Introduction.

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

A29.2 In this document –

- (a) “department” means any department of the State, implementing agent or Contractor;
- (b) “Employer” means any department, implementing agency or Contractor that hires workers to work in elementary occupations on a EPWP;
- (c) “worker” means any person working in an elementary occupation on a EPWP;
- (d) “elementary occupation” means any occupation involving unskilled or semi-skilled work;
- (e) “management” means any person employed by a department or implementing agency to administer or execute an EPWP;
- (f) “task” means a fixed quantity of work;
- (g) “task-based work” means work in which a worker is paid a fixed rate for performing a task;
- (h) “task-rated worker” means a worker paid on the basis of the number of tasks completed.
- (i) “time-rated worker” means a worker paid on the basis of the length of time worked.

A30 Terms of Work.

A30.1 Workers on an EPWP are employed on a temporary basis.

A30.2 A worker may NOT be employed for longer than 24 months in any five-year cycle on a EPWP.

A30.2 Employment on a EPWP does not qualify as employment as a contributor for the purposes of the Unemployment Insurance Act 30 of 1966.

A31 Normal Hours of Work.

A31.1 An Employer may not set tasks or hours of work that require a worker to work–

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

A31.2 An Employer and worker may agree that a worker will work four days per week. The worker may then work up to ten hours per day.

A31.3 A task-rated worker may not work more than a total of 55 hours in any week to complete the tasks allocated (based on a 40-hour week) to that worker.

A32 Meal Breaks.

- A32.1 A worker may not work for more than five hours without taking a meal break of at least thirty minutes duration.
- A32.2 An Employer and worker may agree on longer meal breaks.
- A32.3 A worker may not work during a meal break. However, an Employer may require a worker to perform duties during a meal break if those duties cannot be left unattended and cannot be performed by another worker. An Employer must take reasonable steps to ensure that a worker is relieved of his or her duties during the meal break.
- A32.4 A worker is not entitled to payment for the period of a meal break. However, a worker who is paid on the basis of time worked must be paid if the worker is required to work or to be available for work during the meal break.

A33 Special Conditions for Security Guards.

- A33.1 A security guard may work up to 55 hours per week and up to eleven hours per day.
- A33.2 A security guard who works more than ten hours per day must have a meal break of at least one hour or two breaks of at least 30 minutes each.

A34 Daily Rest Period.

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

A35 Weekly Rest Period.

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

A36 Work on Sundays and Public Holidays

- A36.1 A worker may only work on a Sunday or public holiday to perform emergency or security work.
- A36.2 Work on Sundays is paid at the ordinary rate of pay.
- A36.3 A task-rated worker who works on a public holiday must be paid –
 (a) the worker's daily task rate, if the worker works for less than four hours;
 (b) double the worker's daily task rate, if the worker works for more than four hours.
- A36.4 A time-rated worker who works on a public holiday must be paid –

- (a) the worker's daily rate of pay, if the worker works for less than four hours on the public holiday;
- (b) double the worker's daily rate of pay, if the worker works for more than four hours on the public holiday.

A37 Sick Leave.

- A37.1 Only workers who work four or more days per week have the right to claim sick-pay in terms of this clause.
- A37.2 A worker who is unable to work on account of illness or injury is entitled to claim one day's paid sick leave for every full month that the worker has worked in terms of a contract.
- A37.3 A worker may accumulate a maximum of twelve days' sick leave in a year.
- A37.4 Accumulated sick-leave may not be transferred from one contract to another contract.
- A37.5 An Employer must pay a task-rated worker the worker's daily task rate for a day's sick leave.
- A37.6 An Employer must pay a time-rated worker the worker's daily rate of pay for a day's sick leave.
- A37.7 An Employer must pay a worker sick pay on the worker's usual payday.
- A37.8 Before paying sick-pay, an Employer may require a worker to produce a certificate stating that the worker was unable to work on account of sickness or injury if the worker is –
 - (a) absent from work for more than two consecutive days; or
 - (b) absent from work on more than two occasions in any eight-week period.
- A37.9 A medical certificate must be issued and signed by a medical practitioner, a qualified nurse or a clinic staff member authorised to issue medical certificates indicating the duration and reason for incapacity.
- A37.10 A worker is not entitled to paid sick-leave for a work-related injury or occupational disease for which the worker can claim compensation under the Compensation for Occupational Injuries and Diseases Act.

A38 Maternity Leave.

- A38.1 A worker may take up to four consecutive months' unpaid maternity leave.
- A38.2 A worker is not entitled to any payment or employment-related benefits during maternity leave.
- A38.3 A worker must give her Employer reasonable notice of when she will start maternity leave and when she will return to work.

- A38.4 A worker is not required to take the full period of maternity leave. However, a worker may not work for four weeks before the expected date of birth of her child or for six weeks after the birth of her child, unless a medical practitioner, midwife or qualified nurse certifies that she is fit to do so.
- A38.5 A worker may begin maternity leave –
 (a) four weeks before the expected date of birth; or
 (b) on an earlier date –
 (i) if a medical practitioner, midwife or certified nurse certifies that it is necessary for the health of the worker or that of her unborn child; or
 (ii) if agreed to between Employer and worker; or
 (c) on a later date, if a medical practitioner, midwife or certified nurse has certified that the worker is able to continue to work without endangering her health.
- A38.6 A worker who has a miscarriage during the third trimester of pregnancy or bears a stillborn child may take maternity leave for up to six weeks after the miscarriage or stillbirth.
- A38.7 A worker who returns to work after maternity leave, has the right to start a new cycle of twenty-four months employment, unless the EPWP on which she was employed has ended.
- A39 Family responsibility leave.**
- A39.1 Workers, who work for at least four days per week, are entitled to three days paid family responsibility leave each year in the following circumstances -
 (a) when the employee's child is born;
 (b) when the employee's child is sick;
 (c) in the event of a death of –
 (i) the employee's spouse or life partner;
 (ii) the employee's parent, adoptive parent, grandparent, child, adopted child, grandchild or sibling.
- A40 Statement of Conditions.**
- A40.1 An Employer must give a worker a statement containing the following details at the start of employment –
 (a) the Employer's name and address and the name of the EPWP;
 (b) the tasks or job that the worker is to perform; and
 (c) the period for which the worker is hired or, if this is not certain, the expected duration of the contract;
 (d) the worker's rate of pay and how this is to be calculated;
 (e) the training that the worker will receive during the EPWP.
- A40.2 An Employer must ensure that these terms are explained in a suitable language to any employee who is unable to read the statement.

A40.3 An Employer must supply each worker with a copy of these conditions of employment.

A 41 Keeping Records.

A41.1 Every Employer must keep a written record of at least the following –

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

A41.2 The Employer must keep this record for a period of at least three years after the completion of the EPWP.

A42 Payment.

A42.1 An Employer must pay all wages at least monthly in cash or by cheque or into a bank account.

A42.2 A task-rated worker will only be paid for tasks that have been completed.

A42.3 An Employer must pay a task-rated worker within five weeks of the work being completed and the work having been approved by the manager or the Contractor having submitted an invoice to the Employer.

A42.4 A time-rated worker will be paid at the end of each month.

A42.5 Payment must be made in cash, by cheque or by direct deposit into a bank account designated by the worker.

A42.6 Payment in cash or by cheque must take place –

- (a) at the workplace or at a place agreed to by the worker;
- (b) during the worker's working hours or within fifteen minutes of the start or finish of work;
- (c) in a sealed envelope which becomes the property of the worker.

A42.7 An Employer must give a worker the following information in writing –

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

A42.8 If the worker is paid in cash or by cheque, this information must be recorded on the envelope and the worker must acknowledge receipt of payment by signing for it

A42.9 If a worker's employment is terminated, the Employer must pay all monies owing to that worker within one month of the termination of employment.

A43 Deductions.

- A43.1 An Employer may not deduct money from a worker's payment unless the deduction is required in terms of a law.
- A43.2 An Employer must deduct and pay to the SA Revenue Services any income tax that the worker is required to pay.
- A43.3 An Employer will be responsible for payment or contribution of UIF for all workers employed under the project. Proof of payment of UIF shall be available upon request.
- A43.4 An Employer who deducts money from a worker's pay for payment to another person must pay the money to that person within the time period and other requirements specified in the agreement law, court order or arbitration award concerned.
- A43.5 An Employer may not require or allow a worker to –
 (a) repay any payment except an overpayment previously made by the Employer by mistake;
 (b) state that the worker received a greater amount of money than the Employer actually paid to the worker; or
 (c) pay the Employer or any other person for having been employed.

A44 Health and Safety.

- A44.1 Employers must take all reasonable steps to ensure that the working environment is healthy and safe.
- A44.2 A worker must–
 (a) work in a way that does not endanger his/her health and safety or that of any other person;
 (b) obey any health and safety instruction;
 (c) obey all health and safety rules of the EPWP;
 (d) use any personal protective equipment or clothing issued by the Employer;
 (e) report any accident, near-miss incident or dangerous behaviour by another person to their Employer or manager.

A45 Compensation for Injuries and Diseases

- A45.1 It is the responsibility of the Employers (other than a Contractor) to arrange for all persons employed on a EPWP to be covered in terms of the Compensation for Occupational Injuries and Diseases Act, 130 of 1993.
- A45.2 A worker must report any work-related injury or occupational disease to their Employer or manager.
- A45.3 The Employer must report the accident or disease to the Compensation Commissioner.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

- A45.4 An Employer must pay a worker who is unable to work because of an injury caused by an accident at work 75% of their earnings for up to three months. The Employer will be refunded this amount by the Compensation Commissioner. This does NOT apply to injuries caused by accidents outside the workplace such as road accidents or accidents at home.

A46 Termination.

- A46.1 The Employer may terminate the employment of a worker for good cause after following a fair procedure.
- A46.2 A worker will not receive severance pay on termination.
- A46.3 A worker is not required to give notice to terminate employment. However, a worker who wishes to resign should advise the Employer in advance to allow the Employer to find a replacement.
- A46.4 A worker who is absent for more than three consecutive days without informing the Employer of an intention to return to work will have terminated the contract. However, the worker may be re-engaged if a position becomes available for the balance of the 24-month period.
- A46.5 A worker who does not attend required training events, without good reason, will have terminated the contract. However, the worker may be re-engaged if a position becomes available for the balance of the 24-month period.

A47 Certificate of Service.

- A47.1 On termination of employment, a worker is entitled to a certificate stating –
- (a) the worker's full name;
 - (b) the name and address of the Employer;
 - (c) the EPWP on which the worker worked;
 - (d) the work performed by the worker;
 - (e) any training received by the worker as part of the EPWP;
 - (f) the period for which the worker worked on the EPWP;
 - (g) any other information agreed on by the Employer and worker.

A48 Contractor's default in payment to Labourers and Employees.

Any dispute between the Contractor and labourers, regarding delayed payment or default in payment of fair wages, if not resolved immediately may compel the Employer to intervene.

The Employer may, upon the Contractor defaulting payment, pay the moneys due to the workers not honoured in time, out of any moneys due or which may become due to the Contractor under the Contract.

A49 Provision of Hand tools.

The Contractor shall provide his labour force with hand tools of adequate quality, sufficient in numbers and make the necessary provisions to maintain the tools in good and safe working conditions

A50 Personal & Other Protective Equipment (Sections 8/15/23 or the OHS Act)

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

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

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

It is a further requirement that the said equipment be maintained by the Contractor, that he instructs and trains the employees in the use of the equipment and ensures that the prescribed equipment is used by the employee/s.

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

The Contractor may not charge any fee for protective equipment prescribed by him/her but may charge for equipment under the following conditions:

- Where the employee requests additional issue in excess of what is prescribed
- Where the employee has patently abused or neglected the equipment leading to early failure
- Where the employee has lost the equipment

All employees shall, as a minimum, be required to wear the following PPE on any Municipal projects:

- Protective overalls
- Protective footwear
- Protective headwear
- Eye/face protection

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

All PPE provided to local labour working on the Expanded Public Works Programme shall be branded in accordance with the EPWP CI Manual. Typical elements which shall be branded include:

- Protective overalls
- Reflective vests
- Protective headwear

The rate for local labour shall include for the supply of EPWP branded PPE in accordance with the Provincial EPWP specifications. The rate shall include the additional cost of the specified colours for the PPE and branding in accordance with CI manual.

A51 Community participation

A51.1 Purpose

In order to give effect to the need for participation and transparency in the process of appointing labour, the community should participate in the decision making process throughout the life of a project. This shall be achieved through structured engagement between those responsible for the delivery of the project and the community.

A51.2 Structure and Composition

A Project Steering Committee (PSC) may be formed from representatives of the Employer, the Engineer, the Contractor and the Community if the project is such that a specific community can be identified.

A51.3 Procedures

The PSC deals with labour and SMME involvement on the project and shall meet at least once every month until such time as it is of the opinion that it could fulfil its tasks by meeting less frequently.

The PSC shall make recommendations by consensus. If consensus cannot be reached, the decision of the Employer will be final in cases that have no financial implications for the Contractor or where payment is to be made from PC items. Where the financial responsibility for the successful completion of the works rests with the Contractor, the Contractor's decision shall be final. In fulfilling its tasks, the PSC shall be guided by the relevant sections of this specification and the supplementary documents.

A51.4 Tasks of the PSC

- (a) To assist with community liaison and resolution of disputes.
- (b) To devise fair and transparent procedures that will assist the Contractor in the engagement of labour and the award of sub-contracts to SMME's.
- (c) To advise on and monitor labour issues.
- (d) To assist in resolving labour disputes.

A51.5 Assistance to the PSC

The Employer may appoint a competent local person as a Community Liaison Officer to assist the Engineer and the Contractor in the day to day liaison with the communities directly affected by the project.

A52 Community liaison officer (CLO)

The contractor or his appointed agent will appoint a Community Liaison Officer (CLO) after consultation with the local communities, the engineer and the employer. The contractor shall direct all his liaison efforts with the local communities through the appointed officer. The contractor shall, however, accept the appointed as part of his management personnel.

A52.1 Duties of the Community Liaison Officer

The Community Liaison Officer's duties will be:

- (a) To be available on site daily between the hours of 07h00 and 17h00 and at other time as the need arises. His normal working day will extend from 07h00 morning until 17h00 in the afternoon.
- (b) To determine, in consultation with the contractor, the needs of the temporary labour for relevant skills training. He will be responsible for the identification of suitable trainees and will attend one of each of the training sessions.
- (c) To communicate daily with the contractor and the engineer to determine the labour requirements with regard to numbers and skill, to facilitate in labour disputes and to assist in their resolution.
- (d) To assist in and facilitate in the recruitment of suitable temporary labour and the establishment of a "labour desk".
- (e) To attend all meetings in which the community and/or labour are present or are required to be represented.
- (f) To assist in the identification, and screening of labourers from the community in accordance with the contractor's requirements.
- (g) To inform temporary labour of their conditions of temporary employment and to inform temporary labourers as early as possible when their period of employment will be terminated.
- (h) To attend disciplinary proceedings to ensure that hearings are fair and reasonable.
- (i) To keep a daily written record of his interviews and community liaison.
- (j) To attend monthly site meetings to report on labour and RDP matters.
- (k) All such other duties as agreed upon between all parties concerned.
- (l) To submit monthly returns regarding community liaison.

A52.2 Payment for the Community Liaison Officer

A special pay item is incorporated in section 1200 of the bill of quantities relating to payment of the liaison officer on a prime cost sum basis. This payment shall only be made for the full duration of the contract. The remuneration of the CLO shall be determined jointly by the contractor, engineer and employer.

A52.3 Period of employment of the Community Liaison Officer

The period of employment of the community liaison officer shall be as decided upon jointly by the contractor, engineer and employer.

A53 Reporting.

The Contractor shall submit monthly returns/reports as specified below:

- Signed Muster rolls/pay sheets of temporary workers and permanent staff detailing the number, category, gender, rate of pay and daily attendance.
- Certified ID copies of all locally employed labour
- Signed Contracts between the employer and the EPWP Participants
- Attendance Registers for the EPWP Participants
- Monthly Reporting Template as per EPWP requirements
- Plant utilization returns
- Progress report detailing production output compared to the programme of works

C3.2 ENGINEERING**C3.2.1 Design services and activity matrix**

Description	Responsibility
Design of Works	Engineer
Concept, feasibility and overall process	Client
Basic Engineering and detail layouts to tender stage	Engineer
Final Design of Works	Engineer
Final Design approved for construction stage	Client
Preparation of tender documentation & adverts	Engineer
Appointment of soil test / topographical surveyors/ etc	Engineer/ Client
Risk assessment, quality assurance, Project Health and safety specifications and compliance.	Engineer
Construction and appointment of sub-Contractors	Contractor
Supervision	Engineer
Preparation of as-built drawings	Contractor / Engineer
Completion certificate	Engineer / Client / Contractor

C3.2.2 Drawings.

The Engineer will provide the Contractor with three full sets of drawings, which will be used exclusively for the recording of as built information by the Contractor.

Only dimensions, positions, levels, co-ordinates etc. that change from the original values, will be required to be entered on these drawings. These drawings, fully marked up, will be handed to the Engineer at the issue of the Certificate of completion, which will not be issued until the as-built information has been received.

The following drawings are applicable to this contract:

CIVIL ENGINEERING:	
ROM-134-07-076-03-01	LOCALITY PLAN
ROM-134-07-076-03-02	SITE LAYOUT PLAN
ROM-134-07-076-03-03	SURVEY LAYOUT PLAN
ROM-134-07-076-03-04	DETAILS
ROM-134-07-076-03-05	CONTRACT NAMEBOARD
ROM-134-07-076-03-06	CONCRETE PALISADE FENCE DETAILS
MECHANICAL AND ELECTRICAL ENGINEERING:	
ROM-134-07-078-03-01	PUMP STATION LAYOUT PLAN
ROM-134-07-078-03-02	PUMP STATION SECTIONS
ROM-134-07-078-03-03	TYPICAL WALL MOUNTED GATE VALVES
ROM-134-07-078-03-04	SCREEN DETAILS
ROM-134-07-078-03-05	PUMP STATION LAYOUT PLAN: PIPE SCHEDULES
STRUCTURAL ENGINEERING:	
ROM-134-07-075-03-01	HEAD OF WORKS STRUCTURAL DETAILS
ROM-134-07-075-03-02	WET SUMP AND DRY SUMP STRUCTURAL DETAILS
ROM-134-07-075-03-03	WET SUMP AND DRY SUMP STRUCTURAL DETAILS
ROM-134-07-075-03-04	PUMP STATION 3D LAYOUT

The applicable drawings mentioned above are attached at the end of this section (C5 – Drawings).

C3.3 PROCUREMENT

C3.3.1 Procurement principles

The Tenderers notice is drawn to the fact that the awarding of this tender will be in terms of the Supply Chain Management Policy of the Bela-Bela Local Municipality.

The standard uniformity of construction in construction published by the Construction Industry Development Board (CIDB) as well as the National Treasury Standard for Infrastructure Procurement and Delivery Management (SIPDM) is adopted for the procurement of this contract, in order to establish the minimum requirements that:

- Promote cost efficiencies through the adoption of a uniform structure for procurement documents, standard component documents and generic solicitation procedures;
- Provide transparent, fair and equitable procurement methods and procedures in critical areas in the solicitation process;

- Ensure that the forms of contract that are used are fair and equitable for all parties to a contract; and
- Enable risk, responsibilities and obligations to be clearly identified.

C3.3.2 Contractor's personnel

The Contractor shall limit the utilization of his permanently employed personnel to the key personnel only on the Works, as defined below, and shall execute and complete the Works utilizing a temporary workforce employed directly by the Contractor and/or by his sub-Contractors, using the assistance of the Ward Councillor and his/her Project Steering Committee (PSC) from the various communities that are established within the same ward where the works will be executed.

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

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

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

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

C3.3.3 Temporary Workforce/ Employment of Local Labour

The Contractor shall employ labour from the local communities that are within the same ward where the works will be executed, through the assistance of the Ward Councillor and his/her Project Steering Committee (PSC) from the various communities that are established within the same ward where the works will be executed.

Accordingly, the workforce that is employed on Site shall consist of local residents, except for approved key staff in the permanent employ of the Contractor, to maximum extent that is compatible with the requirements of Clause C.3.32.

It is a specific criterion of this project that should as far as possible adhere to EPWP principles, and to meet these principles the following procedures will be followed:

- a) All labour is to be sourced from the local communities that are within the same ward where the works will be executed, and the Contractor may only bring key personnel from outside this area.
- b) The fixed rate for the appointment of local labour will be as per the Department of Labour Ministerial determination applicable in that project duration. This will be payable by the Contractor on monthly basis.
- c) A Monthly labour report on all local labour i.e. payments and labour days should be submitted to the Engineer at the end of each month in order for the Engineer to submit a report to the Employer.

The Ward Councillor and his/her Project Steering Committee (PSC) shall assist in identifying available local labour and, where available semi-skilled labour as well as local Sub-Contractors. The Employer shall assist and advice regarding conditions of employment, minimum wages, disputes and disciplinary procedures. The function of the Ward Councillor, PSC and Employer shall however in no way diminish the responsibilities of the Contractor in terms of the Conditions of Contract.

C3.3.3.1 Requirements of Expanded Public Works Programme

- **EPWP Project Specification**

As much as is economically feasible, all work shall be implemented by employing Labour Intensive Construction methods. Over and above the normal Building and Allied works to be implemented by employing skilled and unskilled labour the works specified in the "Guidelines for the Implementation of Labour-Intensive Infrastructure Projects under the Expanded Public Works Programme (EPWP)" shall be undertaken using Labour Intensive Construction methods.

- **Labour-intensive construction methods**

Labour-intensive construction shall mean the economically efficient employment of as great a portion of labour as is technically feasible to produce a standard of construction as demanded by the specifications with completion by the Due

Completion Date, thus bringing about the effective substitution of labour for plant and equipment.

Appropriate portions of the Works included in the Contract shall be executed using labour-intensive construction methods.

Except where the use of plant is essential in order, in the opinion of the Engineer, to meet the specified requirements by the Due Completion Date, or where the use of plant is essential as a result of occupational health and safety considerations, the Contractor shall use only hand tools and equipment in the construction of those portions of the Works that are required in terms of these Project Specifications to be constructed using labour-intensive construction methods.

These portions of the Works shall be constructed utilizing only locally employed labour and/or the labour of local subcontractors, supplemented by the Contractor's key personnel to the extent necessary and unavoidable, unless otherwise instructed by the Engineer and in accordance with the further provisions of the relevant sections of Portion B of the Project Specifications.

Subject to considerations of occupational health and safety, the portions of the Works to be executed using labour-intensive construction methods are:

- Clearing and grubbing of the Site;
- Excavation for structures up to 1,5 m deep;
- Bedding, selected fill, backfilling and compaction of all pipe trenches irrespective of depth, but assisted by mechanical compaction equipment in order to achieve the specified densities;
- Transportation and spoiling of all trench materials, where the disposal site is located within 20 metres of the source;
- Dismantling and re-erection of fences;
- Mixing and placing of concrete;
- Construction of all brickwork required for structures; and
- Cleaning and tidying up of the site.
- Any other manual work as assigned

C3.3.3.2 Employment of unskilled and semi-skilled workers in labour-intensive works

• Requirements for the sourcing and engagement of labour

Unskilled and semi-skilled labour required for the execution of all labour-intensive works shall be engaged strictly in accordance with prevailing legislation and SANS 1914-5, Participation of Targeted Labour.

The rate of pay set for the EPWP is **R225.00** per task or per day.

Tasks established by the Contractor must be such that:

- a) the average worker completes 5 tasks per week in 40 hours or less; and

b) the weakest worker completes 5 tasks per week in 55 hours or less.

The Contractor must revise the time taken to complete a task whenever it is established that the time taken to complete a weekly task is not within the requirements above.

The Contractor shall, through all available community structures, inform the local community of the labour-intensive works and the employment opportunities presented thereby. Preference must be given to people with previous practical experience in construction and / or who come from households:

- a) where the head of the household has less than a primary school education;
- b) that have less than one full time person earning an income;
- c) where subsistence agriculture is the source of income.
- d) those who are not in receipt of any social security pension income

The Contractor shall endeavour to ensure that the expenditure on the employment of temporary workers is in the following proportions:

- a) 60 % women;
- b) 20% youth who are between the ages of 18 and 25; and
- c) 2% on persons with disabilities.

- **Specific provisions pertaining to SANS 1914-5**

Targeted labour: Unemployed persons who are employed as local labour on the project.

There is no specified contract participation goal for the contract. The contract participation goal shall be measured in the performance of the contract to enable the employment provided to targeted labour to be quantified.

The wages and allowances used to calculate the contract participation goal shall, with respect to both time-rated and task rated workers, comprise all wages paid and any training allowance paid in respect of agreed training programmes.

Further to the provisions of clause 3.3.2 of SANS 1914-5, written contracts shall be entered into with targeted labour.

The Contractor shall provide all the necessary on-the-job training to targeted labour to enable such labour to master the basic work techniques required to undertake the work in accordance with the requirements of the contract in a manner that does not compromise worker health and safety.

The cost of the formal training of targeted labour, will be funded by the Municipality where applicable.

The Contractor shall be responsible for scheduling the training of workers and shall take all reasonable steps to ensure that each beneficiary is provided with a minimum

of six (6) days of formal training if he/she is employed for 3 months or less and a minimum of ten (10) days if he/she is employed for 4 months or more.

The Contractors shall do nothing to dissuade targeted labour from participating in the above-mentioned training programmes.

An allowance equal to 100% of the task rate or daily rate shall be paid by the Contractor to workers who attend formal training, in terms of the information above.

Proof of compliance with the requirements of training must be provided by the Contractor to the Employer prior to submission of the final payment certificate.

C3.3.4 Sub-Contracting

Notwithstanding the requirement to sub-contract some of the works to local sub-Contractors; works may not be sub-contracted to another party unless approval is given by the Engineer in writing. The Contractor must advertise the sub-contracting packages in local public areas within the Municipal area and submit to the Engineer in writing a request for appointment of a particular sub-Contractor subsequent to the evaluation of the submitted bids. Accompanying this request is to be the full detail of the sub-Contractor, including:

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

Before the Engineer issues any certificate that includes any payment in respect of work done or goods supplied by any sub-Contractor appointed in accordance with the provisions of Clause 4.4 of the General Conditions of Contract Third Edition (2015), he shall be entitled to call upon the Contractor to furnish reasonable proof that all payments (less retention moneys) included in previous certificates in respect of the work or goods of such sub-Contractors have been made or discharged by the Contractor, in default of which, unless the Contractor:

- Informs the Engineer in writing that he has reasonable cause for withholding or refusing such payment; and
- Submits to the Engineer reasonable proof that he has so informed such sub-Contractor in writing.

F4. JOB CREATION REPORTING FOR EPWP

In order to assist the Employer in complying with the goals of creating EPWP job opportunities, the Contractor must provide the following information for reporting purposes:

F4.1 Type of project data required per project

Every EPWP project shall collect and keep specific project data for the purpose of EPWP progress reporting. ***The data that is required to be kept and maintained for each project includes:***

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

F4.1.1 Beneficiary data

A beneficiary list must be maintained for every project. The data required in this beneficiary list is indicated below. This data shall be recorded, checked and signed off by the Contractor on a weekly basis, and shall be submitted to the Employer at each monthly site meeting. The beneficiary list shall contain the following data and shall be kept and maintained on site for audit purposes:

- (a) Beneficiary identity – name, surname, initials, date of birth and identity number (or other unique identifier) plus certified copy of ID book (or other unique identifier).
- (b) Beneficiary profiles – nationality, gender, age, education level and disability status.
- (c) Monthly work data for beneficiaries – daily wage to be received, number of calendar days training attended and number of calendar days worked.

F4.1.2 Project work data

This generally seeks to confirm the number of people at work daily on the project. The following data must be recorded and maintained on site by the Contractor, in order that it can be provided by the Employer to the National Department of Public Works upon request when the latter is undertaking sample auditing. The documentation that should be kept includes:

- (a) Daily attendance register – register for each day showing all the workers that were registered as being at work on that day. Attendance registers shall be completed on site on a daily basis and signed off by the Contractor on a weekly basis.
- (b) Summary of monthly attendance.

F4.1.3 Project payment data

This generally seeks to confirm what was paid, for how much work and to whom. It is required that the Contractor adopt one of the following methods as standard procedure for recording and maintaining this information:

- (a) Payment register – this is a list of the workers showing the wages paid to each worker, and signed off by each worker as proof of receipt and acceptance of payment. Information on this register must include the name of the worker, either an identity number or other unique identifier, the number of calendar days that the pay period covers, the wage rate and the total wages paid.

Alternatively,

- (b) Bank records showing the transfers to each worker account, signed off by the Contractor as proof of payment – these bank records must specifically show the name of the worker, either an identity number or other unique identifier, the period which the pay covers and the total wages paid.

The project payment data, as recorded and maintained by the Contractor in terms of either (a) or (b) above, must be available and applicable for the entire period for which the Employer claims an incentive reward for person-days of work created in terms of the project.

F4.1.4 Employment output data

The Contractor shall submit to the Employer at each monthly site meeting the data necessary to enable the Employer to calculate the following employment output data:

- (a) Number of work opportunities created (where one work opportunity = paid work created for one individual on an EPWP project, for any period of time).
- (b) Number of person-days of work created (where one person-day = one day of work carried out by one individual). The total number of person-days of work created on a particular EPWP project shall be obtained by summing the total number of person-days worked by each individual employed during the course of that EPWP project.
- (c) Number of Full Time Equivalents (FTEs) created (= total number of person-days of work created on the EPWP project divided by 230 working days). In terms of EPWP policy, one year of work created for one individual is assumed to comprise a total of 230 days of paid work carried out by that individual.
- (d) Average duration of work opportunities created (= total number of person-days of work created on the EPWP project divided by the number of work opportunities created on that EPWP project).
- (e) Average daily wage rates paid (= accumulated total of the wages paid to all individuals employed on an EPWP project divided by the total number of person-days of work created on that EPWP project).

C3.4 CONSTRUCTION

C3.4.1 Standard Specifications

The Standard specifications on which this contract is based are the South African National Standards (SANS).

The following SANS 1200 Specifications shall form part of this contract and are available at the expense of the Contractor from the SA Bureau of Standards, Private Bag X191 Pretoria, 0001:

SANS 1200 A 1986 Section A: General
 SANS 1200 AB 1986 Section AB: Engineer's office
 SANS 1200 C 1980 Section C: Site clearance
 SANS 1200 D 1988 Section D: Earthworks
 SANS 1200 DB 1989 Section DB: Earthworks (pipe trenches)
 SANS 1200 G 1982 Section G: Concrete (structural)
 SANS 1200 GE 1984 Section GE: Precast concrete (structural)
 SANS 1200 H 1990 Section H: Structural steelwork
 SANS 1200 L 1983 Section L: Medium-pressure pipe lines
 SANS 1200 LB 1983 Section LB: Bedding (pipes)
 SANS 1200 LD 1982 Section LD: Sewers
 SANS 1200 LE 1982 Section LE: Stormwater drainage
 SANS 1200 LF 1983 Section LF: Erf connections (water)
 SANS 1200 M 1996 Section M: Roads (general)
 SANS 1200 ME 1981 Section ME: Subbase
 SANS 1200 MF 1981 Section MF: Base
 SANS 1200 MFL 1996 Section MFL: Base (light pavement structures)
 SANS 1200 MH 1996 Section MH: Asphalt base and surfacing
 SANS 1200 MJ 1984 Section MJ: Segmented paving
 SANS 1200 MK 1983 Section MK: Kerbing and channelling

Other Standard Specifications:

SABS 0162 Code of Practice for Structural Steelwork. The Machinery and Occupational Safety Act (Act No. 6 of 1983) as amended

SANS 0120:1980, Part 2, section G - For the requirements and tests for water tightness

SANS 121 (ISO1461) - For the requirements galvanised steel

SANS 1039 Sec A/SAV - For the requirements tank panels

C3.4.2 General Project Specifications

In the event of any discrepancy between the Project Specifications and SANS 1200 Standardized Specifications, the Schedule of Quantities or the Drawings, the Project Specifications shall take precedence. Where discrepancies arise with regard to the units of the payment items only, the units stated in the Schedule of Quantities shall prevail.

PS 1	CONSTRUCTION PROGRAMME
PS 2	SITE FACILITIES AVAILABLE
PS 3	SITE FACILITIES REQUIRED
PS 4	FEATURES REQUIRING SPECIAL ATTENTION
PS 5	INFORMATION SUPPLIED BY EMPLOYER
PS 6	EXTENSION OF TIME ARISING FROM ABNORMAL RAINFALL
PS 7	CERTIFICATES OF PAYMENT
PS 8	CONSTRUCTION IN LIMITED AREAS
PS 9	NON-WORKING DAYS
PS 10	SPOIL MATERIAL
PS 11	DRAWINGS
PS 12	LENGTH OF TRENCHES
PS 13	SAMPLES
PS 14	MANUFACTURER'S INSTRUCTIONS
PS 15	MATERIALS AND PLANT
PS 16	NOTICES, SIGNS, BARRICADES AND ADVERTISEMENTS
PS 17	SETTING OUT OF WORK
PS 18	WORKMANSHIP AND QUALITY CONTROL
PS 19	TRANSPORT OF MATERIAL
PS 20	LIAISON WITH LOCAL AUTHORITIES
PS 21	LOCAL LABOUR AND LOCAL SUB-CONTRACTORS
PS 22	TRAINING SCHEMES
PS 23	PRESCRIPTIONS IN RESPECT OF EXISTING SERVICES

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

PS 1: CONSTRUCTION PROGRAMME

It is a prerequisite of this contract that minimal disruption of the public is ensured during construction.

Construction methods must be of such a nature that no property or life is endangered. The Municipality accepts no responsibility for any work done outside the site boundaries without the Engineer's approval. The Contractor himself is responsible for liaison and arrangements with the Engineer in connection with the finalization and approval of the construction programme.

The Contractor is responsible for liaison with residents and house owners via the Project Steering Committee in respect of the programming of construction through private erven and the crossing of driveways to erven. No additional payment will be made in this regard and it shall be deemed to be covered by the relevant items.

Sufficient digital photographs of all existing structures and obstructions in the pipe line routes must be taken by the Contractor, compiled electronically, indexed and handed over to the Engineer before construction commences.

The Contractor shall submit a programme of work to the Engineer/Municipality not later than 14 (fourteen) days after the Contractor has been notified of the acceptance of his tender. This programme must take into account and allow for phased completion of the work. The Engineer may instruct the Contractor to stop construction work at any stage and time, as may be dictated by financial constraints highlighted by the Clients Cost Control Programme.

If necessary, the Engineer may instruct the Contractor to adjust his programme to suit other activities.

The programme shall not be in the form of a bar chart only, but shall clearly show the anticipated quantities, the production rates and value of work to be performed each month.

A network-based programme according to the precedence method shall also be provided showing the various activities and critical path in such detail as may be required by the Engineer. The programme shall be updated monthly in accordance with the progress made by the Contractor.

Failure to comply with these requirements will entitle the Engineer to use a programme based on his own assumptions for the purpose of evaluating claims for extension of time or additional payments.

If the programme submitted by the Contractor in terms of Clause 15 of the General Conditions of Contract, has to be revised because the Contractor is falling behind in his programme, he shall submit a revised programme of how he intends to regain lost time to ensure completion of the Works within the period defined in Clause 45 of the General Conditions of Contract or within a granted extension of time. A proposal to increase the tempo of work must incorporate positive steps to increase production either by more labour and plant on the site, or by using the available labour and plant in a more efficient manner.

Failure on the part of the Contractor to submit or to work according to the programme or revised programmes shall be sufficient reason for the Engineer to take steps as set out in Clause 58 of the General Conditions of Contract.

The approval by the Engineer of a programme shall have no contractual significance other than the Engineer will be satisfied if the work is carried out according to the programme. The said approval shall not limit the right of the Engineer to instruct the Contractor to vary the programme if necessary. The Contractor shall allow for the effect of normal rainfall and special non-working days in his programme.

(CRITICAL PATH MUST BE INDICATED ON PROGRAMME)

PS 2 : SITE FACILITIES AVAILABLE

PS 2.1 : Water, electricity and sewage

The Contractor shall make his own arrangements concerning the supply of electrical power, water, telephone and all other services, both for use at the site establishment area as well as for the use in the construction of the Works. No direct payment shall be made for the provision of any service and the cost thereof shall be deemed to be included in the rates tendered for the various items of work for which these services are required.

PS 2.3 : Rain gauge

The Contractor must set up his own rainfall gauge. This item is included in the Schedule of Quantities under other fixed-charge obligations.

PS 3 : SITE FACILITIES REQUIRED

PS 3.1 : Water, electricity and sewage

The Contractor shall, at his own expense, be responsible for obtaining and distributing the water and electricity required for construction and domestic use. The distribution of water and electricity shall be carried out in accordance with the applicable laws and regulations.

No separate payment will be made for obtaining and distributing water and electricity, the cost of which will be deemed to be included in the tendered rates.

PS 3.2 : Site instruction book

A triplicate book shall be provided by the Engineer to be used for site instructions. It shall at all times be kept on the site.

PS 4 : FEATURES REQUIRING SPECIAL ATTENTION**PS 4.1 : Access to properties**

The Contractor shall organize the work in such a manner as to cause the least possible inconvenience to the employees working around the site as this is a public institution.

PS 4.2 : Contractor's vehicles

All equipment and vehicles used by the Contractor shall be roadworthy at all times and all drivers and operators shall be in possession of valid drivers' licences.

PS 4.3 : Site maintenance

During the progress of the work and upon its completion, the site of the works shall be kept and left in a clean and orderly condition. The Contractor shall at all times store materials and equipment for which he is responsible in an orderly manner and shall keep the site free from debris and obstruction. Workers shall lunch or have tea breaks only in a designated area with approved refuse and toilet facilities.

No open fires shall be permitted on the site.

Vehicles and workers must adhere to property demarcated access routes and not take or make short cuts.

PS 4.4 : Sub-Contractors

The Contractor is responsible for work carried out on his behalf by Sub-Contractors. The Engineer will not liaise directly with such Sub-Contractors, and all problems relating to payments, programming, workmanship, etc, shall be the concern of the Contractor and the Sub-Contractor, and the Engineer will not be involved.

PS 4.5 : Existing Services

Before the Contractor commences operations, he must discuss with and have the approval of the Employer, authority or owner concerned regarding the method he proposes to use for relocating or safe-guarding any services and existing works he may encounter during construction.

The Contractor shall be responsible for any damage to such existing services and works in the execution of this contract and shall reimburse the Employer, authority or the owner concerned for any repairs required and for damages.

The Contractor shall be responsible for immediately notifying the Engineer and the authorities concerned regarding any damage caused to public services and existing works.

Any alteration to public services shall be carried out by the Authority concerned unless the Contractor is instructed otherwise.

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Contractor

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Witness 1

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Witness 2

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Employer

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Witness 1

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Witness 2

The Contractor shall provide the necessary assistance during any operations necessary in connection with the removal, alteration or safe-guarding of any public service.

PS 4.6 Safety

The Contractor shall apply suitable proven methods for construction so that his activities will not constitute a hazard to the public or any adjacent property. All excavations shall be suitably safeguarded and barricaded especially during night time, weekends or holidays and any other day of inactivity by the Contractor.

PS 5 : INFORMATION SUPPLIED BY EMPLOYER

Certain information contained in these contract documents, or provided separately, is being offered in good faith. However, in the circumstances pertaining to the type of information supplied, no guarantee can be given that all the information is necessarily correct or representative. More specifically this applies to all material surveys and reports and similar information, the accuracy of which is necessarily subject to the limitation of testing, sampling, the natural variation of material or formations being investigated and the measure of confidence with which conclusions can be drawn from any investigations carried out. It also applies to the positions of existing services as indicated on the drawings.

The Employer accepts no liability for the correctness or otherwise of the information supplied or for any resulting damages, whether direct or consequential, should it prove during the course of the contract that the information supplied is either incorrect or not representative. Any reliance placed by the Bidder on this information shall be at his own risk.

PS 7 : CERTIFICATES OF PAYMENT

It was agreed that the master copy of the payment certificates would be drawn up and processed by the Contractor. All costs to this effect, as well as reproduction costs shall be to the account of the Contractor. It was agreed that the first month's certificate will be evaluated and if in order, the same format will be used throughout the contract.

PS 8 : CONSTRUCTION IN LIMITED AREAS

In certain cases, working space may be limited. The method of construction in these restricted areas will depend largely on the Contractor's plant. However, the Contractor must note that measurement and payment will be according to the specified cross-sections and dimensions irrespective of the method used to achieve these cross-sections and dimensions, and that the rates and prices tendered shall be deemed to include full compensation for any difficulty encountered while working in limited areas and narrow widths, and that no extra payment will be made, nor will any claim for payment due to these difficulties be considered.

PS 9 : NON-WORKING DAYS

The Contractor shall not work on Sundays or on the following statutory Public Holidays: New Year's Day, Human Rights Day, Good Friday, Family Day, Freedom Day, Workers Day, Youth Day, National Women's Day, Heritage Day, Day of Reconciliation, Christmas Day and Day of Goodwill. Whenever any of the above statutory Public Holidays fall on a Sunday, the following Monday shall be a Public Holiday.

PS 10 : SPOIL MATERIAL

No indiscriminate spoiling of material will be allowed. All surplus or unsuitable material shall be spoiled in designated areas as directed by the Engineer. Spoiling shall comply with the applicable statutory and municipal regulations.

PS 11 : DRAWINGS

All "as built" information, as listed below, must be submitted to the Engineer's Representative before a certificate of completion will be issued. No separate payment will be made for the "as built" drawings

PS 13 : SAMPLES

The Contractor shall at his own cost, supply all samples that may be required. Material or work not conforming to the approved samples shall be rejected. The Engineer reserves to himself the right to submit samples to any tests to ensure that the material represented by the sample conforms to the requirements of the specifications. The cost of all tests failed shall be for the Contractor's account.

PS 14 : MANUFACTURER'S INSTRUCTIONS

The recommendations of the manufacturers of patented materials must be strictly adhered to regarding the use, mixing, application, fastening, etc. thereof except when otherwise instructed in writing by the Engineer.

PS 15 : MATERIALS AND PLANT

The Contractor, when using materials that are required to comply with any standard specification, shall, if so ordered, furnish the engineer with certificates of compliance.

Where so specified, materials shall bear the official mark of the appropriate authority. Samples ordered or specified shall be delivered to the engineer's office on the site free of charge.

Where proprietary products have been specified, similar products may be used subject to the prior written approval of the engineer.

Unless otherwise specified, all proprietary materials shall be used and placed in strict accordance with the relevant manufacturer's current published instructions.

Unless anything to the contrary is specified, all manufactured articles or materials supplied by the Contractor for the permanent works shall be unused.

Existing structures on the site shall remain the property of the Employer and except as and to the extent required elsewhere in the contract, shall not be interfered with by the Contractor in any way.

Materials to be included in the works shall not be damaged in any way and, should they be damaged on delivery or by the Contractor during handling, transportation, storage, installation or testing they shall be replaced by the Contractor at his own expense.

All places where materials are being manufactured or obtained for use in the works, and all the processes in their entirety connected therewith shall be open to inspection by the engineer (or other persons authorised by the engineer) at all reasonable times, and the engineer shall be at liberty to suspend any portion of work which is not being executed in conformity with these specifications.

The Contractor shall satisfy himself that any quarry selected for use provides the necessary mined material in accordance with the specification.

PS 16 : NOTICES, SIGNS, BARRICADES AND ADVERTISEMENTS

The Contractor shall erect the necessary signs, notices and barricades for the duration of the contract in order to safeguard both the works and the public.

Notices, signs and barricades as well as advertisements may be used only upon approval by the Engineer, and the Contractor shall be responsible for their supply, erection, maintenance and ultimate removal and shall make provision for this in his tendered rates.

The Engineer shall have the right to have any sign, notice or advertisement moved to another position or to have it removed from the site of the works, should it in any way prove to be unsatisfactory, inconvenient or dangerous to the general public.

Such notices, signs and barricades shall be provided and erected at the Contractor's own expense.

The standard name board of the South African Association of Consulting Engineers is specified. The Contractor will be required to erect a signboard displaying the EPWP logo, indicating that this project is part of the EPWP. All costs related to the provision, erection and subsequent removal of the signboard shall be refunded to the Contractor through the provisional sum included in the Schedule of Quantities for this purpose.

PS 17 : SETTING OUT OF WORK

Reference and level beacons will be shown to the Contractor by the Engineer at the commencement of the Contract and the Contractor will be responsible for transferring the data to the Site of Works.

The Contractor shall check the condition and accuracy of all reference and level beacons and satisfy himself that they have not been disturbed and are true with regard to position and level. A beacon

that has been disturbed shall not be used until its true position and level have been re-established and the new values have been certified by the Engineer. The Contractor shall thereafter be held entirely responsible for the protection of all reference and level beacons.

The Contractor shall submit the method of setting out he proposes to employ to the Engineer. Accurate control of line and level shall be provided by the Contractor at all stages of construction.

Work set out by the Contractor may be checked by the Engineer and any errors found shall be rectified by the Contractor at his own expense. The Contractor shall supply any instrument, equipment, material and labour required by the Engineer for this survey work. Any assistance, including checking given to the Contractor by the Engineer or any setting out done by the Engineer for Contractor shall not be held as relieving the Contractor of his responsibility for the accurate construction of the Works.

PS 18 : WORKMANSHIP AND QUALITY CONTROL

The onus to produce work which conforms in quality and accuracy of detail to the requirements of the Specifications and Drawings rests with the Contractor, and the Contractor shall, at his own expense, institute a quality-control system and provide experienced foremen, materials technicians, other technicians and technical staff, together with all transport, instruments and equipment, to ensure adequate supervision and positive control of the works at all times.

The costs of all supervision and process control, including testing thus carried out by the Contractor shall be deemed to be included in the rates tendered for the related items of work.

The Contractor's attention is drawn to the provisions of the various standardized specifications regarding the minimum frequency of testing that will be required for process control. The Contractor shall, at his own discretion, increase this frequency where necessary to ensure adequate control.

On completion of every part of the work and submission thereof to the Engineer for examination, the Contractor shall furnish the Engineer with the results of all relevant tests, measurements and levels to indicate compliance with the specifications.

PS 19 : TRANSPORT OF MATERIAL

All costs of transporting material shall be included in the applicable tendered rates. All references in the specifications to transport, overhaul and haul distances shall be deleted irrespective of whether or not the deletion is included in these project specifications.

PS 20 : LIAISON WITH LOCAL AUTHORITIES

The Contractor will have to liaise with local authorities regarding the following matters:

- (a) Protection of existing services during construction.

All the relevant authorities were notified of above operations. It is then the Contractor's onus to immediately contact all these authorities and to accommodate their involvement in his programme

of work. The Contractor should also warn the authorities at least 48 hours before the actual work commences. Compensation for delays, losses or accidents will not be considered should the Contractor at any time have failed to keep the local authorities informed.

The Engineer or Employer must immediately be notified, should the Contractor experience any problem regarding work which involve a local authority.

DRAFT

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

C3.4.3 Mechanical Project Specification

PSM 1	SCOPE OF WORK
PSM 2	DESIGN
PSM3	QUALITY
PSM 4	MECHANICAL FRONT RAKED SCREEN
PSM 5	SREENINGS COMPACTOR WASHER
PSM 6	MOTORISED WASTE SKIP DOLLY SYSTEMS
PSM 7	SELF PRIMING PUMPING PLANT
PSM 8	MEASUREMENT AND PAYMENT

LIST OF ACRONYMS

TK	TANK
P&ID	PIPING AND INSTRUMENTATION DIAGRAM
PLC	PROGRAMMABLE LOGIC CONTROLLER
HMI	HUMAN MACHINE INTERFACE
KW	KILO WATT
RPM	REVOLUTIONS PER MINUTE
LIT	LEVEL INDICATING TRANSMITTER
PIT	PRESSURE INDICATING TRANSMITTER
PI	PRESSURE INDICATOR
LSL	LEVEL SWITCH LOW
LSH	LEVEL SWITCH HIGH
PC	PUMP CENTRIFUGAL

PSM 1**SCOPE OF WORK**

The works consist of the design, supply, delivery, installation, testing, commissioning and upholding up to and during the trial operation period and defects notification period of mechanical equipment, including but not limited to, the following, at various process units and complying with this specification:

a) An Inlet works comprising of:

- One (1) off wastewater inlet channel with level measurement,
- One (1) off hand raked screens,
- One (1) off mechanical front rake screens
- One (1) off screenings compactor
- One (1) off screenings waste skip dolly system
- Two (2) Wastewater sumps with level measurement
- Various manually operated channel gates.

b) A Main works pump-station comprising of:

- Two (2) Self-priming centrifugal pumps with flow and pressure measurement
- One (1) Wash water tank
- One (1) Wash water pump

c) Field Instruments

- Mechanical Front Rake Screen – Level transmitter to measure the level ahead of the screen.
- Mechanical Front Rake Screen – Proximity switch to disable the screen on over torque.
- Waste Skip Dolly System – Proximity switches for stop positions on end of forward and reverse travel.
- Pumpstation – Level Transmitter to measure level in the sump.
- Pump Station – Float switches to indicate high and low levels in the sumps.
- Pumpstation – Flow Transmitters to measure and totalize wastewater pumped to WWTW.
- Pumpstation – Delivery Manifold – Pressure Transmitter to measure pumped wastewater pressure on the delivery side of the pump.
- Pumpstation – Wash water Pump – Flow switch to prevent pump from running dry.

PSM 2**DESIGN****PSM 2.1 Design Brief**

The Contractor shall use the Mechanical Scope of Work, Employer's Standard Specification, Project Specifications, Technical Datasheets and typical drawings described in this document as the basis for his detailed and construction designs.

The mechanical installations will be fit for purpose and carried out in accordance with South African National Standards (SANS) and the other international standards as applicable.

During Concept Detail and Construction Design phase, reviews shall be performed by the Engineer and Employer and any updates required are to be incorporated to ensure conformance to Employer's Requirements with regards to constructability, accessibility, maintainability, reliability, availability, safety and operability of the Works.

PSM 2.2 Drawings, Documentation and Manuals

The Works shall be carried out in accordance with the Mechanical Scope of Work, applicable clauses of the Project Specifications and latest available revisions of all international, national standards and regulations pertaining to a facility of this nature as well as the drawings approved for final construction.

At the earliest stages of Contract commencement, but not later than two weeks after Contract award, the Employer/Engineer shall deliver to the Contractor, signed copies of the specifications and any further instructions required for the commencement of the Works.

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

The following Engineer's Drawings and technical datasheets are applicable to this Contract:

DRAWING NUMBER	DESCRIPTION
ROM-134-07-078-03-06	P&ID
ROM-134-07-078-03-01	Pumpstation Layout Plan
ROM-134-07-078-03-02	Pumpstation Layout Sections
ROM-134-07-078-03-05	Pipe Schedule

In addition to the requirements of Project Specification(s), the following drawings, documentation and manuals pertaining to the mechanical portion of the Works shall be provided by the Contractor at various stages of the contract:

PSM 2.3 Prior to Construction

- Basis of design
- Control philosophy document
- Equipment lists
- Equipment datasheets
- General arrangement drawings, sections and elevations

PSM 2.4 Post Construction (As-Built):

- Basis of design
- Control philosophy document
- Equipment lists
- Equipment datasheets
- General arrangement drawings, sections and elevations

Four (4) comprehensive sets of Operations and Maintenance Manuals shall be supplied for the mechanical works in compliance with the requirements of the Project Specifications. The manuals shall include all As-Built information and be supplied in electronic, and hardcopy bound formats and shall include the following content:

- Contents pages
- P&ID's
- General arrangement drawings, sections and elevations
- Equipment lists
- Line lists
- Valve lists
- Equipment datasheets
- Pump performance curves
- Standard Operating Procedures
- Routine inspections procedures
- Fault-finding procedures
- Equipment manuals
- Listing of parts and spares lists

PSM 2.5 Training

The following formal, classroom type training shall be provided for at least 10 municipal attendees:

- Plant operator training. The Operational staff shall be trained in the operation of the Works
- Process description and operating principles for Operators
- Start-up procedures for Operators

- Abnormal/Emergency conditions & troubleshooting for Operators
- Vendor specific training (e.g. pumps and other package units operating and maintenance principles)

PSM 2.6 Design Procedures

The design procedures for all components of the pump-stations are as follows:

- a) The Contractor shall study the Mechanical Scope of Work and Project Specifications and produce his own detailed designs and associated drawings following his own assessments - for review and approval by the Engineer.
- b) The Contractor shall then convene and facilitate a HAZOP design review session where the detailed designs and process flows are assessed by all stakeholders. Modifications may then be made to the detailed construction designs and drawings and installation may commence. Portions of the Works which are independent of the HAZOP process may proceed into construction.
- c) The Contractor shall produce and present general arrangement drawings for approval by the Engineer. The drawings shall also be used to assess maintainability, reliability, availability, safety and operability of the Works.
- d) Following the installation, the Contractor shall produce all As-built designs and finalise the Operating and Maintenance Manuals and Standard Operating Procedures.
- e) Reviews and approvals shall be managed by the Contractor using a reliable and auditable electronic document and drawing management system.

The Contractor shall make time allowances in his construction schedule for the Engineer's review, corrections and approval of his designs where required.

PSM 2.7 General Drawing Requirements

The drawings shall be clearly legible when printed or plotted. All drawings shall be to a professional standard and drawn in accordance with the relevant IEC or International (ISO) Standards.

Electronic versions of drawings shall be provided in both "dwg" and "pdf" formats.

Where appropriate, drawings scales must be shown. Sections at different scales presented in the same drawing shall be clearly notated. Graphic scales will be referenced to a particular drawing size.

Drawings must show a revision box detailing the document's development and include:

- A revision number;
- A description indicating the principal reason for the revision;
- The Designer's name and/or initials;
- The checker's name and / or initials;
- The approver's name and / or initials; and
- Date of drawing approval/issue.

The drawing must include the project reference number and the Designer's internal drawing number and version. Symbols used in the drawing must comply with relevant Standards, particularly the ISA Standards for P&ID's and instrumentation logic representations. Where the use of nonstandard symbols is required, they should be intuitive representations of the service items and to the extent possible align with any industry – based symbols. A drawing which describes all symbols used throughout the design shall be included in the design package.

The Designer may, with the Employer's approval, include its corporate logo / company identification on the drawing.

PSM 2.8 Service Life Requirements

Equipment shall be 'fit for purpose' and be selected to ensure that the pumpstation can be reliably operated and maintained without loss of major components. As a guide, the following service life requirements should be adopted:

Component Type	Design Life Requirements (Years)
Mechanical equipment	20
Piping	20
PSM3	QUALITY

PSM 3.1 Quality Management

The Contractor shall conduct quality management as per the requirements of this scope of work. The Contractor shall provide his quality management systems to ensure that the quality of the works complies with the requirements of the Scope.

The Contractor shall ensure the use of quality control plans identifies and lists the relevant inspection and test procedures applicable to the project.

Where the Engineer's requirements do not address pertinent issues, and where from the Contractor experience is, certain requirements are necessary, the Contractor shall add that. This may or may not be in consultation with the Engineer.

PSM 3.2 Quality Control

The Contractor shall provide the following quality plans to the Engineer for acceptance:

- a) A detailed quality control plan for design, project management, procurement, manufacturing and construction services for all fabrication and on-site erection activities for approval by the Engineer prior to the contract kick-off meeting. This control plan will specifically describe the actions to be taken by the Contractor. The Contractor is ensuring that the requirements of this contract are incorporated, and quality checked during the design, procurement and site construction phases of the project.

- b) The quality management requirements for Subcontractors (and Vendors) are to meet the requirements of the Contractor's design.
- c) The Employer shall monitor the quality management system, as his own needs dictate. Any Employer representative and / or any other inspection body as may be appointed, shall be granted unrestricted access to all parts of the Contractor's, or the Subcontractors / Vendors works or sites where manufacture and / or processing of the works are being performed. Access will be co-ordinated with the responsible person for the specific site.
- d) All materials, except where otherwise specified, are to be new and of the best quality and suitable to withstand and to operate satisfactorily under all possible climate and weather conditions which can reasonably be expected at the site and process conditions.
- e) All storage, handling, transport, erection or installation of the Plant, Equipment and Materials shall be carried out in accordance with the supplier's or manufacturer's instructions, provided that the Contractor does vary such instruction should he deem such variations necessary.
- f) The Contractor shall conduct a continuous programme of construction Quality Control for all work performed.
- g) The Contractor shall add any additional requirements to meet the overall contractual requirements of Employer where the Contractor realise shortcomings and from his experience, need to amplify or add his standard requirements.
- h) A Quality Plan and Quality Manual shall be produced by the Contractor which details all quality inspections, tests and processes that will be performed for the Works. The Quality Plan and Manual shall be reviewed and approved by the Engineer prior to any inspections and test being conducted.
- i) Any defects during factory and site testing and inspection shall be recorded as per the Quality Plan made good in terms of the relevant Contract clause/s.
- j) Should these tests require the Engineer to be present again, the Engineer's cost for time and travel shall be recovered from the Contractor at rates as set out by ECSA.

PSM 3.3 Inspections, Tests and Commissioning

In addition to the requirements of Project Specification(s), the following shall be complied with:

For all the inspections and tests the Contractor shall notify the Engineer in writing at least 1 week in advance, when his presence will be required for inspections or witnessing of tests.

The Engineer and a Municipal representative will attend factory inspections / tests and the Contractor shall bear all travel costs and disbursements associated with the inspections.

If tests fail, the Contractor will be required to make good all such defects as per the applicable Contract clauses and perform such tests again.

SM 3.4 Test on Completion

The Contractor's engineering work shall be demonstrated during the test run to be undertaken after completion, commissioning and start-up at a date and time agreed between the Employer and the Engineer.

PSM 3.5 Test after Completion

On-specification operation of 365 days per year is expected, with planned shutdowns once in four years.

PSM 3.6 Tools and Spares

All commissioning spares and tools shall be provided by the Contractor as part of the Contract.

In addition to any spares specifically called for in this Scope of Work, the Contractor shall recommend any additional spares which he considers the Employer should hold. The prices of these spares shall be indicated in the Tender document but must not be included in the tender price.

PSM 3.7 Corrosion Protection

Where corrosion of metal may be expected, the Contractor shall supply materials which are resistant to corrosion. Any material showing signs of corrosion, tuberculation or pitting before expiry of the Defects Liability Period must be replaced by the Contractor at no cost to the Employer. Corrosion protection requirements shall be carefully attended to as outlined below.

All epoxies and paints are to be applied strictly in accordance with the manufacturer's recommendations. Particular care is to be taken with surfaces which will be inaccessible after assembly. Surfaces of welded connections must be painted before welding is carried out and painted surfaces damaged by welding must be suitably prepared and repainted without delay. In the case of bolted connections, edges of bolt holes must also be painted, and bolts, nuts and washers must be similarly treated. Washers must be used under all nuts to prevent damage to the treated surfaces of the plate.

The final colour scheme(s) is to suit the Employer's requirements.

The tendered prices will be held to include the cost of all painting or other surface treatment which is not separately specified or scheduled but which is nevertheless necessary for the protection of surfaces against corrosion and for the final appearance of the installations.

Unless an alternative coating is called for in the Project Specification, all fabricated mild steel components shall be hot dipped galvanised strictly in accordance with the requirements of SANS 121 (hot-dip zinc coatings) for heavy duty applications.

After galvanising, the equipment shall be carefully stored and loaded, making ample use of wooden spacers to prevent damage to the galvanised surfaces. Equipment with damage to the galvanised surface will be accepted only after satisfactory re-galvanising.

Unless stated otherwise in the Project Specification, or otherwise agreed on site with the Engineer, galvanised steelwork shall receive a suitable primer and two coats of gloss enamel after installation.

If specifically stated in the Project Specification that hot dipped galvanising is not required, the fabricated mild steel components shall be abrasive blast-cleaned internally and externally to Grade Sa2,5 of the Swedish Standard SIS 05-5900 to an angular surface profile within the limits of 30-50 microns and immediately thereafter coated with solvent borne epoxy complying with SANS 1217 Type 1A with a DFT of at least 300 microns.

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Contractor

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Witness 1

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Witness 2

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Employer

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Witness 1

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Witness 2

PSM 4**MECHANICAL FRONT RAKED SCREEN****PSM 4.1 Scope of Work**

Design, supply, delivery, installation, testing, commissioning and upholding up to and during the trial operation period and defects notification period.

The front raked screen shall be designed to fit the civil structure, as shown on relevant civil drawings.

The front raked screen shall be supplied according to technical datasheet and shall operate in a duty / standby arrangement with an existing screen. Both screens shall discharge into a common shaftless screw conveyor, which shall discharge the screenings into a compactor washer.

PSM 4.2 Performance Requirements

The screen shall be designed to remove various types of suspended solids such as pieces of timber, bottles, cans, cloth, string and fibrous materials, metal objects, rocks, sheets of paper and any materials which are likely to be present in the influent under typical South African conditions.

The screen shall be designed for The Average Dry Weather Flow and Peak Wet Weather Flow respectively and the maximum head loss is 200 mm and the peak flowrate at 40% screen blinding. Design calculation shall be submitted to the engineer for review and acceptance.

The volume and mass of screens is not quantifiable, but the screen shall remove all screenings collected before the head loss across the screen is exceeded.

PSM 4.3 Operation and Control

Under normal operating conditions the screens will be automatically raked based upon the water level differential across the screen. Timer control will also be provided to activate the screens after an adjustable period if the screens have not been activated by the water level differential during this time period.

Local forward reverse manual activation of the screen rake shall be provided.

PSM 4.4 Construction and Design**a) Frame**

The frame shall be formed entirely from 304 stainless steel 4.5mm thick plate and will be recessed to accommodate the scraping mechanism, chain guides and idler sprockets in order to maintain the full channel width and channel depth.

The screen frame is accurately set into position and will be fitted with a rubber skirt plus stainless-steel diversion plate to accommodate the total channel width. The screen will be set in the channel approximately 75° to the horizontal.

b) Screen Field

The screen field tapered bars shall be accurately set and secured to give the clearance between the bars of 6mm. The entire screen field shall be manufactured from 304 stainless steel.

The Taper bar shall be extended from the sole plate, to which each bar shall be individually clamped in position. The bars shall be fitted with laser prepared spacer plates for simple removal when damaged.

c) Sole Plate

The sole plate shall be profiled to induce screening and debris in the lower level of the flow to be directed onto the lower portion of the screen bars and not to accumulate at the foot of the screen. The leading edge of the sole plate shall be level with the channel invert.

d) Drive Unit

The drive unit shall be sized with a service factor of min. 1.8 and a maximum output speed of 8 rpm. The drive unit shall be a Helical Worm Geared hollow shaft type to accommodate the drive shaft. A torque arm shall be attached to the drive unit to accommodate vertical adjustment. The protection rating is IP 55, 380 V, and TEFC.

e) Cleaning Mechanism

The scraper cleaning mechanism positioned at the discharge chute area, shall comprise of a single UHDPE blade which activates as each rake rotates above the upper edge of the screening retention plate.

The scraper mechanism shall be positioned so that it efficiently cleans the full width of each screen rake. The bearing for the scraper bar shall be self-lubricating polypropylene.

f) Raking Mechanism

The multiple screen field rakes shall be designed to form a single continuous meshing into the screen field, clearing the waste caught up in the screen field. The rakes shall have an appropriate profile to suit the screen field bar spacing. The rake shall penetrate to within 1 mm of the root of the screen field. The rakes shall be bolted to the main rake frames for quick and simple removal when necessary.

A facility shall be incorporated within the drive mechanism, to enable the drive chains to be correctly tensioned, and the rake to be accurately positioned across the screen field face. This adjustment shall be possible without the dismantling of any part of the screen frame and without the necessity for any special tools.

g) Chains & Sprockets

The chains connecting the rake frames to be to Type FV112/75 with an Acetal rollers and Hardened Steel Alloy side plates and pins.

The sprockets shall be suitably sized to the chain used to giving a 0.2 mm clearance between the roller and the seating curve.

PSM 5 SCREENINGS COMPACTOR WASHER

PSM 5.1 Scope of Work

Design, supply, delivery, installation, testing, commissioning, and upholding up to and during the trial operation period and defects notification period.

The screenings compactor washer shall be designed to fit the civil structure, as shown on relevant civil drawings.

The screenings compactor washer shall be supplied according to technical datasheet and shall deposit washed and pressed screenings into the centre of a standard 3m³ skip, that will be positioned on a motorised dolly alongside the compactor.

Water drainage and any screenings overflow shall fall under gravity to the inlet channels as specified in the drawings.

The compactor shall be fitted with a high-pressure spray bar wash zone.

PSM 5.2 Performance Requirements

The screenings compactor washer shall remove faecal matter and excess moisture from the screenings. Compaction shall ensure that the dry substance contents of the washed and pressed screenings are no less than 50%.

The organic content of the washed screenings shall be minimal and shall have a grey / white colour. Brown unwashed screenings shall not be acceptable.

PSM 5.3 Operation and Control

The operation shall be fully automatic. The screenings compactor washer shall be interlocked to operate together with every run cycle of the mechanical screens and shaftless screw conveyor.

PSM 5.4 Construction and Design

a) Drive Unit

The drive unit shall be suitably sized with an output speed selected to facilitate the load transported and with a minimum service factor of 1.8 on installed power. The drive unit shall be a Flanged Mounted Inline Helical Bevelled Geared hollow shaft type to accommodate the drive shaft. The drive unit shall be bolted to a drive end flange, machined with spigots and tapped holes for accurate alignment. The protection rating to be IP 55 or higher, 380 V or higher.

b) Compactor Screw Press Body

The Compactor Screw Press body shall be manufactured in a tube form to accommodate the Reduced Spiral Ribbon. The Compactor Screw Press body shall be rolled form pre-pressed, drilled and cut and specially designed perforated plate to specific diameters and clearances. The Compactor Screw Press body shall consist of two specific zones as follow:

Inlet Zone

Screenings are discharged into the Inlet Zone. The Inlet Zone shall consist of a perforated half cylindrical tube with the inlet chute with water supply optional. Excess water is drained off. A Reduced Spiral Ribbon is to transport screenings to the compaction zone.

Compaction Zone

The screenings are to be transported with a reducing pitched screw ribbon into the compaction zone. The compaction zone shall consist of a perforated cylindrical tube with a water supply for cooling and washing of the screenings. At the end of the compaction zone a reducer is to be mounted to create a backpressure on the screenings. The shaft of the screw ribbon is to be extended to the reducer and shall be tapered down.

The backpressure shall ensure that the fluid and diluted Faecal matter in the drained screenings are pressed out of the screenings.

The screenings washer body shall be flanged at either end to facilitate the mounting of the drive unit and discharge chute.

c) Reducing Pitched Spiral Ribbon

The reducing pitched spiral ribbon shall be manufactured to suit the compactor screw press body. The reducing pitched spiral ribbon shall extend the full length of the body and consist of two specific sections to suit the various zones as follow:

Inlet Zone

The reducing pitched spiral ribbon shall consist of a hollow shaft with equal pitched spiral ribbon welded to the shaft in the Inlet zone. The screenings are to be transported to the compaction zone with spiral ribbon reducing in pitch.

Compaction Zone

The screenings are to be transported the compaction zone with a reduced pitched screw ribbon. At the discharge of the compaction zone a reducer is to be mounted to create a backpressure on the screenings.

The reducing pitched spiral ribbon shall be flanged at the drive end to facilitate the mounting of the drive unit.

d) Safety Covers

Safety covers shall be provided to prevent any aerosol and odour from escaping. Drainage covers, the whole length of the Inlet zone and compaction zone shall be provided to accumulate any fluids from these zones. These covers shall be watertight and bolted down.

e) Discharge Chutes

Discharge chutes shall normally be fitted to the reducer end of the compactor screw press body. The discharge chute shall have a maximum incline of 30 degrees with a maximum lift of 750 mm from centre line of compactor to the centre line of discharge spout.

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

PSM 6 MOTORISED WASTE SKIP DOLLY SYSTEMS

PSM 6.1 Scope of Work

Design, supply, delivery, installation, testing, commissioning, and upholding up to and during the trial operation period and defects notification period. The motorised waste skip dolly systems shall be supplied according to technical datasheet.

The installation shall be as shown on the drawings.

One waste skip dolly system complete with rails and motor shall be provided. The dolly shall be capable of carrying a 3 m³ skip. The two dolly systems will be situated at the inlet works, one located near the compactor washer and one near the grit classifiers.

PSM 6.2 Performance Requirements

The waste skip dolly systems shall be able to travel without losing traction under the full range of loads ranging from no skips to one full skip for screenings and grit.

The waste skip dolly systems travel speed shall be approximately 6 m/min, irrespective of the loading.

PSM 6.3 Operation and Control

A local push button station shall be provided at each dolly system for moving the dolly forward or in reverse. The push buttons shall be non-latching and marked with directional arrows.

PSM 6.4 Construction and Design

The dolly system shall be of rigid construction and shall be designed for not less than 10 000 operational hours before major repairs are required. The unit shall operate quietly and smoothly. Grease points which are not easily accessible shall be piped individually to accessible positions for manual greasing.

Removable guards shall be provided to ensure that it is not possible for a hand to come into contact with the wheels. The dolly system shall be of hot dip galvanized steel.

The rails and cable system shall be long enough to ensure that any of the skips can be placed or removed from the dolly without double handling of skips.

The rails shall be firmly anchored into the concrete, by means of chemical anchors and suitable standard rail cleats. The rails shall be level and aligned and shall be grouted in to ensure the minimum rail surface area is exposed to the atmosphere. The Contractor shall provide the details of all fixing arrangements including anchoring and grouting techniques and materials. Anchors shall be stainless steel.

The dolly shall be provided with locating lugs to ensure that the skips are properly positioned and cannot slide off the rails. The lugs shall not impede the easy removal or placement of the skips on the dolly.

Rails shall be at least of 22 kg/m size and shall have end stops to prevent the dolly from travelling off the rail ends.

Ingress protection shall be to IP 55 or higher and shall be suitable for washing by hose.

The motor gearbox shall be protected from spillages and foreign material like stones that may be found on the concrete slab in the path of travel. The underneath of the gearbox shall be at least 25 mm above the finished floor level. A scraper shall be provided on both sides of the gearbox to ensure it is protected, should this be applicable to the design.

PSM 6.4 Inspections

The dolly shall be inspected during fabrication as per the requirements for items that are hot dip galvanised.

PSM 6.5 Testing Requirements

The dolly shall be tested for compliance with the specification.

PSM 7 SELF PRIMING PUMPING PLANT

PSM 7.1 Scope of Work

Design, supply, delivery, installation, testing, commissioning, and upholding up to and during the trial operation period and defects notification period. The self-priming pumps shall be supplied according to technical datasheet.

The installation shall be as shown on the drawings.

The self-priming pumping plant may be briefly described as follows:

- Two identical pumpsets (duty / standby), Gorman Rupp T6 or similar approved each driven by a 400 V x 11 kW induction electric motor (*Estimated, to be confirmed by the Contractor*) and with a duty point of 40 l/s x 8.43 m.
- DN 200 suction pipework which is to commence with a DN 250 intake bellmouth.
- DN 200 delivery pipework manifold and valves which is to terminate in a immediately downstream, as indicated on the drawings.

PSM 7.2 Performance Requirements

The pumps shall meet the duties specified above and must be capable of operating throughout the system head range shown on the system curve.

PSM 7.3 Operation and Control

This Clause describes the manner in which the pumps will operate and details the required control and protection functions of the plant. The Tenderer shall study this Clause in conjunction with the whole specification and the tender drawings and shall be deemed to have included allowance in his tender price to cover the provision of everything necessary for the proper functioning of the plant whether such things are specifically scheduled as separate items in the Bill of Quantities or not.

All the necessary controls for the pumps are to be housed in the pump station MCC to be supplied under this Contract and more fully described elsewhere. The prices tendered are to include for all the necessary cabling between the MCC.

The electrical and electronic controls specified elsewhere which are to be supplied and installed under this Contract may be briefly summarised as follows:

- Ultrasonic water level sensor for sensing the water levels in the sump.
- Low level and high-level float switches
- Pressure transmitter on the delivery piping
- Electromagnetic flow meter

PSM 7.4 Pumping Plant

The fluid to be pumped is raw sewage, which can be expected to contain various types of suspended solids such as pieces of timber, bottles, cans, cloth, string and fibrous materials, sheets of paper and any materials which are likely to be present in the influent under typical South African conditions.

The pumpsets shall be of the single stage, end suction, self-priming type, suitable for pumping the above-mentioned fluid and shall run a speed not exceeding 2 500 rpm.

The pumps shall have non-clogging impellers capable of passing 50 mm diameter solids and stringy material.

The pumps shall meet the duties specified above and must be capable of operating throughout the system head range shown on the system curve.

The pump casings shall be hydrostatically tested prior to commissioning to 1000 kPa or double the highest head developed by pumps at zero discharge whichever is greater.

The pumps shall be equipped with suitably rated mechanical seals.

PSM 7.5 NPSH Requirements of the Pumps

Two of the critical design parameters are the ability of the pumps to self-prime and the NPSH requirement of the pumps.

Attention is drawn to the pumping plant layout as presented in the tender drawings and the need for the pumps to self-prime.

The “NPSH Required” by the pump will be deemed to be 30% above that of the pump manufacturer’s 3% decay curve and that value shall be less than the NPSH Available as calculated by the contractor. The adequacy or otherwise of the NPSH safety margin will be carefully considered.

PSM 7.6 Motors for the Pumps

Each pump shall be driven by an electric motor of such rating that the motor will not be overloaded by the pump no matter how great its discharge and no matter how low the total pumping head.

The motors shall comply with the electrical specifications forming part of the tender document.

PSM 7.7 Drive Configuration

The pumps are to be vee-belt driven by electric motors via pulleys on jack shafts connected by means of flexible couplings to motors running at the lowest possible speed consistent with a minimum overall efficiency of the whole motor-pump set of not less than 70%.

PSM 7.8 Suction and Delivery Pipework and Valves

The diameters and extent of the existing suction and delivery pipework and valves that are to be supplied and installed under this section of the Contract are shown on the drawings accompanying this document.

No responsibility is accepted for any dimensions shown on the drawings as the Contractor will be required to design suitable pipework and valve configurations for verification by the Employer’s Agent prior to fabrication. Notwithstanding that the pipework that is required is shown on the drawings and is briefly described below, the Contractor will be required to design and supply and install all pipes, valves, and fittings required for the complete installation.

The diameters and extent of the new suction and delivery pipework that is to be supplied and installed under this Contract to serve the two pumpsets is from the sump to the DN 200 flange immediately outside the pump station wall. All pipework is to be 304L Stainless steel unless otherwise specified.

PSM 7.9 Hydraulic Pressure Testing & Painting

On completion of the installation, the pumps delivery pipework, valves and fittings shall be hydrostatically tested to 1500 kPa.

PSM 710 Flow Meter

A DN 200 double flanged (SANS 1123 Table1000/3) electromagnetic flow meter (magflow meter) is to be supplied under the Instrumentation section of the Contract. The Contractor is to provide all cables and equipment necessary to provide input from the flow meter to the PLC (refer to the Instrumentation section).

The meter must be capable of withstanding the field test pressure of 1500 kPa.

PSM 7.11 Pressure Gauges

Delivery pressure gauges, with a minimum diameter of 150 mm and graduated in kPa is to be supplied. The range of the gauges shall be: zero to 1000 kPa

Each pressure gauge is to be equipped with a diaphragm to prevent the ingress of solids into the gauge.

PSM 8 MEASUREMENT AND PAYMENT

PSM 8.1 General

Payment for particular items scheduled shall conform to the payment clauses of the Conditions of Contract as amended by the following:

- a) Unless scheduled separately, the tendered rates or sums shall cover the cost of drawings and instructions as required.
- b) The tendered rates or sums shall cover the costs of anything not specially mentioned but which an experienced contractor can reasonably foresee as being required, (e.g., all ancillaries, including all bolts, fastenings and brackets, safety guards and any work or material or equipment required for the proper execution and installation of such apparatus and equipment, piping, valves, gauges, instruments, either severally or collectively in complete working order), to enable the apparatus and equipment to be installed and/or function safely and correctly as specified. No claims whatsoever for extras will be allowed on the grounds that a necessary piece of equipment or a part thereof is not specifically mentioned in the Schedule of Quantities.
- c) The Contractor will not be entitled to any payment until the three copies of the Progress Statement have been submitted by him to the Engineer. The Statement shall contain an invoice of all items as scheduled in the Schedule of Quantities and reflect the progress made on each item. If a pro forma is enclosed in the Contract Documents the Contractor's Progress Statement shall conform to it. If there is no pro forma in the document the form of the Progress Statement used by the Contract will be subject to the approval of the Engineer.

PSM 8.2 Preliminary and general items

Unit:..... Sum

Where provision is made in the Schedule of Quantities for Preliminary and General items, the sum(s) tendered shall cover the cost of all responsibilities specified in the Specifications. In interim certificates, payment for Preliminary and General Items will be made, unless otherwise provided for, as a percentage of the tendered lump sum(s) pro rata to the value of work certified for payment.

Where no provision is made in the Schedule of Quantities for Preliminary and General Items the rates tendered for the scheduled items shall cover the cost of all responsibilities specified in the Specification together with all responsibilities.

PSM 8.3 Supply

Unit:.....No or Sum

The tendered rate or sum shall cover the cost for supply of the goods, testing as required, provision of test certificates certifying compliance of the goods with SABS, IEC, ISO or BS standards, corrosion protection, if designated and not scheduled separately, and supply of all special tools and keys.

Payment for supply of the relevant equipment will not be effected until the draft copies the following have been submitted:

- a) Drawings of the equipment detailing all part numbers and materials, and, if required by the Engineer, detailed drawings showing the complete installation.
- b) A complete spare list.
- c) A lubrication and maintenance schedule showing all maintenance and lubrication operations, their recommended frequency and the grades of lubricant required.
- d) A maintenance brochure describing all maintenance, adjustment and replacement procedures.
- e) Operating manual describing the operation of the equipment with performance curves where applicable.
- f) A manual detailing all dismantling and reassembly procedures.
- g) A manual detailing the maintenance procedure for the corrosion protection painting systems.

PSM 8.4 Delivery

Unit:.....No or Sum

The tendered rate or sum shall cover the cost of delivery of the goods and offloading at the delivery point stated in the Project Specification.

Where a rate or sum has been tendered for delivery of goods which are then stored as provided, the Engineer at his sole discretion may certify an amount for partial or full payment of the relevant item, if in the Engineer's opinion such a payment is justified by reason of the transportation of such goods to their place of storage.

PSM 8.5 Installation**Unit:.....No or Sum**

The tendered rate or sum shall cover the cost of all necessary site oriented activities such as handling at the Site, storing, sorting, erecting, all painting, testing and commissioning (unless scheduled separately), including all costs of transport of personnel and their erection gear to Site.

PSM 8.6 Testing**Unit:.....No or Sum**

The tendered rate or sum shall cover the cost of testing as specified including all costs of transport to and from Site, and Site accommodation of personnel and their gear.

PSM 8.7 Commissioning (where scheduled separately)**Unit:.....No or Sum**

The tendered rate or sum shall cover the cost of commissioning as below, including all costs of transport to and from the Site, and Site accommodation of personnel and their gear.

Commissioning: The Contractor shall be responsible for commissioning the equipment which shall comprise putting it into operation, calibration, proper adjustment of the equipment, and thoroughly running in the whole of the installation after completion under all sections of the Contract. The Contractor shall also train the Employer's staff regarding the operation and maintenance of the equipment. When all these operations have been carried out and, in the opinion of the Engineer, the installation is operating satisfactorily it will be considered to have been commissioned.

PSM 8.8 Servicing visits**Unit:.....Sum or No of Visits**

The tendered rate or sum shall exclude the cost of providing lubricants but shall cover the cost of servicing visits and operations as specified below. Payment of 95% of the tendered amount will become due monthly on a pro rata basis or after each visit, as the case may be. The remaining 5% will be regarded as Retention Money and paid at the end of the Defects Liability Period.

Servicing: Without limiting in any way the liability of the Contractor for remedying defects, the Contractor shall make regular quarterly visits to the installation during the Defects Liability Period to service and supervise the operation and maintenance of the equipment. During these visits he shall make all adjustments and do everything necessary to ensure the proper running of the equipment.

After each servicing visit to the Site the Contractor shall submit to the Engineer a report on:

- a) the condition of the equipment and the servicing work carried out,

- b) any adjustments which may have been made,
- c) any further instruction to the operator, and
- d) the degree to which the operator has become conversant with the equipment.

The last servicing visit shall be carried out during the last week of the Defects Liability Period during which visit the Contractor shall carry out full checks on the equipment to ensure that the alignment, clearances and any other settings are correct and he shall carry out any adjustments necessary.

The Final Certificate will not be issued until the last servicing visit has been carried out to the satisfaction of the Engineer.

PSM 8.9 Tools and spares

Unit:.....Sum

The cost of special tools and keys shall be covered by the tendered rate or price for the supply of the relevant equipment. Payment for spares will be made at the price tendered in the Spares Schedule which price shall cover the cost of supply, crating and labelling where applicable, and delivery to the Site of the relevant items.

PSM 8.10 Interim storage

Unit:.....Month

When interim storage is to be paid, the minimum period measured will be three months. The tendered rate shall cover the cost of providing storage in the ordered or approved store, protecting and maintaining the goods in storage, handling the goods in and out of the said store, and labelling and packing.

No separate payment for storage will be made where normal delivery is effected, nor where storage is ordered on the following terms:

In the event of the Engineer not being satisfied with the provisions for storage provided by the Contractor on Site, he may order all goods and erection equipment to be delivered to the Employer's stores and stored therein at the Contractor's risk and cost.

Whether goods are stored at the Employer's stores on the order of the Engineer or on the request of the Contractor, the Contractor shall provide all handling and transport to move the goods and erection equipment to the Site of the Works when required.

PSM 8.11 Insurance for goods stored.

Unit:.....Month

When insurance for goods stored is to be paid, the minimum period measured will be three months. The tendered rate shall cover the cost of insuring the goods while in storage.

Contractor

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Witness 1

Witness 2

PSM 8.12 Additional visits to Site

Additional visits to Site ordered by the Engineer (other than visits required as a result of malfunctioning of, or defects in the Contractor's materials or workmanship, or as a result of circumstances for which the Contractor is responsible in terms of the Contract) will be scheduled as:

- a) **Transport.....Unit: No of Visits**

The tendered rate for transport shall cover the total cost of transporting personnel and equipment to and from Site.

- b) **Site operations.....Unit: Day**

The tendered rate for site operations shall cover the full daily cost of the wages, equipment, accommodation and local transport.

C3.4.4 Electrical Project Specification

PSE 1	SCOPE OF WORK AND PROGRAMME
PSE 2	DRAWINGS, MANUALS, TRAINING, SPARES AND TOOLS
PSE 3	INSPECTIONS, TESTS AND COMMISSIONING
PSE 4	TESTS
PSE 5	FIRE EXTINGUISHERS, FIRST AID KITS, DANGER SIGNS
PSE 6	MATERIALS, FINISHING AND PAINTING OF MATERIALS
PSE 7	FIXING OF MATERIALS
PSE 9	LV MOTOR CONTROL CENTRE (MCC)
PSE 10	FIELD CONTROL STATIONS
PSE 11	LOW VOLTAGE POWER CABLES
PSE 12	CABLE SUPPORTS
PSE 13	CABLE TRENCHES
PSE 14	EARTHING
PSE 15	ELECTRICAL BUILDING SERVICES
PSE 16	AREA AND ROAD LIGHTING
PSE 17	BUILDING TRENCH COVERS
PSE 18	MEASUREMENT AND PAYMENT

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Contractor

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Witness 1

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Witness 2

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Employer

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Witness 1

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Witness 2

PSE 1 SCOPE OF WORK AND PROGRAMME

PSE 1.1 Scope of Work

The following work, equipment and material shall be included in the scope of this contract.

The scope of works for the electrical installation entails the design, supply, delivery, installation, testing, commissioning and upholding during the trial operation period and the defects notification period of the following equipment and materials:

- One low voltage (400V) motor control centre (MCC)
- All low voltage power cables.
- Power cable supports and racking where applicable.
- Small power and lighting installations.
- Instrumentation.
- Field control stations.
- Earthing of equipment and installation of an earthing system associated with the new buildings.
- Testing and commissioning of the electrical works.
- Operations and maintenance manuals.
- Training of municipal staff in the operation and maintenance of the electrical installation.
- Ground cable trenching (including danger tape and backfilling).
- Sealing of all cable ducts after the installation of the cables.

PSEE 1.2 Programme

The Contractor shall produce a detailed project programme showing designs and documentation submissions, delivery periods and planned installation dates for all electrical equipment. The detailed baseline program shall be submitted to the Engineer two weeks after the contract award. The electrical programme shall follow the mechanical construction programme and shall also take into consideration the civil contract/ programme.

PSE 2 DRAWINGS, MANUALS, TRAINING, SPARES AND TOOLS

PSE 2.1 Design Data Pack

The Contractor shall produce and submit an Electrical Design data pack for approval by the Engineer within three (3) week after award of contract and before procurement of any equipment. The data pack shall include more details about the equipment to be supplied and installed than what has been provide in the Technical Data during tender stage.

The Contractor shall also submit the following design documents/ drawings as part of the contractual deliverables. All documents and drawing must be approved by the Engineer prior to ordering of any equipment:

- Cable support layout drawing designs for the building. This shall include the mounting details on all structures. All cable support infrastructure must be included in the cable schedules.
- Cable schedules for all cables (LV power, control stations) for each switchboard, field control stations etc.
- Site trenching route that indicates the details of the cables that will be installed in the various sections of the ground trenching.
- Building cable trench details showing the required cable racks. All cable supports must be included in the cable schedules.

Please note that the items in the Bill are an allowance only and that the final ordering of materials shall only be done after the schedules/ drawings have been approved by the Engineer.

The Contractor shall submit manufacturing drawings to the Engineer for approval for all equipment. For all manufacturing drawings related to the electrical equipment the following information shall be shown:

- Project Name and Contract Number
- Manufacturer/Supplier
- Consulting Engineer and contact person
- Client details
- Drawing Number and Revision
- Drawing to be Signed
- Source of Supply – MCC or transformer name etc.
- Switchboard General Description
- Fault level (kA and time rating)
- Form factor/Sectioning
- Busbar Details (cross-section, material type, tinned etc.)
- Busbar Support Details – type, manufacturer
- Earth bar details (cross-section, full-length, front or rear etc.)
- Switchboard Material type, grade, thickness etc.
- Gland Plate details – material type, thickness, mounting etc.
- Colour – internal and external
- Switchboard Dimensions
- Base Dimensions and bolting arrangements
- Front door details – hinge and padlock requirements
- Rear door details – hinge and padlock requirements
- End panel details – removable cover details
- Door details - Stiffeners and restrainers installed etc.
- Hinge Details
- Locking Details
- Handle Details
- Cable Entry Details
- All bolts, nuts, screws material type (i.e. 316 Stainless Steel)
- Equipment details – CB ratings, fault levels, type, manufacturer

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Witness 2

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Witness 1

Witness 2

- Equipment Layout details – Cubicle name, function, equipment function etc.
- Indication Light colours
- Section through switchboard

The Contractor shall also submit electrical drawings for all equipment. These schematic drawings for switchboards (MCCs, DBs, field control stations, etc.), the following information shall be shown:

- Project Name and Contract Number
- Manufacturer/Supplier
- Consulting Engineer and contact person
- Client details
- Drawing Number and Revision
- Revision details to be listed
- Drawing Page Number
- Drawing to be Signed
- Reference Grid required on each schematic page
- Source of Supply – MCC or transformer name etc.
- Fault level (kA and time rating)
- Voltages for all circuit to be clearly indicated
- All devices to have reference number i.e. relays
- Equipment ratings to be given i.e. motor ratings
- All indication lamps to be labelled including required lamp colour
- Legend to be provided
- Equipment Tag Numbers as Water Services Plant Numbering System.
- All fieldbus device addresses, cable and termination details, network bus speeds and shielding details.

PSE 2.2 Drawings

The following Electrical drawings, which are bound separately, shall be read in conjunction with this Detailed Specification:

DRAWING No.	TITLE
SINGLE LINE DIAGRAMS	
TBA	Typical Single Line Diagram
GENERAL ARRANGEMENT DRAWINGS	
TBA	Typical MCC GA
675/E/616	Typical Remote Isolator Panel
TYPICAL DRAWINGS	

Contractor

Witness 1

Witness 2

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Witness 1

Witness 2

675/E/620	Typical Cable Trench
675/E/001	Main Cable Route Plans
675/EL/600	Typical Control System Configuration
675/EL/602	Typical Instrument Enclosure

PSE 2.3 Operation and Maintenance Manuals

Four copies of the O & M Manual shall be issued to the Engineer prior to commissioning of the Works, and the Trial Operation Period shall not commence until the manual has been issued. Before the Taking-over Certificate is issued (after the successful completion of the Trial Operational Period) six copies of the final approved version of the O & M Manual shall be issued to the Engineer.

The manual shall be of a standard acceptable to the Engineer and shall be subject to his approval. At least one (or one set) shall contain original copies.

Binders with hard plastic covers and four-ring spring clip holders shall be used. Binders shall not be over-filled to allow use without damage to the contents. A spare binder shall be provided for every three used, marked with the contract information.

Title labels which include contract number, title, location, Contractor's name as well as the plant or process description together with volume number and contents shall be fixed on the front as well as the spine of the binders.

Manuals shall be in English only, with sections of equipment arranged by labelled dividing separator sheets. Where standard literature is obtained from suppliers or manufacturers, this shall be neatly photocopied in A4 size, with the applicable sections clearly marked, omitting duplicate sections in languages other than English.

Comprehensive indexes shall be included, with separate sections (with their own index) where required, as follows:

- a) Details of the electrical equipment supplied including the name and address of the supplier, and descriptive and technical literature, giving performance and service information.
- b) Full details of control and protection systems including logic sequence charts, logic controller programs, trip settings, etc.
- c) Circuit diagrams.
- d) Dimensioned panel layout drawings.
- e) Cable schedules for power and instrumentation cables. This shall include the cable type, start and finish points, route length, duty load, size, voltage drop, number of cores, number of cores used and gland size.
- f) Record (as-built) drawings referenced to the above. As-built drawings shall be provided by the contractor. Cable routes to be surveyed on layout drawings.
- g) Recommended short term and long-term spares list.
- h) A comprehensive schedule of routine maintenance by time period for the system as installed.
- i) Taking over certificates (FAT, SAT and COC etc.)
- j) Training

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Training for the operation and maintenance of the complete Electrical System and equipment shall be included and shall provide for at least one separate training session of each of the site operational, electrical and instrumentation staff groups.

The training shall be supported by the content of the O&M Manual and the Contractor shall compile an attendance register and accreditation of staff so trained.

The Contractor shall produce a training certificate detailing the training that has been provided with a place for all municipal staff representatives to sign that the training was received. The signed training certificate must be included in the O&M manuals.

PSE 2.4 Spares and Tools

Spares and tools shall be provided as called for in the particular equipment specifications. In addition to any spares specifically called for in this Specification, the Tenderer shall recommend any additional spares which he considers the Employer should hold. The prices of these spares must not be included in the tender price.

Prices must be included in the list of recommended spares and these prices shall include delivery to and off loading at the site. It shall be noted that the recommended spares list must be divided into the following categories:

- Commissioning spares
- Operations spares
- Critical spares

The following spares and tools shall be provided as called for in this specification:

- Software and interface cables

PSE 3 INSPECTIONS, TESTS AND COMMISSIONING

SE 3.1 General

The following requirements shall be complied with:

For equipment being manufactured in South Africa, the Engineer and a Municipal representative will attend one factory inspection and the Contractor shall bear all travel costs and disbursements associated with the inspections.

For all the inspections and tests the Contractor shall notify the Engineer in writing at least 2 weeks in advance, when his presence will be required for inspections or witnessing of tests. This time is required for the Contractor to make the required travel arrangements and Engineer to plan

accordingly. In the event that tests fail, the Contractor shall be required to affect all corrections and perform such tests again.

Should these tests require the Engineer to be present again, the Engineer's cost for time, travel and disbursements shall be recovered from the Contractor at rates as set out by the Engineering Council of South Africa.

PSE 3.2 Inspections

- k) All items shall be inspected by means of detailed design drawings and equipment schedules that are submitted to the Engineer for approval. No items shall be procured/ ordered prior to the Engineer's approval of the selected equipment and design drawings. If any equipment does not meet the specifications the Contractor shall change the equipment to comply with the specification at no additional cost to the Municipality.
- l) All cable trenches shall be inspected by the Engineer's representative prior to cables being laid, and after cables have been laid, prior to backfilling.
- m) The Contractor shall submit a quality control plan and procedures document for all main equipment. These documents shall include baseline delivery dates for checking by the Engineer.
- n) Factory Acceptance Tests (FAT) will include physical inspections and all functional testing of equipment. As part of the testing all connections to the PLC, HMI, and all other simulations will be checked (the details of these requirements are included in the electronic specification). The Contractor shall bear all travel costs associated with the factory inspections. This shall include all travel costs (return flights for the Engineer, car rental, accommodation and meals etc., as applicable) The cost for this shall be included in the FAT price in the Bill.
- o) Inspections of all switchboards and panels may be carried out by the Engineer, at his discretion, at the following holding points:
 - switchboard design (drawings and schedules)
 - after steelwork fabrication, before painting;
 - after painting, before installation of equipment inside panel/board;
 - after assembly, before factory testing.

The Contractor shall bear all associated costs for the Engineer and a Municipal representative to attend the FAT at the OEM factory. This shall include all travel costs. The cost for this shall be included in the FAT price in the Bill.

PSE 4

TESTS

Factory tests shall be carried out in accordance with the particular equipment and material specifications in this Specification and routine test certificates shall be provided. The cost of all factory routine and type tests (where existing certification is not available) shall be included in the supply prices for the equipment. No equipment shall be shipped without test certificates.

The tests listed below shall be carried out in the factory (FAT) and on site (SAT) by the Contractor and witnessed by the Engineer and a representative of the Employer. Pricing items have been included in the Schedules of Quantities for tests.

Transformers

- Visual checks after installation
- Control scheme and wiring testing
- Dielectric testing of auxiliary circuits
- Insulation resistance measurement
- One minute power frequency voltage test (at reduced voltage applicable)

LV Switchboards/gear

- visual checks (including paintwork)
- impedance measurements
- insulation resistance measurement
- current and voltage transformer tests
- proving of protection scheme
- high voltage tests
- circuit breaker operation tests
- control scheme test
- load testing
- communication and interface testing

LV Cables

- insulation resistance test (after jointing and termination)
- phase rotation test (after jointing and termination)

Earthing

- earth resistivity measurements
- earth electrode resistance measurements
- bonding conductor continuity tests

PSE 5 FIRE EXTINGUISHERS, FIRST AID KITS, DANGER SIGNS

Statutory danger signs and notices shall be provided in all substations/ electrical equipment rooms as part of this Contract. All danger signs and safety notices shall be in four of the official languages, viz. English, Afrikaans and Sepedi. 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. Each of the substation building/ rooms shall have a name installed above the door on the outside of the building.

The final positions of the signage/ notices shall be confirmed on site by the Engineer.

A 9kg DCP type fire extinguisher and a first aid kit shall be supplied in each of the new substation/ electrical equipment rooms and as indicated on drawing. The first aid kits and fire extinguishers shall be installed onto the wall with a suitable steel bracket. The final positions of the fire extinguisher and first aid kit shall be indicated on site by the Engineer.

PSE 6 MATERIALS, FINISHING AND PAINTING OF MATERIALS

PSE 6.1 Materials

The environment in a sewer pumpstation is corrosive, and the following materials shall therefore be used following materials shall be used as tabulated below.

MCCs/ Distribution boards	:	3CR12
Busbars/ Earth Bars	:	S6 tinned copper
Field control stations supports	:	316L stainless steel
Internal cable supports/ Unistrut	:	3CR12
External cable supports/ Unistrut	:	316L stainless steel
Inlet and outlet louvres	:	3CR12
Fixing, nuts and bolts	:	316L stainless steel

No galvanised mild steel is envisaged for the project and no galvanised mild steel will be accepted unless approved in writing by the Engineer. Where this is approved the mild steel shall be hot-dip galvanized after fabrication, and no cutting or drilling shall be done after galvanising.

The cutting and drilling of gland plates and other steelworks shall be done in the factory. No cutting and drilling shall be on site without the approval of the Engineer.

All busbars and copper control wires in the MCC panel shall be S6 tinned as described in this specification.

Glass fibre switchboards or switchboards manufactured of other composite materials will not be accepted.

PSE 6.2 Finishing and Painting

All material shall be degreased, with any sheared edges, welds or surfaces subjected to any form of heat treatment pickled and passivated. If there is any mill scale on the material it shall be non-metallic blast cleaned to SA2½, prior to degreasing.

All galvanizing shall be hot dip zinc galvanized coating done in accordance with SABS ISO 1461:1999.

The hot dip galvanizers shall be permit holders in terms of the SABS Mark Scheme for SABS ISO 1461:1999.

The main electrical equipment shall be painted as follows:

Motor Control Centre

MCC Assembly frames	:	Light Orange B26
MCC Non-Essential doors	:	Light Orange B26
MCC Essential doors	:	Signal Red A11
PLC Panel doors	:	Cornflower F29
MCC Inside assembly cubicles	:	White
MCC Cubicle back plates	:	White
MCC Assembly plinth	:	Black

PSE 7

FIXING OF MATERIALS

All fasteners shall be 3CR12 or stainless steel. No galvanised, electro-plated, brass or zinc plated fasteners will be allowed.

Fixing to structures and concrete shall be effected by stainless steel bolts and nuts, or stainless steel threaded rod used in conjunction with an approved chemical anchor.

Where there is a possibility of electro-galvanic reaction (e.g., between stainless steel and galvanizing) the Contractor shall make use of suitable insulating washers of rubber, Teflon or similar material. Insulating paint will not be acceptable.

PSE 9

LV MOTOR CONTROL CENTRE (MCC)

PSE 9.1 General

A new 400V MCC will be provided for pumpstation. The requirements for these MCCs are detailed below, on the single line diagrams and the general arrangement drawings.

PSE 9.2 Standard Specifications

The MCC shall comply with SANS 61439-1, 2, SANS 1973-1/3.

PSE 9.3 MCC Construction

The MCCs shall be constructed as per the general arrangement drawings and the construction details below.

- a) The MCCs shall be fabricated from 3CR12 steel sheet metal. The outer panels of the MCC enclosures shall have a minimum thickness of 2.0 mm and the internal separations shall have a minimum thickness of 1.6 mm.

- b) The MCCs shall be flush fronted, i.e., the chassis of the enclosure shall be flush with the panel doors.
- c) All cables will be bottom entry for the MCCs. The MCCs shall be equipped with a robust 3CR12 gland plates (at least 2,0 mm thick), sealing off the MCCs at the bottom. Non-ferrous gland plates will be installed for the terminating of single core cables where applicable.
- d) Switchgear compartments shall be constructed to form Type 4a or 3b as per SANS IEC 60439-1. Compartments in the Switchgear shall be nominally 600mm x 400mm or 400mm x 400mm in size as indicated in the general arrangement drawings however the final sizing and arrangement rests with the Contractor to suit the equipment offered. All switchgear to be of the same supplier, i.e., Schneider, Siemens or similar approved.
- e) The top of the enclosure for all Switchgear shall be divided into a busbar chamber and a wiring channel.
- f) The MCCs shall be front and rear access. MCC compartments shall be equipped with hinged doors (front and rear) with the drive equipment mounted on it, secured with square key driven latches.
- g) The side covers shall be by means of plates and shall be fixed by means of allen key screws.
- h) An interlocking device shall be provided so that the front door of a compartment cannot be opened unless the circuit breaker / isolator are in the off position, and so that the circuit breaker / isolator cannot be switched on unless the door or cover is locked.
- i) The MCCs shall have an ingress protection rating as follows:
 - IP65 with doors closed
 - IP2x with doors open
 - IP3x between compartments
- j) Accessible PVC trunking shall be provided on all routes for conductors between the various components inside an MCC cubicle as well as for bus wiring between panels. Internal wiring shall be kept separated from external wiring and as far as possible the internal serving of PVCPVCSWAPVC cables entering the switchboard/MCC shall be left around the conductors until the cable enters the compartment to which it is to be connected.
- k) All exposed copper shall be tinned with S6 solder using resin-based flux, after all the drilling, bending and cutting has been completed. The finished, tinned copper shall be free of solder lumps and shall be as smooth as the copper under the solder. All internal wiring shall be silicone insulated panel wiring with tinned stranded copper conductors.
- l) The MCC enclosures shall have a dedicated PLC panel as indicated on the general arrangement drawing. The PLC panel shall be equipped/ fitted as detailed in in the electronic detailed specification and drawings.

PSE 9.4 Switchgear and Controlgear

- a) The manufacturer of the MCC shall strictly comply with the latest versions of SANS 1973-1 and SANS 61439.
- b) The motor ratings given on the single line diagram are the Engineer's estimates, which have been used for systems design purposes. Should the ratings of motors offered in the

Tender differ from the Engineer's estimates, then the switchgear and controlgear shall be suitably sized accordingly. No additional funds will be made available for varied motor sizes after the Tender stage and the Tenderer shall be responsible for sizing and pricing the suitable switchgear.

- c) All equipment shall be approved by the Engineer in writing before acceptance for use on the project and shall bear the SABS/SANS mark. A detailed component list for the MCC shall be provided to the Engineer for approval. Where alternatives are offered to the preferred make or manufacture, these shall be equal to the specified items, and shall be approved by the Engineer in writing before acceptance for use on the project. Should the alternative item as offered not be approved, the Contractor shall supply and install the specified item with no additional cost implication.
- d) Moulded Case Circuit Breakers (MCCBs) shall be used for all main/ distribution circuit breaker $\geq 60A$ and $< 800A$.
- e) The MCCBs shall be fitted with key locks (Ronis, Keyguard, Keymaster or equal approved) for locking out individual circuit breakers. Other lockouts may be proposed by the Contractor but shall be subject to the approval of the Engineer.
- f) All motor starter breakers shall be lockable in the "off" position (have a door interlocked handle that is lockable). Motor starter circuit breakers shall be of the magnetic motor curve type.
- g) Standard overcurrent/ earthfault protection shall be provided with each ACB and integral type protection units shall be allowed.
- h) Where multiple valve feeders are housed in a single cubicle the cubicle shall be complete with a main fused disconnect to reduce the fault level on outgoing valve circuits.
- i) Where small motor starters are connected to the main busbar system the circuit breaker shall be of the cascading/ current limiting type to ensure that the fault level is reduce (to at least 10kA) for the connection of small conductors. This detail/ charts shall be provided for the Engineer to check prior to the manufacturing of the MCC.
- j) Selector switches shall be provided on the front door of each drive's compartment for selecting manual / off / automatic and local / remote (where required) operation modes. In the manual mode the control pushbuttons on the MCC (local) and at field control stations (remote) shall be operational. In the automatic mode, the control pushbuttons shall not be operational, and control of the drives shall be transferred to the PLC controlling the drives.
- k) Where standby motor-driven equipment is provided, selector switches shall be provided for duty / standby selection on the front doors of the drive compartments as required implementing the specified control philosophy.
- l) Class II type surge arrestors are required on all incomer panels and distribution boards where shown on the drawings. These surge arrestors shall be protected with fuses, rated to OEM requirements.
- m) All contactors shall be rated for the duty to which they will be subjected. For all motor loads an AC-3 category shall be applicable. uses and fuse holders shall comply with SANS 172 and shall be adequately rated for the circuit currents. All fuses shall be positioned so as to be accessible from the front of the board.
- n) The contactors shall operate from a 230VAC control supply system. Control supply output voltage from the PLC shall be 24VDC. Refer to the Typical Motor Starter Schematics.
- o) Each side of the MCC (either side of the bus section) shall be fitted with a single-phase double wound air-cooled transformer installed in the control & metering cubicle in the MCC. The control supply transformer shall be supplied with 5 taps at $\pm 5\%$, 0% and $\pm 10\%$. It shall be possible to switchover the control supply on any bus section to the supply system of the



Contractor



Witness 1



Witness 2



Employer



Witness 1



Witness 2

adjacent bus section in the case of failure of that particular control supply system (using the selector switches described below). This means that the control supply system on either bus section shall be suitably rated for the total control supply load of the entire MCC board. On each control supply cubicle, a selector switch shall allow selecting to feed the control supply to the control buswires/busbars of that particular bus section from either control supply (left hand or right-hand side).

- p) The supply to the control supply transformer shall be from the distribution busbars through a suitable moulded case circuit-breaker (MCCB) before connecting to the transformer primary winding. The outgoing feed to the respective selector switches shall be protected by suitable a miniature circuit breaker (MCB). The supply wiring to the transformer shall be connected to the MCC busbars by means of suitable high rupturing capacity (HRC) fuses rated for the fault current of the board and which are mounted directly onto the busbars. The rated load current of the fuses shall be at least three times higher than the downstream circuit breaker on the input to the transformer.
- q) The control supply transformer shall be adequately rated to supply continuously all the connected load on the MCC simultaneously and shall be rated equal to the sum of twice all the functional unit control supply loads plus twice the inrush current of the largest contactor operating coil plus 20%. The control transformer shall have a standard VA rating and a turns ratio to provide a nominal 220V supply.
- r) One leg of the transformer secondary supply shall be solidly earthed directly to the protective conductor.

PSE 9.5 Busbars

- a) The busbars in the MCCs shall be rated in accordance with the single-line diagram and sized in accordance with SANS 1973-1/3 for a current density of at least 2A/mm².
- b) All busbars shall be tinned with S6 solder using resin-based flux after all drilling, bending and cutting has been completed. The finishing of the tinned busbar shall be as smooth as the bare busbar and free of solder lumps.
- c) The specified covering of the busbars with heat-shrinkable material shall only apply to distribution busbars (i.e. droppers to functional units).
- d) The purpose of the dielectric barriers are to prevent busbar faults from propagating from one bus section to the next. The supplier shall provide the necessary certification to prove that this is achieved.
- e) All busbars shall be torqued to the correct torque settings and appropriately marked both prior to final factory acceptance testing as well as hot commissioning after installation. Torqueing of busbars shall be witnessed by an independent quality control inspector and signed-off busbar torque test certificates shall be provided as part of the factory testing certification as well as final hot commissioning test report.

PSE 9.6 Intelligent Motor Protection

- a) Intelligent Electrical Devices (IED) shall be used for all non-electronic starters (Direct-on-line, Forward-Reverse and Star-Delta).
- b) All IED shall interface with the PLCs by means on a deterministic fieldbus protocol (Profibus DP, Controlnet) or similar with a minimum network speed of 1.5Mbps. The network shall be fibre optic media from the PLC to the first starter within the MCC and then copper throughout. All IED's shall be on their own network segment and terminated using

active terminators. The following shall be designed, installed and commissioned on the MCC IEDs.

- Fieldbus network cable
 - Repeaters (As required – typically after every 28 devices)
 - Repeater power supplies
 - Active terminators
 - Active terminator power supplies
 - Earthing
- c) All motor protection functions shall be performed by means of the Intelligent Electrical Devices (IED) and the IED shall be designed using a “fail-safe” philosophy. A basic typical schematic has been included in the contract. This typical schematic does not include any detailed protection functions such as no-flow, overheat relays, dry-sump etc. The Contractor shall develop his own detailed schematic along these guidelines. The detailed schematic shall be submitted to the Engineer for checking and approval prior to producing detailed schematics for each starter. After approval of the philosophy a detailed schematic per starter shall be submitted to the Engineer for checking and approval prior to manufacturing. The IED shall as a minimum have the following functions:
- Average line current
 - Phase imbalance – measure and protection
 - Thermal capacity level
 - Frequency
 - Thermal overload
 - Phase loss
 - Under/ Over current
 - Earth Fault
 - Fault history
 - Running Hours
- d) Each IED shall have a removable operator panel from which it will be possible to configure the various IED parameters and to view all measured and monitored parameters.
- e) The motor starter shall have a Manual/ Off/ Auto selector that shall be wired directly to the IED. The E-Stop shall interrupt the normally closed control circuit of the IED and the E-Stop shall disconnect the power supply to the contactor coil.
- f) All external fault conditions shall be wired to the IED which shall drive a single fault output which shall drive a single fault light. The faults shall however be distinguished via the IED and fieldbus on the SCADA system.
- g) The Contractor shall include for the extension I/O modules as required for the various inputs and outputs. Each IED shall have a minimum of 6 digital inputs and 3 digital outputs.
- h) The motor power conductors shall run through the integral CT opening of the IED. Where the current of the motor is more than the rating of the integral CTs the Contractor shall provide secondary CTs to relay the measured current through the IED.
- i) All electronics shall be conformal coated. The conformal coating shall improve the electronics insulation qualities and resistance to condensation, dust and chemical corrosion.

j) Indication lamps shall be wired to the IED through a lamp test card

- Running (Green)
- Stopped (Red)
- Fault (Amber)
- E-Stop (Amber)

k) A reset button shall be wired to the IED for each motor starter.

PSE 9.7 Current transformers

- a) Current transformer ratios shall be as specified.
- b) Current transformers shall be suitable for power a supply system where the main supply transformer LV side neutral is solidly earthed.

PSE 9.8 Wiring- and Cable Terminations

- a) Power cables shall be terminated directly onto circuit breakers, contactors (as applicable) and shall not be connected up via separate terminal strips.
- b) Motor supply power cables shall be wired through the IED to output terminals as per the sample typical schematic.
- c) All wiring inside the MCC shall of the silicone rubber insulated type with high conductivity tinned stranded flexible conductors, with a minimum size of 1.5mm².
- d) The colour of the wiring shall be in accordance with the Municipality standards for circuits other than power circuits. The details of the wire colours shall be provided prior to manufacturing.
- e) Power cables shall be labelled externally to the MCC to indicate the equipment being fed. Incoming supply cables shall also be labelled to indicate the source of supply. A labelling schedule shall be submitted to the Engineer for approval prior to manufacturing the labels. The labels shall be manufactured from engraved aluminium strips.

PSE 9.9 Glands and Gland Plates

- a) All cable glands shall be of the nickel-plated brass type and fitted with waterproof neoprene shrouds.
- b) Gland plates shall be provided for cable entry from below.
- c) Gland plates shall be mounted at 300mm above finished floor level and shall be bolted to robust brackets welded to the framework of the MCC.
- d) Gland plates shall be manufactured from unpainted 3CR12 sheets with a minimum thickness of 2mm.
- e) Gland plates for single core cables shall be manufactured from non-ferrous material (Aluminium).

PSE 9.10 Switchboard Accessories

Control Push Buttons

- a) Motor control compartments shall be equipped with control push buttons:
 - Start
 - Stop
 - Reset
- b) Each motor starter shall have an Auto/ Off/ Manual and a Local/ Remote selector switch. The MCC shall be operated as follows:
 - In the Manual and Local positions, the operator shall control the motor starters by means of the MCC pushbuttons or by the operator by means of the SCADA system.
 - In the Manual and Remote positions, the operator shall control the motor starters by means of the pushbuttons on the field control station or by the operator by means of the HMI system.
 - In the Auto position the motor starters shall be controlled by the PLC and instruments (fully automatic).
- c) Control push buttons shall be of the round, flush, spring-loaded type of 22,5mm diameter.
- d) Pushbuttons shall be coloured as follows:
 - Emergency stop : Red
 - Lamp test : Black
 - Reset : Black
 - Start : Green
 - Stop : Red
 - Open / close : Black on White
 - Up/down/left/right : Black on White
 - Forward / reverse : Black on White
- e) The MCC shall be fitted with one lamp test button on each Control section of the MCC. The single lamp test shall be wired to a timer and a lamp test relay which shall drive the input to a lamp test card on each motor starter to indicate whether all lamps are functional. The lamp test shall stay on for at least 30 seconds.

Indication Lights

- a) Motor control compartments shall be equipped with indication lights as listed below:
 - Running (to indicate that the motor is running)
 - Stopped (To indicate that the motor is stopped and available for running)
 - E-Stop (To indicate the E-Stop is activated)
 - Fault (A single fault light shall be fitted on the motor starter doors. The detail of the fault will be detailed in the SCADA system indication the specific type of fault.)

- b) Indication lights shall have lamps comprising a cluster of four light-emitting diodes in a common housing. A light's lens shall be of the specified colour and shall be at least 20mm diameter. The lights shall be clearly visible through an angle of 180° in a brightly lit room (500 - 600 lux) and the contrast between an energized condition and a de-energized condition shall be clearly visible from all sides as well as from the front.
- c) Indicator lights shall be colour-coded as follows:

Indication	Colour	Example / Comment
Local / Auto / SCADA Mode	White	
Busbar Alive	White	
Capacitor Bank Discharged	Green	Power Factor Equipment
Closed	Red	Valves, penstocks
Differential Pressure – HIGH	Amber	
Differential Pressure – NORMAL	Green	
Earth Fault	Amber	
Emergency Stop	Amber	
Mechanical Seal Failure Warning	Amber	Sub- / Immersible Pumps
Moisture in Coolant	Amber	Sub- / Immersible Pumps
Moisture / Water Ingress	Amber	
Motor Winding Over Temperature	Amber	May be flashing AMBER
Open	Green	Valves
Overload	Amber	
PFC Fault	Amber	Power Factor Equipment
Running	Green	
Starter Alive (Circuit Healthy)	Green	
Stepped Function	Blue	Power Factor Equipment
Stopped & Power Available	Red	
Tripped	Amber	

PSE 9.11 Name Plates and Labels

- a) The requirements of SANS 1973 relating to name plates and labels shall be complied with.

PSE 9.12 Metering and Indication Instruments

- a) Metering and indication instruments shall be provided in accordance with the single-line diagram for the MCC.
- b) The MCC shall be equipped with a door mounted power (kVA) meter on the door of each control/ metering section of the MCC. These meters shall measure instantaneous values and maximum demand values for all kVA, kVAR, kW, currents and voltages of each side of the bus section. No analogue meters shall be required for the main metering. The power meter shall be protected by two sets of fuses: busbar-mounted and instrument fuses. The incomer circuit shall also have a CT per phase. The power meters shall interface directly with the PLC to display all measured values.
- c) The size of ammeters and voltmeters shall be 96mm x 96mm on compartment doors that are 600mm x 600mm or larger in size, and 72mm x 72mm on all smaller compartment doors if spacing becomes a problem.

- d) The IED shall be used to measure running hours. Where this is not possible separate run hours meters shall be installed per motor starter. Run hour meters shall be provided for all motor starter compartments to match the ammeters and voltmeters in size. The run hour meter shall count to 99 999,9 before returning to zero, and it shall not be possible to reset the meter. Relays used for indication purposes shall be general purpose plug-in relays with octal or 11 pin bases. Soldered connections to bases will not be accepted. Each relay shall be tightly sealed with a clear plastic cover. Relay coils shall operate on a 230VAC, 50 Hz supply with 24V DC contacts for output from the PLC.

PSE 9.13 Inspection and Testing

- a) The MCC and associated equipment shall be fully tested at the manufacturer premises and inspected by the Engineer and a Municipal representative before release for installation on site. The equipment will again be fully tested on site as part of the site commissioning. The testing shall only be done in the factory once the PLC and HMI is fully programmed to check the full functionality of the system.
- b) The Contractor shall submit a complete equipment register to the Engineer for checking before the procurement and manufacturing of any equipment.

PSE 9.14 Installation

- a) The MCC shall be installed over a floor opening as shown on the layout drawing.
- b) All trench covers shall be 38mm grey GRP reinforced fibreglass plastic.
- c) The MCC shall be transported in sections and the transport sections shall be a maximum of 1800mm (typically 3 tiers).
- d) The MCC shall only be released for site installation after the Factory Acceptance Testing has been completed to the satisfactory of the Engineer.

PSE 9.15 Measurement and Payment

- a) The MCC installation price shall include for the delivery, rigging and all fixings as required.
- b) The price for the supply of the MCC shall include all soft starters, control circuit breakers and ancillary equipment.
- c) The FAT pricing shall include for flights, accommodation and food for the Engineer and a Client representative.

PSE 10 FIELD CONTROL STATIONS

PSE 10.1 General

All equipment that is driven by an electrical motor shall have field control stations equipped with start/stop and emergency pushbuttons.

PSE 10.2 Equipment Specification

All mounting stands for the field control stations shall be manufactured from 316L stainless steel. The field control stations' control buttons shall be mounted at 1200mm height after installation. These field stations have a red mushroom head mechanical latching, twist-to-release type emergency stop push button, a non-latching green start and red stop pushbutton.

The Contractor shall include all mounting bolts and accessories required for the installation of the field control stations as part of the pricing.

For reversing equipment, a forward and reverse push button shall also be provided on the field control station.

7 Core 1.5mm² cables shall be used for all control stations.

PSE 10.3 Installation

The field control stations shall be installed within 1 m of the corresponding motor in a position such that it is easily accessible. Field control stations shall either be floor-mounted (pedestal) or wall mounted. The proposed positions shall be discussed with and approved by the Engineer before installation commences.

PSE 11 LOW VOLTAGE POWER CABLES

PSE 11.1 General

- a) LV power cables shall be provided as indicated on the single-line diagrams. However, should the ratings of motors offered in the tender differ from the Engineer's estimates, then the motor supply cables shall be sized to suit the motors offered by the tenderer in the tender. The voltage drop from the MCC to the motor terminals shall not exceed 3% of motor rated voltage at motor rated current. Allowances shall also be made for the de-rating of cables in accordance with SANS 10142-1 and SANS 10198.
- b) All multicore LV cables shall be PVC insulated, PVC bedded, steel wire armoured, PVC sheathed, 600/1000V cables manufactured to SANS 1507-3. Single core cables shall be unarmoured. All power cabling to motors up to 120mm² shall be 4 core cables using one of the cores as an earth. Above 120mm² all power cables to motors shall be 3 core with a separate earth cable as shown on the single line diagrams.
- c) The minimum size of a motor supply cable, based on the cross-sectional area of its phase conductors, shall be 2.5 mm². Where a four-core motor supply cable is used, the fourth core can be used as an earthing conductor.
- d) The Contractor shall produce detailed cable schedules and calculations. These cable schedules and calculations shall be submitted to the Engineer for checking and approval. The Contractor shall also produce a cable routing drawing that needs to be submitted to the Engineer for approval.

- e) All cable glands shall be of the nickel-plated brass type and fitted with waterproof neoprene shrouds. The proposed glands datasheet shall be submitted to the Engineer for approval prior to procurement of the glands. It shall also be noted that where glands are installed in wet areas (mostly around the inlet works) the Contractor shall supply IP65 glands. A glanding schedule shall be included as part cable schedule that needs to be approved by the Engineer.

PSE 11.2 Installation

- a) All cable routes indicated on the Engineer's drawings are provisional and the final routes shall be confirmed with the Engineer on site before cables are installed. Cable lengths given in the Bill of Quantities are provisional and subject to re-measurement on site. Unit prices shall allow for wastage, as only the net length will be measured for payment purposes. The Contractor shall produce a final cable schedule that will be checked and approved by the Engineer prior to the ordering of any cables.
- b) The prices include for all backfill materials and cable marking danger tape. A provisional quantity of imported backfill has been measured and will not be used and paid without the written approval of the Engineer.
- c) LV power cables shall be installed on floor-mounted cable ladder in cable trenches inside electrical equipment rooms, and on vertical/horizontal structure-mounted cable ladder/tray, mounted to equipment/walkways/handrails, etc.
- d) Cables shall be strapped and spaced to minimize the de-rating of the cables.
- e) LV single-core cables shall be strapped in trefoil formation with stainless steel straps.
- f) Where cable routes as indicated on drawings clash with other services the Contractor shall request clarification from the Engineer in writing.
- g) Cables shall be clearly marked with metal strap cable markers. The Contractor shall propose a final circuit naming convention and issue this proposal to the Engineer and Municipal staff for approval.
- h) Upon installation the contractor shall provide as-built drawings of cable routes and provide surveyed co-ordinate points at every change in direction and on straight runs every 100 metres. A final installed cable schedule will also be provided in segments (for ease of measurement) in order for the Engineer to verify installed cable lengths.

PSE 11.3 Measurement and Payment

- a) Prices for the installation of cables in the ground shall include for cable marking tape.
- b) Prices for the installation of cables on cable ladder / tray shall include for fixing clamps and cable ties.
- c) Prices for the termination of cables shall include for all material required for the termination.
- d) Cable lengths given in the Schedule of Quantities are provisional and subject to re-measurement on site. Unit prices shall allow for wastage, as only the installed length will be measured for payment purposes. The Engineers will verify installed cables at the end of the Contract.

PSE 12**CABLE SUPPORTS****PSE 12.1 General**

- a) All main supply cables shall be installed on Heavy-duty cable ladders where the cables are not buried in the ground.
- b) Welded wire mesh cable supports shall be used at the motors where smaller cables and field control cables are installed.
- c) All internal cable supports shall be of hot dipped galvanised steel type and external shall be of hot dipped galvanised steel.
- d) Cutting of cable supports shall be kept to a minimum.
- e) The environment is to be considered corrosive (refer to Technical Data Sheet TDS No.1 SITE CONDITIONS) therefore all brackets, straps, bolts, nuts, washers, fasteners, etc. employed for the cable tray system to be manufactured from 316L stainless steel.

PSE 12.2 Installation

- a) Cable support shall be installed to support all cables around the site. The Contractor shall produce a detailed cable support schedule and layout drawings for all buildings that shall be submitted to the Engineer for checking and approval.
- b) All cable supports shall be supported at the ends of runs and on long runs at least every three (3) metres. Sections of supports must be electrically connected across the joints with 10mm² insulated wiring to provide earth continuity.
- c) Cable supports shall be wide enough to accommodate the cables required in terms of this contract plus 15% spare capacity for future additions.
- d) Nylon washers must be employed to prevent galvanic reaction between galvanized steel and 3CR12 (for specialized installation), but careful consideration shall be given to ensure earthing continuity of all metallic items is achieved.

PSE 12.3 Measurement and Payment

- a) The price for all cable supports shall include for all unistruts, fixing clamps, bolts, cable straps and cable ties to complete the installation of the cable supports and cables.
- b) Cable supports given in the Schedule of Quantities are provisional and subject to re-measurement on site. Only the installed items/ length will be measured for payment purposes. It shall be noted that not excess cable supports shall be paid and cable supports must not be ordered prior to all cable routing being finalised. It shall be the responsibility of the Contractor to ensure that superfluous cable supports are not ordered.

PSE 13**CABLE TRENCHES****PSE 13.1 General**

- a) Cable trench requirements will be shown on the site layout drawing. All trenches will be inspected by the Engineer prior to backfilling.
- b) Cable route markers shall be installed every 50 m in straight runs and at every change of direction. These shall be of concrete pyramid type, with engraved aluminium label. All cable routes shall furthermore be surveyed as-built and a coordinate provided at every point where the routes change direction.
- c) The trench bottom shall be cleared of all sharp or protruding objects / stones. Soft material shall be installed into the bottom of the trench before laying of the cables. The soft may be backfill material sifted through a 3mm mesh grid. Sifted backfill shall cover the cables from the trench bottom. PVC danger tape shall be added and then the remaining area shall be backfilled using insitu backfill.
- d) The rate for trenching shall include for all backfilling and danger tape. An allowance has been made for imported soil in the bill of quantities in case this is required for backfilling. This imported soil shall not be used unless approved in writing by the Engineer.
- e) Where cables are drawn into sleeves, they shall be drawn according to the manufacturer's recommendations.
- f) Cable routes shall be so planned that the minimum number of crossovers occurs in a cable trench and where signal or control cables are installed in the same trench a minimum clearance distance of 300 mm (between power and communication cables) shall be adhered to.
- g) For the purpose of this Contract, only three classes of material are considered and all excavated material shall be classified according to the following:

Type (as measured) in this document	General Description	Formal Classification to SABS 1200
Soft excavation	Excavation by pick and shovel in soft soil	Soft Excavation
Intermediate excavation	Possible by use of pneumatic tools and equipment	Intermediate excavation: Boulder excavation Class A Boulder excavation Class B
Hard rock excavation	Removal of material by blasting	Hard Rock excavation

PSE 14**EARTHING****PSE 14.1 General**

An earthing system shall be provided for each of the buildings as per the earthing drawings. The earthing systems shall comprise a foundation earth electrode and earth bars installed as indicated. The MCC and DBs shall be supplied with a dedicated earth bar as detailed in the various sections. The equipment shall be connected to the earthing system as per the earthing diagram.

All earthing conductors shall be continuous lengths without joints between terminations. Any damage to the earthing conductors shall be reported in writing to the Engineer and, subject to his approval, shall be repaired by means of exothermic welding. The resistance across a repair joint shall be measured and submitted to the Engineer for approval.

All electrical and electronic equipment, metallic and mechanical structures shall be bonded together to form a holistic earthing system using earthing continuity conductors.

PSE 14.2 Earth Electrodes

The earth electrodes shall be a foundation earth comprising 95mm² bare copper earth conductors and 2 m long "Copperweld" earth rods buried 1000mm from the building perimeter concrete foundation of the new buildings and 600mm deep, as shown on the earthing drawings. The copper conductors shall be exothermically welded to the exposed head of each rods. The earthing conductors shall be pinned to the bottom of the slot before the slot is filled with clean, compacted building sand.

At each "Copperweld" rod, a 2 m long copper wire tail shall be exothermically welded to the foundation earth conductor. The free end of each tail shall be run to a position outward from the building and arranged for easy retrieval. These positions shall GPS coordinated and clearly marked on the record drawings.

The earth systems shall be connected either to a S6 tinned 50 mm x 10 mm main earth bar or the earth bar in the DBs for smaller installations. The copper bar shall be mounted on moulded epoxy insulators to space the bar 30 mm from the wall. Each insulator shall be provided with two, moulded in, 12 mm brass studs. The stud at the base of each insulator shall be screwed into an internally threaded wall anchor (at least 50 mm long) and the copper bar shall be secured to the remaining stud on each insulator with a brass nut, brass washer and cadmium plated spring washer.

The positions of earth rods shall be GPS coordinated after installation. The earth rods shall be installed in accessible positions and preferably not under hard ground cover (e.g., paving, concrete, tar). No earth rods shall be installed under a building or building foundations. No earth cables shall run underneath buildings unless installed in sleeves.

Earth bars shall be installed as indicated. The earth system specified above shall be connected to this earth bar by means of two separate earth conductors from two separate points on the system.

PSE 14.3 Soil Resistivity and Earth Electrode Resistance Measurement

Before the earth electrodes are installed, the Contractor shall measure the soil resistivity at the Site and submit the results to the Engineer. The Engineer will decide if the specified earth electrode need to be improved and, if necessary, will issue a revised specification.

Once the earth electrodes have been installed, their resistance shall be measured, and the Engineer shall immediately be informed if the resistance exceeds 1 ohm. The Engineer will instruct the

Contractor if further electrode enhancement is required. The earthing resistance at each building will be submitted to the Engineer for review.

PSE 14.4 Earth Continuity Conductors

Earth continuity conductors shall be provided with all electrical and electronic equipment as shown on the single-line diagram and earthing diagram.

Where no separate earth continuity conductor is shown on the single-line diagram, the intention is that a spare core in the power cable shall serve this function.

PSE 14.5 Bonding

All accessible extraneous conductive parts of electrical equipment/electrically driven equipment shall be bonded in accordance with SANS 10142-1. All cable ladders/ trays/ steel structures etc. shall be properly bonded to earth and joints in the cable support system shall be fitted with a bonding conductor across each joint.

PSE 14.6 Lightning Protection

A lightning protection system shall be installed on all buildings. The lightning protection system shall be installed in accordance with SANS 62305 and SANS 10142-1, and its referenced standards. All equipment used shall be SABS approved, and shall be suited for the corrosive environment it will be installed in. Special care shall be taken when the down conductor installation accessories are selected to ensure that they will endure the environment at the Pump Stations (wind and corrosive conditions).

As part of the installation of the aluminium down conductors the Contractor shall make allowance for exothermically welding the conductors to the 2m "Copperweld" rods.

On completion of the installation, the Contractor shall submit the LPS Certificates, one per structure, contained in SANS 10313.

PSE 15 ELECTRICAL BUILDING SERVICES

PSE 15.1 General

This section describes the building services electrical installation associated with the new buildings. The building services works shall comprise the following:

- a) Distribution boards (DBs)
- b) Wireways for lighting, small power and electronic services. Some wireways have been installed as part of the Civil contract but additional wireways would be required.
- c) Wiring for lighting, small power and electronic services.
- d) Switch socket outlets, isolators and associated outlet boxes.
- e) Light fittings, light switches and outlet boxes.

PSE 15.2 Applicable Standards

All equipment installed shall comply with SANS specification. Accessories: Light switches and socket outlets and SANS 10142-1. All equipment shall be SABS approved and the Engineer may request proof where this is not clearly visible.

PSE 15.3 Inspections, Testing and Commissioning

The Contractor shall test and commission the electrical building services and issue a Certificate of Compliance per installation/ DB in accordance with SANS 10142-1 (the Wiring Code). The CoC shall be submitted to the Engineer for checking and approval prior to the final CoC being issued.

PSE 15.4 Distribution Boards

The LV distribution boards shall be manufactured in accordance with SANS 1973-3 or at least SANS 1973-8 and SANS 10142-1 with special reference to 6.6 Distribution Boards. The following distribution boards shall be supplied and installed as part of this contract:

DB-MCC	:	A 230/400V distribution boards for the small power services in the MCC
DB-Chlorine	:	A 230/400V distribution boards for the small power services in the Chlorine building

The LV distribution boards construction details are as follows:

Distribution Board Information											
Name:		Various		Voltage:		230/ 400V					
Construction											
Recessed:		X		Semi-Recessed:		-		Surface:		-	
Free Standing:		-		Wall Mounted:		X		Floor Standing:		-	
Doors:		X		Doors Lockable:		X		No Doors:		-	
Faceplate:		X		Hinged:		X		Removable:		-	
Spare Space:		20 ways				Material:		1.6mm 3CR12			
Colour (SABS 1091)											
Normal Section:		Off White				Standby Section:		NA			
Access											
Front:		X		Rear:		-		Both:		-	
Supply											
Wiring:		-		Cable:		X		Busbar:		-	
Supply Size:		As per SLDs				Earth Conductor		As per SLDs			
Cable Entry: Incoming											
Top:		-		Bottom:		X		Side:		-	
Cable Entry: Outgoing											
Top:		X		Bottom:		X		Side:		-	
Busbars											
Rating:		As per SLDs				Fault Level:		As per SLDs			

- a) The single line drawings are not manufacturing drawings and the details above are generic for all distribution boards. The Contractor shall produce detailed schematics/ manufacturing drawings that must be approved by the Engineer prior to manufacturing.

- b) Channel type label holders shall be fixed to the cover plate and door, in one continuous length, below the cut-outs for the circuit-breakers or other equipment. Continuous length labels with black 8 mm high letters on a white background shall be fitted to the label holders. The labelling for circuit breakers shall comprise consecutive numbers. All labelling shall be glued and screwed by means of stainless steel screws. All labels shall correspond to final record drawings and shall be in English only.
- c) The distribution board shall have a laminated A4 legend card placed inside the outer door. The legend card shall be secured by means of a welded card supports.
- d) Only switchgear from a SABS approved manufacturer will be accepted. Certificates may be requested by the Engineer if the switchgear manufacturer is unknown. If the equipment offered is not acceptable to the Client/ Engineer, the Contractor shall supply and install an approved product without any additional cost implications.
- e) A drilled (minimum 20mm x 5mm x150mm with 8 holes) S6 tinned copper earthing bar shall be provided within the distribution boards, to accommodate all the earthing conductors on separate connections.
- f) A cover plate shall be provided behind the door and shall be secured at the top with at least two square key driven catches, whilst the bottom edge shall be located with two 6 mm diameter tapered dowel pins located in holes drilled in the architrave. Each pin shall be fitted with a 1.2 mm thick spacer washer to space the cover plate from the architrave and limit the damage to the paintwork when removing and refitting the cover. Both the pins and the washers shall be welded to the cover.
- g) The distribution boards, shall be manufactured from 3CR12 stainless steel, shall be suitably bent, stiffened and braced for rigidity. Where joints occur in the sheet steel, the joints shall be welded full length and ground smooth to provide a blemish free surface for painting.
- h) All screws employed in the manufacture of the boards shall be stainless steel and where required shall be entered into an appropriately threaded "RIVNUT".
- i) Doors shall be stiffened, adequately braced, fully gasketed, mounted on pin type hinges, and secured by means of, lever operated tapered tongue catches. The lever shall be provided with an external stop to prevent rotation in excess of 360° and to provide a padlocking facility. (An 8 mm diameter hole in the stop aligned with an 8 mm diameter hole in the lever).
- j) Where indicated on the respective single line diagrams moulded case circuit breakers shall be of fault currents limiting type.
- k) All distribution boards shall be equipped with protective covers that shall prevent access to electrically live parts. All distribution boards shall have protective covers preventing access to parts that remain live after isolation.

PSE 15.5 Wireways

Wireways shall be installed for all new buildings as per the specifications below. It shall be noted that some conduits have been installed as part of the Civil contract while the buildings are constructed. An allowance has been made for some chasing in of conduit and making good and some surface conduit. The specific installations shall be discussed with the Engineer on site prior to installation. (Chasing vs surface)

- a) Conduiting shall be recessed and include draw wires. Surface conduit shall only be installed upon written instruction from the Engineer. It shall be noted that some conduits have been installed as part of the Civil contract while the buildings we constructed. An allowance has been made for some chasing in of conduit and making good and some surface conduit. The

specific installations shall be discussed with the Engineer on site prior to installation. (Chasing vs surface).

- b) Conduiting shall be of the PVC type. Heavy duty galvanised conduit shall only be installed upon written instruction from the Engineer.
- c) Provisional conduit sizes are indicated on the single line diagram. The Contractor shall remain responsible for correctly sizing the conduit, as per SANS 10142-1.
- d) Conduiting shall be provided for lighting, power and electronic services wiring in accordance with the small power drawings and the single-line diagrams. Please note that the electronic services layout drawings will only be provided during construction.
- e) The price for the supply and installation of conduit shall include the conduit, conduit boxes, joints, terminations, draw wires and the chasing and making good for built-in conduit.

PSE 15.6 Wiring

- a) The building lighting and switched socket outlet circuits shall be wired with PVC insulated stranded copper conductors as indicated on the single line diagrams.
- b) All wiring shall be drawn into the wireways/ PVC conduits. No wiring that are not installed in wireways will be accepted.

PSE 15.7 Lighting

- a) Lighting shall be installed as per the lighting layout drawings and single line diagrams. Luminaires shall be of the type listed in the schedule below or approved equivalent, but priced alternatives may be offered. If alternatives are offered, the Contractor shall submit samples of both the preferred and alternative luminaires, together with photometric data, for evaluation by the Engineer.

The schedule of required luminaires is as follows:

Symbol	Description	Preferred type or equal approved
B1	Bulkhead luminaire with 12W LED Lamp (cool white)	Beka
B2	Bulkhead luminaire with 54W LED Lamp (cool white)	BEKA SUPRANOVA/GL LED 48/54W/HELI/PV
F2	1500mm Zone 1 rated luminaire, fitted with 2x58W lamps, electronic control gear, complete with grade 304 stainless steel wall mounting brackets.	Nordland NLE2x58
F2(E)	Same as for F2, but with 0.5 hrs battery backup (maintained).	Nordland NLE2x58/EMG

- a) All luminaires shall have the SABS mark of approval.
- b) Luminaires shall be installed onto 60 mm round outlet boxes as provided for in the schedule of quantities.
- c) All light switches shall be flush-mounted unless otherwise shown. All fixing screws and bolts shall be grade 316 stainless steel.

- d) All light switches shall be rated for 20A, recessed and installed in 50 mm x 100 mm outlet boxes at 1200 mm above the finished floor level. The cover plates shall be off white.
- e) The luminaires shall be surface-mounted to the underside of the ceilings, roof structure or on brick walls.
- f) Luminaire prices shall include for lamps as specified.

PSE 15.8 Switch Socket Outlets and Isolators

The installation of the switch socket outlets shall be in accordance with the power layout drawings:

- a) Standard 16A 3-pin switched socket outlets shall be installed.
- b) Switched socket outlets (SSOs) shall be flush mounted in 100 mm x 100 mm outlet boxes mounted 300 mm above the finished floor level. All socket covers shall be off white.
- c) IP65 switched socket outlets shall be installed in all industrial areas as indicated on the drawings.
- d) Normal switched socket outlets shall be fitted with 30mA earth leakage protection.
- e) Dedicated switched socket outlets shall not have any earth leakage protection.

PSE 15.9 Three Phase Welding Sockets

- a) Three phase welding plugs shall be of the 32A three phase welding plug type. IP65, 5 pin, metal clad type. Samples are to be submitted to the Engineer for approval prior to procurement.

SE 15.10 Fire detection and Access Control

A fire detection system shall be allowed for the MCC section and generator buildings. The fire detection systems shall be in accordance with the specifications below:

- a) The fire detection panel shall be an addressable panel.
- b) A recessed outlet box shall be installed behind the panel, suitably sized, to allow both the communication cabling, power and fire detection cabling to be reticulated from this panel.
- c) Optical smoke detectors shall be installed as per the fire detection layout.
- d) Break glass units installed at the exit doors of the buildings.
- e) Wiring shall be drawn into the conduits measured in the above sections.
- f) All equipment shall be SABS approved. Imported products shall only be accepted if SABS test certificates are supplied for the products.
- g) The Contractor shall allow for all necessary testing equipment to test the fire detection system upon its completion.
- h) The fire detection panel shall come complete with output relays and RS 232 communication port, to allow connection with the PLC.

The Contractor shall supply the RS 232 to USB programming cable under this contract which shall be handed over to the Client upon completion.

PSE 16**AREA AND ROAD LIGHTING****PSE 16.1 General**

- a) The area lighting will be installed, as indicated. These locations are indicative. Final GPS coordinated positions will be determined during construction.
- b) The area lighting shall be achieved by installing 10-meter heavy duty glass reinforced polyester (GRP) poles complete with mounting bracket suitable to fit four flood lights.
- c) After the installation of the area lights, the Contractor shall arrange for surveying of the lighting levels by actual measurement on all access routes as well as where night-time task activities are performed.

The Contractor shall produce a lighting level survey drawing for the Engineer to review. Level shall be surveyed at 0°, 90°, 180° and 270° degrees at increments of 5m from 0m to 50m. At all locations where night-time tasks activities are performed, and which are inadequately lit after installation of the area lighting, additional task lighting shall be provided to achieve the lighting levels as specified in the OHS Act Regulations. Provisional sums have been allowed for this in the tender.

- d) Pole dressings (circuit breakers and wiring) shall be included in the supply price for the area lighting poles.
- e) Area lighting shall be of the type listed in the schedule below or approved equivalent, but priced alternatives may be offered. If alternatives are offered, the Contractor shall submit samples of both the preferred and alternative luminaires, together with photometric data, for evaluation by the Engineer:

Floodlight luminaire, fitted with 221W LED (wide beam), complete with suitable mounting bracket for attachment to high mast pole.	Beka LED Flood Maxi 221W LED 128/HELI/SSS/WB
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PSE 17**BUILDING TRENCH COVERS****PSE 17.1 General**

- a) Building trench covers shall be supplied and installed as part of this Contract. The building trench covers shall be manufactured of 38 mm fibreglass reinforced plastic grating.
- b) The trench covers shall be coloured grey.
- c) Cutting of the trench covers where required shall be carefully planned. Where cutting of the trench covers are not to the satisfaction of the Engineer the covers shall be manufactured again.
- d) An estimated quantity of cable trench covers has been allowed in the schedule of quantities. The Contractor shall measure the final quantity of trench covering required for installation prior to ordering. The Contractor shall note that only the net installed trench covers shall be measured for payment and wastage shall be for the Contractor's account.
- e) The trench covers alignment shall be checked as part of the final taking over, no unstable trench covers will be accepted.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

- f) The rate for the trench covers shall include for all fixings (C-type, M-type, bottoms clips), clamps and other materials required for installation purposed. All clamps and fixings shall be manufactured of 316L stainless steel.

PSE 18 MEASUREMENT AND PAYMENT

PSE 18.1 General

Payment for particular items scheduled shall conform to the payment clauses of the Conditions of Contract as amended by the following:

- d) Unless scheduled separately, the tendered rates or sums shall cover the cost of drawings and instructions as required.
- e) The tendered rates or sums shall cover the costs of anything not specially mentioned but which an experienced contractor can reasonably foresee as being required, (e.g., all ancillaries, including all bolts, fastenings and brackets, safety guards and any work or material or equipment required for the proper execution and installation of such apparatus and equipment, piping, valves, gauges, instruments, either severally or collectively in complete working order), to enable the apparatus and equipment to be installed and/or function safely and correctly as specified. No claims whatsoever for extras will be allowed on the grounds that a necessary piece of equipment or a part thereof is not specifically mentioned in the Schedule of Quantities.
- f) The Contractor will not be entitled to any payment until the three copies of the Progress Statement have been submitted by him to the Engineer. The Statement shall contain an invoice of all items as scheduled in the Schedule of Quantities and reflect the progress made on each item. If a pro forma is enclosed in the Contract Documents the Contractor's Progress Statement shall conform to it. If there is no pro forma in the document the form of the Progress Statement used by the Contract will be subject to the approval of the Engineer.

PSI 18.2 Preliminary and general items

Unit:..... Sum

Where provision is made in the Schedule of Quantities for Preliminary and General items, the sum(s) tendered shall cover the cost of all responsibilities specified in the Specifications. In interim certificates, payment for Preliminary and General Items will be made, unless otherwise provided for, as a percentage of the tendered lump sum(s) pro rata to the value of work certified for payment.

Where no provision is made in the Schedule of Quantities for Preliminary and General Items the rates tendered for the scheduled items shall cover the cost of all responsibilities specified in the Specification together with all responsibilities.

PSE 18.3 Supply**Unit:.....No or Sum**

The tendered rate or sum shall cover the cost for supply of the goods, testing as required, provision of test certificates certifying compliance of the goods with SABS, IEC, ISO or BS standards, corrosion protection, if designated and not scheduled separately, and supply of all special tools and keys.

Payment for supply of the relevant equipment will not be effected until the draft copies the following have been submitted:

- h) Drawings of the equipment detailing all part numbers and materials, and, if required by the Engineer, detailed drawings showing the complete installation.
- i) A complete spare list.
- j) A lubrication and maintenance schedule showing all maintenance and lubrication operations, their recommended frequency and the grades of lubricant required.
- k) A maintenance brochure describing all maintenance, adjustment and replacement procedures.
- l) Operating manual describing the operation of the equipment with performance curves where applicable.
- m) A manual detailing all dismantling and reassembly procedures.
- n) A manual detailing the maintenance procedure for the corrosion protection painting systems.

PSE 18.4 Delivery**Unit:.....No or Sum**

The tendered rate or sum shall cover the cost of delivery of the goods and offloading at the delivery point stated in the Project Specification.

Where a rate or sum has been tendered for delivery of goods which are then stored as provided, the Engineer at his sole discretion may certify an amount for partial or full payment of the relevant item, if in the Engineer's opinion such a payment is justified by reason of the transportation of such goods to their place of storage.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

PSE 18.5 Installation**Unit:.....No or Sum**

The tendered rate or sum shall cover the cost of all necessary site oriented activities such as handling at the Site, storing, sorting, erecting, all painting, testing and commissioning (unless scheduled separately), including all costs of transport of personnel and their erection gear to Site.

PSE 18.6 Testing**Unit:.....No or Sum**

The tendered rate or sum shall cover the cost of testing as specified including all costs of transport to and from Site, and Site accommodation of personnel and their gear.

PSE 12.8 Commissioning (where scheduled separately)**Unit:.....No or Sum**

The tendered rate or sum shall cover the cost of commissioning as below, including all costs of transport to and from the Site, and Site accommodation of personnel and their gear.

Commissioning: The Contractor shall be responsible for commissioning the equipment which shall comprise putting it into operation, calibration, proper adjustment of the equipment, and thoroughly running in the whole of the installation after completion under all sections of the Contract. The Contractor shall also train the Employer's staff regarding the operation and maintenance of the equipment. When all these operations have been carried out and, in the opinion of the Engineer, the installation is operating satisfactorily it will be considered to have been commissioned.

PSE 18.8 Servicing visits**Unit:.....Sum or No of Visits**

The tendered rate or sum shall exclude the cost of providing lubricants but shall cover the cost of servicing visits and operations as specified below. Payment of 95% of the tendered amount will become due monthly on a pro rata basis or after each visit, as the case may be. The remaining 5% will be regarded as Retention Money and paid at the end of the Defects Liability Period.

Servicing: Without limiting in any way the liability of the Contractor for remedying defects, the Contractor shall make regular quarterly visits to the installation during the Defects Liability Period to service and supervise the operation and maintenance of the equipment. During these visits he shall make all adjustments and do everything necessary to ensure the proper running of the equipment.

After each servicing visit to the Site the Contractor shall submit to the Engineer a report on:

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

- e) the condition of the equipment and the servicing work carried out,
- f) any adjustments which may have been made,
- g) any further instruction to the operator, and
- h) the degree to which the operator has become conversant with the equipment.

The last servicing visit shall be carried out during the last week of the Defects Liability Period during which visit the Contractor shall carry out full checks on the equipment to ensure that the alignment, clearances and any other settings are correct and he shall carry out any adjustments necessary.

The Final Certificate will not be issued until the last servicing visit has been carried out to the satisfaction of the Engineer.

PSE 18.9 Tools and spares

Unit:.....**Sum**

The cost of special tools and keys shall be covered by the tendered rate or price for the supply of the relevant equipment. Payment for spares will be made at the price tendered in the Spares Schedule which price shall cover the cost of supply, crating and labelling where applicable, and delivery to the Site of the relevant items.

PSE 18.10 Interim storage

Unit:.....**Month**

When interim storage is to be paid, the minimum period measured will be three months. The tendered rate shall cover the cost of providing storage in the ordered or approved store, protecting and maintaining the goods in storage, handling the goods in and out of the said store, and labelling and packing.

No separate payment for storage will be made where normal delivery is effected, nor where storage is ordered on the following terms:

In the event of the Engineer not being satisfied with the provisions for storage provided by the Contractor on Site, he may order all goods and erection equipment to be delivered to the Employer's stores and stored therein at the Contractor's risk and cost.

Whether goods are stored at the Employer's stores on the order of the Engineer or on the request of the Contractor, the Contractor shall provide all handling and transport to move the goods and erection equipment to the Site of the Works when required.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

PSE 18.11 Insurance for goods stored.**Unit:.....Month**

When insurance for goods stored is to be paid, the minimum period measured will be three months. The tendered rate shall cover the cost of insuring the goods while in storage.

PSE 18.12 Additional visits to Site

Additional visits to Site ordered by the Engineer (other than visits required as a result of malfunctioning of, or defects in the Contractor's materials or workmanship, or as a result of circumstances for which the Contractor is responsible in terms of the Contract) will be scheduled as:

c) Transport.....Unit: No of Visits

The tendered rate for transport shall cover the total cost of transporting personnel and equipment to and from Site.

d) Site operations.....Unit: Day

The tendered rate for site operations shall cover the full daily cost of the wages, equipment, accommodation and local transport.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

C3.4.5 Electronic Project Specification

PSI 1	SCOPE OF WORK
PSI 2	ELECTRICITY SUPPLY
PSI 3	DRAWINGS, MANUALS, TRAINING, SPARES AND TOOLS
PSI 4	INSPECTIONS, TESTS AND COMMISSIONING
PSI 5	MATERIALS, FINISHING AND PAINTING
PSI 6	CONTROL AND INSTRUMENTATION CABLES
PSI 7	PROGRAMMABLE LOGIC CONTROLLER'S (PLC'S)
PSI 8	HUMAN MACHINE INTERFACE
PSI 9	UNINTERRUPTIBLE POWER SUPPLY (UPS)
PSI 10	FIELD INSTRUMENTATION
PSI 11	RADIO TELEMTRY
PSI 12	MEASUREMENT AND PAYMENT

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Contractor

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Witness 1

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Witness 2

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Employer

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Witness 1

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Witness 2

PSI 1**SCOPE OF WORK****PSI 1.1 General**

The Electronic portion of the Works shall comply with all relevant SANS national regulations and laws, with this Electronic Project Specification and the following Standard Specifications:

- Standard Specification for Programmable Logic Controllers
- Standard Specification for HMI
- Standard Specification for Control Philosophy Documents
- Standard Specification for P&ID's

The Scope of Works for the Electronic installation includes the detailed design, supply, delivery, installation, testing, commissioning, upholding during the trial operation period and the defects notification period of the following equipment and materials:

- k) A new, Programmable Logic Controller (PLC) System installed in the LV MCC
- l) A single, Human Machine Interface (HMI) at the LV MCC
- m) A MCC, fully equipped for housing the PLC, UPS, network equipment, telemetry equipment and marshalling termination section.
- n) Field Instrumentation
- o) Field Instrumentation enclosures
- p) Control and instrumentation cabling and cabling support infrastructure i.e., cable racks, trenches and conduits
- q) Network cabling and cabling support infrastructure i.e., cable racks trenches and conduits
- r) An Uninterruptible Power Supply for the PLC, HMI, networking equipment and analytical field instrumentation as specified.
- s)

PSI 2**ELECTRICITY SUPPLY****PSI 2.1 General**

Single-phase, 230V, 50Hz power supply shall be provided from each new LV MCC to the UPS system located within the PLC compartment/tier of the MCC's.

Dedicated circuit breakers shall be provided for all UPS powered control system equipment and sensitive field instrumentation within a 'UPS power supply' section of the PLC compartment.

PSI 3 DRAWINGS, MANUALS, TRAINING, SPARES AND TOOLS**PSI 3.1 General**

The drawings issued to Tenderers as part of the Tender documents shall be regarded as provisional and preliminary for the Tenderer's benefit to generally assess the scope of work.

The drawings are issued separately to this project electronic specification but included in the tender documents.

The Works shall be carried out in accordance with the latest available revision of the drawings approved for construction by the Engineer.

At commencement of the Contract, the Engineer will 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 or revisions for construction purposes as may be necessary for adequate construction, completion and defects correction of the works.

The following lists the Engineer's drawings that form part of this Project Specification:

DRAWING NUMBER	DESCRIPTION
ROM-134-07-078-03-06	P&ID

In addition to the requirements of Standard Electronic Specifications, the following drawings, documentation and manuals pertaining to the works shall be provided by the successful Contractor at various stages of the Contract:

PSI 3.2 Prior to Construction

- a) Detailed P&ID Drawings
- b) Detailed control philosophy
- c) Detailed PLC network architecture drawings
- d) Detailed PLC Functional Design Specification (FDS)
- e) HMI Functional Design Specification (FDS)
- f) Telemetry Functional Design Specification (FDS)
- g) Typical HMI mimics and trends templates
- h) Interface Control Document (detailing the communication interfaces to intelligent electrical equipment e.g. MCC's, power meters)
- i) PLC I/O Listing
- j) PLC Panel General Arrangement drawing
- k) PLC Panel schematic/wiring and instrumentation loop drawings
- l) PLC Panel UPS/electrical power distribution drawings
- m) PLC earthing distribution drawings
- n) Field instrumentation datasheets
- o) Cable schedule
- p) Cable rack drawings

PSI 3.3 Post Construction (As-Built):

- a) Detailed P&ID Drawings
- b) Detailed PLC network architecture drawings
- c) Detailed PLC Functional Design Specification (FDS)
- d) HMI Functional Design Specification (FDS)
- e) Telemetry Functional Design Specification (FDS)
- f) Interface Control Document (detailing the communication interfaces to intelligent electrical equipment e.g. MCC's, power meters)
- g) PLC Panel General Arrangement drawing

- h) PLC I/O Listing
- i) PLC Panel schematic/wiring and instrumentation loop drawings
- j) PLC Panel UPS/electrical power distribution drawings
- k) PLC Panel earthing distribution drawings
- l) Instrumentation loop drawings
- m) Cable schedule
- n) Cable rack drawings
- o) Software Disaster Recovery Plan
- p) Equipment technical and
- q) Operating and Maintenance manuals

Comprehensive sets of Operations and Maintenance manuals compliant with the requirements of the Standard Specifications shall be supplied for the electronic works. The manuals shall be supplied in electronic and also hardcopy bound formats and shall include the following content:

- a) Contents/index pages
- b) P&ID's
- c) Instrument list
- d) PLC FDS
- e) HMI FDS
- f) Telemetry FDS
- g) Standard Operating procedures describing automatic and manual operations
- h) Routine inspection procedures
- i) Fault conditions identification
- j) Faultfinding procedures
- k) Equipment manuals
- l) Instrument calibration datasheets
- m) Listing of parts and spares lists
- n) Cable and connector datasheets
- o) Listing of all software licenses

PSI 3.4 Software to be supplied as part of the O&M Manual submission:

- a) HMI symbol library/software configuration
- b) PLC block library/software configuration
- c) PLC FDS in electronic format
- d) HMI FDS in electronic format
- e) HMI and PLC application software backup
- f) HMI and PLC programming software

In addition to the requirements of the Standard Electronic Specifications, the following accredited classroom type training shall be provided:

- Plant operator training
- Fieldbus training
- Maintenance fault-finding and rectification training
- Routine maintenance training

PSI 3.5 Design Data Pack

The Contractor shall produce and submit an Electronic Design Data Pack for approval by the Engineer within 3 weeks after award of the Contract and before procurement of any equipment and cables.

Activity durations and milestones for the Engineer's review and approval of the electronic design data pack shall be programmed into the overall construction schedule.

The Electronic Design Data Pack shall include all the requirements stated above and detailed equipment technical datasheets, fieldbus cable technical datasheets, detailed network drawings, cable schedules, termination schedules and calculations and site location drawings for all electronic equipment pertaining to the Works.

Please note that the items in the Bill of Quantities are an estimate only and that the final ordering of materials shall only be done after the electronic design data pack has been approved by the Engineer.

The Contractor shall submit manufacturing drawings for all manufactured equipment e.g., PLC+HMI panel, Remote I/O Panels, instrumentation enclosures etc. to the Engineer for approval prior to construction.

All documents and drawing must be approved by the Engineer prior to ordering of any equipment and cables.

PSI 3.6 Drawings

The following electronic drawings shall be read in conjunction with this Project Electronic Specification.

DRAWING NUMBER	DESCRIPTION
ROM-134-07-078-03-06	P&ID

Where there is discrepancy between the Tendered Specification and Bill of Quantities, this Tendered Specification shall take precedence.

Where an item is omitted from the Bill of Quantities, yet required by this Project Electronic specification, the Tenderer shall include the omitted item in his offer.

PSI 3.7 Drawings, Operation and Maintenance Manuals and Test Certificates

Four (4) complete sets of bound O&M manuals containing the following information shall be supplied by the Contractor on completion of the works and before trial operation and final commissioning commences:

- An index indicating the contents of the manual
- Recommended maintenance schedules (routine and preventative)

- Commissioning procedures
- Instrumentation operating and technical manuals
- Network equipment operating and technical manuals
- PLC operating and technical manuals
- Control system fault-finding manual tailored for this project
- PLC Functional Design Specification (FDS)
- Interface Control Document for IED's, and power meter
- HMI FDS
- Test certificates, CoC's for the electrical installations
- Electronic record drawings ("As-built" of the installation indicating equipment positions. Conduits, sleeves, circuit wiring details, instrumentation loop drawings and fieldbus network drawings

PSI 3.8 Training

The following on-site, classroom type training shall be provided for TEN Municipal technical staff by the Contractor:

- Fieldbus training (diagnostics and maintenance), including manuals
- PLC maintenance training, including fault-finding manuals
- Operator training, including operational manuals
- Integrated system fault-finding and repairs training

The training shall be provided by way of formal training sessions by the Contractor/OEM suppliers who shall certify that the training has been completed satisfactorily.

PSI 3.9 Spares and Tools

The following tools shall be provided by the Contractor:

- Fieldbus network cable terminating tools
- Fieldbus configuration software tool
- Fieldbus diagnostic software tool

All spares and tools shall be provided according to requirements of this specification. In addition, all commissioning spares and tools shall be provided by the Contractor.

In addition to any spares specifically called for in this Specification, the Tenderer shall recommend any additional spares which he considers the Municipality should hold. The prices of these spares shall be indicated in the tender document but must not be included in the tender price.

PSI 4 INSPECTIONS, TESTS AND COMMISSIONING

PSI 4.1 General

In addition to the requirements of Standard Specifications, the following shall be complied with:

For equipment, the Engineer and a Municipal representative will attend one factory inspection / test and the Contractor shall bear all travel costs and disbursements associated with the inspections.

For all the inspections and tests the Contractor shall notify the Engineer in writing at least 2 weeks in advance, when his presence will be required for inspections or witnessing of tests.

This time is required for the Contractor to make the required travel arrangements and for the Engineer to plan accordingly. In the event that tests fail, the Contractor will be required to affect all corrections and perform such tests again.

In the event that tests fail, the Contractor will be required to make good all such defects as per the applicable Contract clauses and perform such tests again.

A Quality Control Plan and Quality Manual shall be produced by the Contractor which details all quality inspections, tests and processes which will be performed. The Quality Control Plan and Manual shall be reviewed and approved by the Engineer prior to any inspections and tests being conducted.

Any defects during factory and site testing and inspection shall be recorded as per the Quality Control Plan and made good in terms of the relevant Contract clause.

Should these tests require the Engineer to be present again, the Engineer's cost for time and travel shall be recovered from the Contractor at rates set out by ECSA.

PSI 4.2 Inspections

The works shall be inspected by the Engineer and a Municipal representative at the following stages/hold points:

- Electronic design data-pack review
- Thin slice testing of PLC control objects
- Thin slice testing of HMI mimic objects
- FAT – PLC panel construction
- FAT – HMI software configuration
- FAT – RIO panel construction
- FAT - PLC software configuration
- FAT – IED, power meter and communications to the PLC
- SAT – PLC, HMI panels, cabling and instrumentation installation
- Practical and final completion

The Contractor shall make provision for the factory simulation of all software configurations and arrangements for the Engineer and a member of Municipality to inspect the software before final release to site.

The inspections listed above shall be incorporated into Quality Manual and QC Plan for the project. Inspections and tests shall also be programmed as hold-points and milestones into the Contractor's schedule for the project.

PSI 4.3 Tests

Factory tests shall be carried out in verification of the particular equipment and material specifications contained in this Project Specification and the Standard Specifications and routine test certificates shall be provided by the Contractor.

The cost of all routine and type approval tests shall be included in the supply prices for the equipment.

The tests listed below shall be carried out by the Contractor and witnessed by the Engineer and a Municipal representative:

PLC

- Thin slice testing of control blocks;
- FAT testing of control blocks and network connections;
- FAT of the completely constructed PLC panels and software configuration;
- SAT of the final PLC installation

HMI

- FAT testing of all mimics, trends and alarms;
- FAT of the completely constructed PLC/HMI panel and software configuration;
- SAT of the final HMI installation

Field Instrumentation

- Calibration of all field instrumentation;
- Installation checks in relation to OEM requirements;
- SAT of all instrumentation;
- Insulation resistance test for all LV cables (after termination)

UPS

- Load test (as per SANS 62040-3:2012) during the FAT phase and
- Switchover testing;
- Power Quality test during the FAT phase;
- Verification of battery time during the FAT phase;
- SAT of the installed UPS system

Earthing

- Earthing and bonding continuity tests post final installation

Fieldbus

- Fieldbus network cabling tests including all data cable (cores swapped), open circuits, short circuits, incorrect terminations, missing terminations, cable loop resistance, segment length,

segment voltage, loose contacts, EMC interference, ground and earthing connections and error messages resolution.

- Regulatory authority certifications for all masters, slaves and repeater stations shall be submitted.

Fibre Optic Cables

- End to end continuity
- Link loss and
- OTDR tests

Any defects identified during the factory and site testing shall be recorded by the Contractor as per the Quality Manual procedures and QC Plan and made good in terms of the relevant Contract clauses.

Should these tests require the Engineer to be present again, the Engineer's cost for time and travel shall be recovered from the Contractor at rates as set out by ECSA.

The development and testing of MCC starter schematics relative to control systems shall be included in the price of the MCC.

PSI 5 MATERIALS, FINISHING AND PAINTING

PSI 5.1 General

Materials provided shall be fit for purpose for the local site conditions.

The materials of construction shall be 3CR12 materials and corrosion protected.

Sound dampening must be supplied if noise levels within equipment and control rooms are above 85dBa.

All fasteners shall be 316L stainless steel materials.

All PLC, HMI and instrument enclosures shall be of 3CR12 materials and corrosion protected as described in the Standard Specification.

All electronic components shall be conformal coated including IT related equipment such as industrial Ethernet switches, firewalls etc.

ALL electronic cards and components shall be conformal coated. The conformal coating shall improve the electronics insulation qualities and resistance to condensation, dust and chemical corrosion.

All panel wiring shall be tinned silicon insulated.

PSI 5.2 Fixing of Materials

The installation point of all cables, instrumentation and panels shall be done using the final civil and mechanical coordinated design drawings in order to prevent equipment clashes.

Materials shall be fixed in accordance with Standard Specification. All fasteners shall be hot-dip galvanized or stainless steel. No electro-plated or zinc plated fasteners will be allowed.

Fixing to structures and concrete shall be effected by stainless steel nuts and bolts or stainless steel threaded rod used in conjunction with an approved chemical anchor.

Where there is a possibility of electro-galvanic reaction (e.g. between stainless steel and galvanizing) the Contractor shall make use of suitable insulating washers of rubber, Teflon or similar material.

PSI 5.3 Finishing and Painting

Finishing and painting shall be in accordance with Standard Specification. All 3CR12 material shall be degreased, with any sheared edges, welds or surfaces subjected to any form of heat treatment pickled and passivated. If there is any mill scale on the material, the 3CR12 shall be non-metallic blast cleaned to Sa2½, prior to degreasing.

Control and Instrumentation / panels / junction boxes shall be painted as follows:

A primer coat of Strontium Chromate Epoxy Primer or approved alternative shall be applied to a minimum dry film thickness (DFT) of 30 µm. A final coat of Epoxy / Polyester powder coating shall be applied by electrostatic spray and baked in accordance with the manufacturer's specification. This final coat shall be in the colour as specified, with a minimum DFT of 50 µm, but not more than 100 µm.

The suppliers or manufacturers shall furnish paint thickness test certificates for all materials that are epoxy powder coated.

All galvanizing shall be hot dip zinc galvanized coating done and tested in accordance with SABS ISO 1461:1999.

The hot dip galvanizers shall be permit holders in terms of the SABS Mark Scheme for SABS ISO 1461:1999.

PSI 6 CONTROL AND INSTRUMENTATION CABLES

PSI 6.1 General

The Contractor shall develop the final cable layout and cable routing drawings with associated cable schedules for approval by the Engineer.

The final designs shall be co-ordinated, by the Contractor who shall take into consideration all civil works, mechanical and electrical equipment.

No cables shall be procured until the final cable schedule has been approved by the Engineer.

PSI 6.2 Control Cables

Multicore control cables shall be provided as required for discrete control circuitry associated with all controlled equipment which are NOT connected to fieldbus systems.

Control cables shall be 600 / 1000V rated multicore with minimum 1mm² copper conductors, PVC insulated cables with galvanised Steel Wire Armouring and PVC serving and terminated using IP65 glands.

Where cables are installed in conduit or trunking within buildings and panels, unarmoured cable may be used.

PSI 6.3 Instrumentation Cables

Field instrumentation NOT connected to fieldbus networks shall be connected via multipair instrumentation cables provided as required for all current loop instrumentation signals linked to the PLC and RIO equipment.

Where the instrumentation is supplied with integral cables, instrument junction boxes shall be provided in order to connect them to multipair cables back to the PLC RIO Panels.

Instrumentation cables shall be 300V rated twisted pair, with minimum 1mm² copper conductors, individually and overall screened, PVC-insulated with galvanised Steel Wire Armouring, PVC serving and terminated using IP65 glands.

Where cables are installed in conduit or trunking, unarmoured cable may be used.

Field instrumentation connected to fieldbus networks shall be connected via fit for purpose data cables approved for that particular type of fieldbus.

PSI 6.4 Instrument Power Cables

Instrument power cables shall be 600 / 1000V rated 3 core 2.5mm² copper conductors, PVC insulated cables with SWA armouring. Where cables are installed in conduit or trunking unarmoured cable may be used.

PSI 6.5 Data Network Cables

Industrial Ethernet cables for data networks within enclosures and conduits shall comply with the following specification:

Attribute:	Specification:
Compliance	TIA 568
Cable type	Solid bare copper conductors, twisted pairs
No. of pairs	2
Outer insulation	Aluminium foil
Drain wire	TC- tinned copper

Out jacket	PVC, oil resistant
Connector	IP 20, RJ45, straight, industrial connector

All buried cables installed within trenches and outdoor environments shall be SWA.

PSI 6.6 Fieldbus Cables

Approved industrial Fieldbus cables for use within enclosures and conduits shall be provided for the PLC to IED, PLC to Remote I/O, PLC to Standby Generator and PLC to Power Meter as follows:

Attribute:	Specification:
Compliance	IEC 61158
Cable type	Continuous armour multi-conductor
No. of pairs	One
Core size	>0.3255mm ² cross section area – bare copper
Outer shield	Aluminium foil
Outer jacket	PVC
Armour	Continuously corrugated, aluminium

All buried cables installed within trenches and outdoor environments shall be SWA.

PSI 6.7 Installation

Control and instrument cables shall be installed on floor and/or wall-mounted heavy duty HDG (Hot Dip Galvanized) cable ladder in cable trenches inside electrical equipment rooms, and on vertical/horizontal structure-mounted HDG cable ladder to equipment mounted external to buildings.

All cables shall be strapped with UV resistant PVC cable ties.

All cable routes indicated on the Engineer's drawings are provisional and the final locations and routes shall be determined by the Contractor and confirmed with the Engineer on site before cables are installed.

Equipment integral cables shall be connected to their signal or data cables via an IP68 instrument junction box fitted with terminals and complete with adequately sized cable compression gland.

Individual instrument cables and integral cables shall be installed on HDG angle iron from the instrument to a major cable raceway.

Cable glands for SWA cables shall comply with the following:

- Comply with SANS 1212 for mechanical cable glands
- Fully adjustable to accommodate the required armour wire
- Brass and nickel plated construction
- Loose cone and loose cone bush components
- Incorporate a weatherproof shroud
- Be supplied complete with brass or nickel-plated steel locknuts
- IP 65 with inner seals

Cable glands for unarmoured cables shall comply with the following:

- a) Comply with SANS 1213 for mechanical cable glands
- b) Brass and nickel plated construction
- c) Be supplied complete with brass or nickel-plated steel locknuts
- d) IP 65 with inner seals

Where instrumentation is hardwired to the PLC or Remote IO Panel, IP65 rated instrumentation junction boxes shall be provided for connecting integral control and instrumentation cables of equipment / instrumentation to the I/O. The junction boxes shall comply with the following:

- a) Slotted mounting lugs for installation
- b) Manufactured out of non-corrosive, toughened plastic
- c) Raised dome lid for easy access (Transparent)
- d) Encapsulated internal earth (continuity between entries)
- e) 4 x threaded entries and supplied with 2 blanking plugs
- f) Suitable to accommodate armoured or unarmoured cables
- g) IP65 rated glands with waterproof shrouds
- h) Terminal rail with terminal headers and end stops

The integral cables shall be connecting to conventional cables via terminal strips in the junction boxes.

All loop drawings shall be prepared by the Contractor as per typical drawing issued.

PSI 6.8 Measurement and Payment

Prices for cable trench excavations and the laying of cables shall be determined in accordance with the Standard Specifications and the following:

Prices for the installation of cables in the ground shall include for cable marking tape.

Prices for the installation of cables on cable ladder / tray shall include for all fixing clamps and cable ties.

Prices for the termination of copper cables shall include for all material required for the termination such as terminals, lugs, labels, droppers, heat shrink, terminals, barriers etc.

Prices for the termination of fibre optic cables shall include for all material required for the termination such as OTDR testing, patch panels, fly leads, splices, optical connectors, link testing splices etc.

Prices for the termination of Ethernet cables shall include for all material required for the termination such patch panels, connectors, link testing etc.

Prices for the supply and installation of enclosures shall include for all material required to produce a complete panel such as mounting stands, brackets, terminals, end plates, end stops, back plates, power supplies, IP rating testing etc.

Prices for the fieldbus network and all related components with MCC's shall be included in the price of the MCC. This shall include the production of test-sets and all testing.

Cable lengths given in the Schedule of Quantities are provisional and subject to re-measurement on site. Unit prices shall allow for wastage, as only the actual installed length will be measured for payment purposes.

PSI 7 PROGRAMMABLE LOGIC CONTROLLER'S (PLC'S)

PSI 7.1 General

The PLC shall comply with the Standard Specifications and the qualifying statements below:

A PLC at the MCC shall be provided for the monitoring and control of the works. The PLC shall be powered from the UPS system via dedicated circuit breakers provided for in the PLC compartment, UPS distribution section.

The PLC shall be hardwired to all field instrumentation, with communication links to the MCC power meter, SS, IED's and standby generator controller.

The PLC shall monitor and control all field instrumentation, electrical equipment, and pumps as applicable.

Control, status and alarm signals from all equipment shall be processed by each PLC and displayed on the associated HMI.

The Contractor shall provide equipment compliant with the requirements of the relevant Standard Specifications. Any deviation to specifications shall be recorded under 'proposed amendments' and submitted with the tender offer.

PSI 7.2 Inputs and Outputs

PLC Remote I/O stations/racks containing digital I/O modules with 0-24VDC, 4-20mA (HART), and interposing relays to the 230V AC control circuit shall be provided for the monitoring and control of non-intelligent devices.

PLC Network Communication adaptors shall be provided monitoring and control of intelligent electrical devices. The locations for these are as follows:

- a) MCC IED's (Intelligent Electrical Devices) – Segment 1
- b) MCC SS's (Soft Starters) – Segment 1
- c) MCC Power meter – Segment 1
- d) Standby generator controller – Segment 2

Sufficient spare inputs and outputs shall be allowed for interfacing to additional control systems as called for in the standard specifications.

Remote I/O modules shall conform to the following:

Description	Type	Specification
Digital Input Cards	0-24VDC	16 Channel, fused in banks of 4 (per equipment) Diagnostics: Bus communication External Fault Individual input status
Digital Output Cards	0-24VDC (interposing relays)	16 Channel, fused in banks of 4 (per equipment) Diagnostics: Bus communication External Fault Blown fuse indication
Analog Input Cards	4-20mA (isolated)	16 Channel, individually fused Diagnostics: Bus communication Broken wire detection Connection: Using shielded cables Shields to be connect to shield bar
Analog Output Cards	0-20mA (isolated)	8 Channel, individually fused Diagnostics: Bus communication Broken wire detection Connection: Using shielded cables Shields to be connect to shield bar

Remote I/O systems shall be suitable for the harsh environment and shall incorporate all I/O modules, communication modules and power supply modules.

PSI 7.3 Data Communication

The PLC's shall be able to communicate with the HMI, standby generator, power quality meter, and IED's, via industrial fieldbus networks e.g. Profibus DP, ControlNet etc.

Communications between the PLC CPU and its I/O modules (if not on the same backplane) shall be via a network or I/O bus arrangement that is physically separated from the PLC CPU to HMI or telemetry communications.

Optical Network Modules (ONM's) shall comply with the following specification:

Attribute:	Specification:
Power	24VDC (UPS)
Output voltage for bus termination	5VDC
Signalling contact	Yes – opens in the event of an error
Signal transmission rate	1.5 Mbps minimum
Status signals	Optical level (meter) Electrical channel (red/yellow)
Optical channel	Glass fibre (G50/125)

Fieldbus Repeater Modules (REP's) shall comply with the following specification:

Attribute:	Specification:
Power	24VDC (UPS)
Output voltage for bus termination	5VDC
Signalling contact	Yes – opens in the event of an error
Signal transmission rate	1.5 Mbps minimum
Status signals	Optical level (meter) Electrical channel (red/yellow)
Connection system	Screw terminal blocks

Process Network Interface Modules (PN-I's) shall comply with the following specification:

Attribute:	Specification:
Power	24VDC, bus powered instrumentation
Protection	Overvoltage and polarity reversal
Signalling contact	Yes – opens in the event of an error
Signal transmission rate	Not < 31.25 kbps
Connection system	Screw terminal block
Data transmission	Digital, bit synchronous
Cable	Approved shielded, twisted 2 wire

All fieldbus segments shall be fitted with diagnostic-type repeaters which shall conform to the following specifications:

Attribute:	Specification:
Power	24VDC (UPS)
Functions	Fault location and the fault cause of line faults, such as a wire break or missing terminations Repeater function Stored diagnostic information Visualisation of bus topology
EMC compatibility	Tested with 8kV in accordance with IEC 61000-4-2
	Tested with 2kV burst pulse in accordance with IEC 61000-4-4
IP Rating	IP 20, installed within panel
Bus protocol	To suit network architecture
Transfer rate	1.5 to 12Mbps
Fault distance resolution	0.5m
Fault distance accuracy	±1m

PSI 7.4 PLC Programming

The PLC shall be programmed using the IEC 61131 standard and function blocks as described in the standard specification shall be designed and used throughout.

SFC (Sequential Function Charts) shall be used for the programming of all start-up, shut-down and plant operating sequences.

A written Functional Design Specification (FDS) for the PLC and HMI shall be produced, for approval by the Engineer and the Employer before programming commences.

The FDS shall address all design aspects of the control system as listed in the Functional Design Standard Specification.

The PLC code shall be written to satisfy the control philosophy of the works as described in the mechanical specifications.

Modes of Operation

Equipment shall be operated in “Manual” or “Automatic” mode or in a “Local” or “Remote” mode. The modes are as follows;

Automatic Mode:

In the Automatic mode, the control of the equipment shall be via the PLC.

Manual Mode:

In the Manual mode the equipment shall be started and stopped via the HMI by the Operator.

Local/ Remote Modes of Operation

In addition to the above, a “Local” / “Remote” selector switch on the MCC panel shall allow the determination of the source of control i.e. Local at the device or Remote from the HMI.

All MCC starters shall be equipped with Remote, Local and OFF selector switches for mode selection.

All relevant electrical modes e.g. Local, Remote and OFF shall be wired as digital inputs to the PLC.

Interfacing to IED's (General):

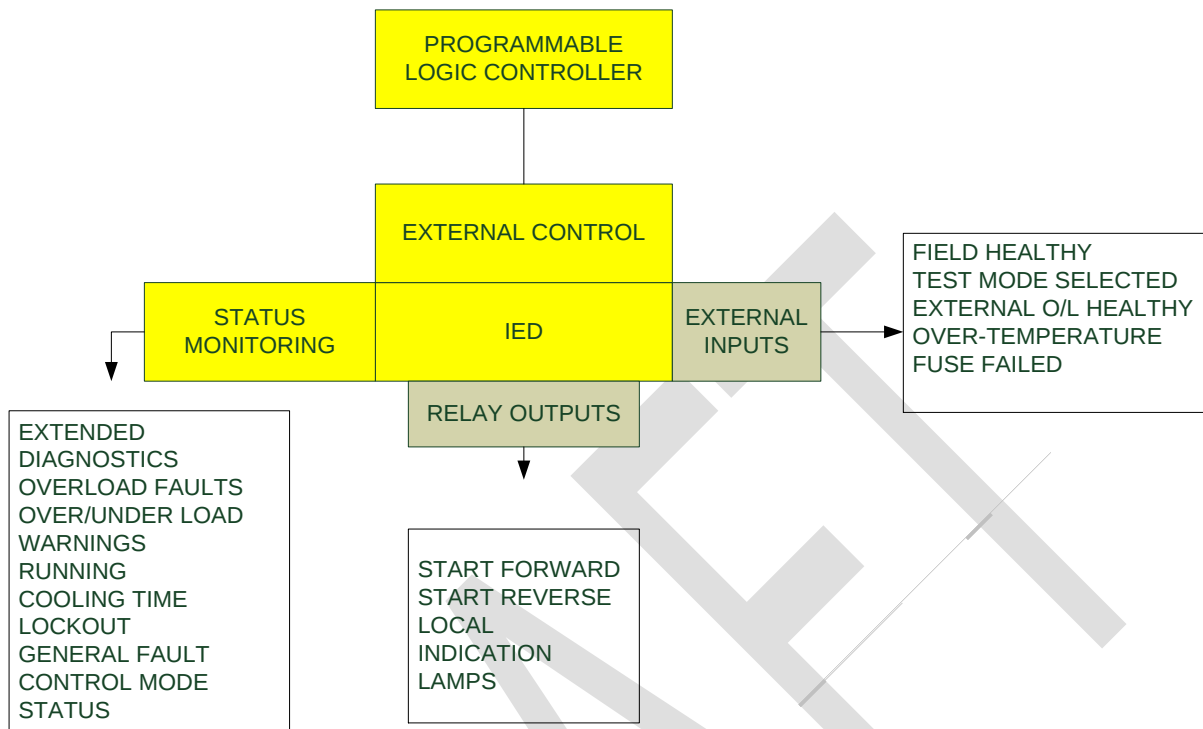
All interfaces to IED's shall be via deterministic fieldbus protocols such as Profibus DP, Controlnet or similar with a minimum network speed of 1.5Mbps. The network shall be fibre optic media from the PLC to the first starter within the MCC and then copper throughout. All IED's shall be on their own network segment and terminated using UPS powered, active terminators.

All safety interlocks shall be hardwired and where necessary be additionally software interlocked on the PLC. All IED's shall be designed using a 'fail-safe' philosophy. The following equipment shall be designed, installed and commissioning on all MCC's containing IED's:

- Fieldbus network cable
- Repeaters (typically after every 28 devices)
- Diagnostic repeater (one per MCC)
- Repeater power supplies
- Active terminators
- Active terminator power supplied
- Earthing and screening systems

Interfacing to IED's (Specific requirements):

The flow of control functions are indicated in the figure below per IED.



A two position (Operational/Test) switch will be mounted behind each starter cubicle door to enable a functional checking of the IED in DOL applications, as well as testing of communications, e-stops, contactors, lights, etc., without the risk of the field devices being energized. This test will be done either from the software programming device or HMI depending on certain conditions.

Field start/stop stations will generally be wired to the PLC, however the preference is for these signals to be directly wired to the IED.

The control interface word shall be standardised per IED type as per the Profibus type IED example below:

Byte "0"	DP Bit 0.7	PLC Failure Bit
	DP Bit 0.6	Reset 1
	DP Bit 0.5	Input to Truth Table 9 to control Changeover Switches S1 & S2 (Change to "0" when in Maintenance Mode, and when test is selected or when commissioning bridge is engaged to Enable Alternative Control Devices)
	DP Bit 0.4	Not used
	DP Bit 0.3	Not used
	DP Bit 0.2	Start Reverse Direction DP On 2 & DPV1 ON2
	DP Bit 0.1	Stop (Configured as a Start Inhibit) DP OFF & DPV1 OFF
	DP Bit 0.0	Start Forward Direction DP On 1 & DPV1 ON1
Byte 1	DP Bit 1.7	To be defined

DP Bit 1.6	To be defined
DP Bit 1.5	To be defined
DP Bit 1.4	To be defined
DP Bit 1.3	To be defined
DP Bit 1.2	To be defined
DP Bit 1.1	To be defined
DP Bit 1.0	To be defined

Control via other controlling devices are prohibited by the control system by sending Profibus DP bit 0.5 = "1" and Profibus DP 0.7 = "1".

Diagnostics shall be provided by acyclic data read from the IED.

Each type of IED shall be built as a test-set and vigorously tested with the PLC before mass production of the MCC commences. The sequence of build shall be as follows:

- Define IED functions
- Produce FDS
- Produce test-set per IED
- Test with PLC
- Thin slice testing
- FAT
- Mass production of MCC cubicles

PSI 7.5 PLC Software Blocks

The PLC code shall be modular (function blocks) as described in the Standard Specification and SFC's for sequences. No ladder logic shall be permitted.

All software shall be extensively commented on with specific comments alongside each logical step. The comments shall be displayed on the Programming Computer when required by service personnel during fault finding procedures.

All logical items shall be clearly labelled and inputs and outputs clearly marked with the relevant Tag numbers in order to minimise downtime and fault finding.

PLC configuration shall only take place once the FDS has been approved by the Engineer.

PSI 7.6 PLC Installation

Pump Station PLC's:

All PLC hardwired I/O types required shall be wired to terminal blocks in the marshalling section of the PLC Remote I/O panels from where multicores or individually screened overall screened twisted pair copper conductors shall be run to each equipment as required. The cabling between the terminal blocks and I/O shall be OEM supplied ribbon cables.

PLC Compartment (of MCC):

Equipment in the PLC compartment shall be installed as indicated on the proposed panel layout drawing issued.

The PLC compartment shall be large enough to accommodate the required equipment plus 20% spare space for expansion and I/O.

The PLC compartment shall be used to house the PLC CPU, I/O blocks, relay controls, remote racks and UPS power distribution as required.

The compartment door shall have a glass window so that one can see status of the modules and other LED lamps on it.

PSI 7.7 Inspection and Testing

The following shall be complied with:

The PLC and its programming as well as the links to the HMI, IED's, standby generator, Power Meters and Remote I/O panels shall be simulated and tested off-site prior to installation on site. The MCC shall not be released to site until full simulation testing has been performed off-site to the satisfaction of the Engineer.

A detailed Factory Acceptance Test report shall be produced by the Contractor prior to software installation on site and this shall clearly show the test results of all controlled equipment, measured values and closed loop controllers programmed in the PLC.

The Engineer will review the full test report and may choose to witness the random re-testing of specific controlled equipment, measured values or closed loop controllers, during the Factory Acceptance Testing.

A report detailing the powder coating process applicable to all panels and the Contractor's test procedure shall be submitted to the Engineer prior to powder coating taking place.

This shall reference the relevant SANS standards.

PSI 8 HUMAN MACHINE INTERFACE**PSI 8.1 General**

Advanced, industrial type, colour graphical, touch screen Human Machine Interface's (HMI's) shall be provided per MCC.

The HMI's shall allow for equipment monitoring and parameter changes to the PLC's which shall be password protected and logged (in the event log).

The HMI's and associated software shall be from the same supplier as the PLC. A unified configuration software tool is required.

The HMI's shall be configured to be operated in two languages i.e. English.

PSI 8.2 Detailed HMI Specification

The HMI unit shall comply with the following minimum specifications:

Attribute:	Specification
Type	19" SXGA, Industrial Panel PC
Backlight	CFL (50000hrs at 25deg C and 24hr operation)
Resolution (Pixels)	TFT Display – 1280 x 1024
Touch Panel/Screen	1280 x 1024 resolution
Memory	4G RAM, 500G Hard Disk
Control Bus network	Deterministic fieldbus e.g. Profibus DP
Programming Communication Link	RS232C/RS 422/485 COM1, RS485 COM2
Interface Port	SUB-DP, RJ45 respectively
Data Transfer	CF Card, USB Memory Stick

The HMI's shall be configured with detailed, high quality graphical displays (mimics) showing all pertinent equipment contained within the works, its status (running, tripped or stopped) and instantaneous instrument readings. The HMI's shall show detailed information concerning the status of all network communication links, indicating location of faults precisely, derived from control system hardware components.

The HMI's are intended to be used for operation of equipment from the MCC room in all modes of operation as well as to provide a diagnostic tool for the control system and connected intelligent network devices.

The HM's shall be configured with high quality graphic displays (mimics) using static and dynamic symbols from libraries such as Symbol Factory™ showing all pertinent equipment, its status (running, tripped or stopped) and instantaneous instrument readings.

A navigation screen shall be provided per HMI from where the operator can navigate from the overview to detailed screens.

Status shall be indicated by different state colours such as white for ready, green for running, amber for tripped and red for e-stop or other fault states.

Trending pages shall be provided showing all measured value readings over time. The trend page shall show live and historical data (which shall be logged to the HMI memory in a first in first out rolling log file). Trends shall be configured to show the full range of data in memory.

Alarm pages shall be provided showing all outgoing and incoming alarms. Alarms shall also be stored in a first in first out file stored in the HMI memory. It shall be possible to scroll backward and forward in the alarm list.

Event pages shall be provided showing all system and operating events. Events shall also be stored in a first in first out file stored in the HMI memory. It shall be possible to scroll backward and forward in the event list.

PSI 8.3 HMI Software Features

The minimum features to be provided in the HMI software is contained in the ensuing paragraphs:

d) Modes of Operation

The operating and control strategy in the HMI system shall, as a minimum, reflect the operating and control strategy programmed in the PLC and where appropriate, provide additional status and diagnostic information.

The most essential modes of operation shall be Automatic, Manual, Local or Remote mode or as per specific statements in the Project Specification.

Automatic Mode:

The PLC shall start or stop the Motor, Valve, Actuator or Controller automatically, based on a general group or sequence start command from the Operator, or based on a process demand signal (e.g. Sump Level). The group or sequence shall be programmed in the PLC and shall always follow the actual process flow.

Manual Mode:

The HMI shall send a start or stop command to the Motor, Valve, Actuator or Controller in the PLC based on an individual start command by the Operator. The start or stop shall be regulated by process flow interlocks in the PLC.

Local Mode:

The HMI system shall not send a start or stop command to the Motor, Valve, Actuator or Controller in the PLC as it is controlled by Push Buttons on the MCC or Field Control Box. (See PLC Modes of operation) In this mode, all process flow interlocks are ignored but safety interlocks still apply.

Remote Mode:

In this mode a device is controlled automatically by the PLC OR via the HMI by the Operator switching a device into in manual mode.

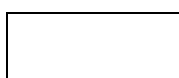
Switching from Auto to Manual shall not stop already running equipment, however switching any equipment from any state to Local shall stop that equipment and all related equipment via process interlocks. Switching to Local shall be provided by the MCC via a physical selector switch.

e) Equipment Status Display

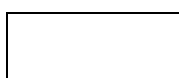
All moving, running or generally switchable equipment, controlled by the PLC, shall be represented by a dynamic graphic symbol in the HMI system.

The Graphic symbols shall reflect the equipment status via the following system colours as well as descriptive text:

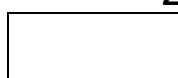
Text	Colour
------	--------



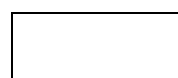
Contractor



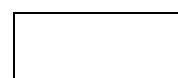
Witness 1



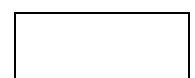
Witness 2



Employer



Witness 1



Witness 2

Healthy (Auto/Man)	White
Healthy (Field)	Flashing White
Tripped	Flashing Amber
Tripped Ack.	Amber
Running (Auto/Man)	Green
Unknown (Comms Failure)	Grey

Graphic symbols for equipment shall be selected from a suitable high quality symbol library e.g. Symbolfactory™ provided as part of the HMI software.

Graphic symbols colours shall be consistent through the MCC panel and HMI designs. For this purpose, and to avoid re-engineering costs, the Contractor shall clarify the final mimic colours required with the Engineer and Employer prior to hardware production.

f) Process Flow Mimics

Mimics shall be configured to represent process flow as accurately as possible using standard symbol libraries.

Mimics shall be displayed in the maximum screen resolution of the HMI.

No more than 30 dynamic elements shall be allowed on any one screen and the dynamic update time per element shall be 2 seconds or better.

Mimic load time, from selection on menu or overview mimic to completely loaded and dynamized, shall not exceed 3 seconds.

All the mimics shall conform to the Standard screen layout as defined in the FDS document and label font sizes shall be standardized throughout. No font smaller than 10pica shall be used.

There shall be extensive consultation with the Engineer and Employer during the thin slice testing phase of the HMI symbols and mimic development in order to ensure a high-quality graphical presentation.

g) Equipment Display Faceplates

All Operating equipment such as Motors, Valves, Actuators, measured values and Controllers shall be represented by standard display faceplates. Faceplates may be customized for specialized equipment only as agreed to by the Engineer.

Faceplates shall clearly identify the operated equipment by its TAG number and clearly display equipment status, start/ stop and reset commands in a common colour and common font.

Operating system colours shall be used throughout so that changes to the OS's colour and font size scheme do not detrimentally affect the visual appearance and operational representation of the controlled equipment.

h) Historical and Real-Time Trending

It shall be possible to configure any measured value or individual status signal for real-time or historical trending.

Real-time trending shall be configurable from as little as every 1 second through to every hour. At least 8 trends per screen shall be allowed where each trend line shall have a different colour. Real-time trend data shall be maintained in memory and or relational database.

Measured values shall be normalized in a range of 0 to 10 000 when sent or received from the PLC and shall be individually scalable in any required engineering unit range for trending purposes.

Historical trends (Data Logging) shall be written to and read from on board memory or external memory card. The memory card size shall be calculated based on the trend requirements determined during the detailed design stage.

i) Alarms and Events

A comprehensive Alarm and Event system shall be provided by the HMI system. Alarms and Events shall be viewable from a separate screen and the last 5 alarms or events shall be visible at the bottom of every mimic as shown in the mimic typical layout.

State changes from any Motor, Valve, Actuator, Measured Value, Controller or individual status bit shall be configurable for alarming and / or event logging.

The alarm screen shall provide colour-coded “in-coming” (new), “acknowledged” and “out-going” (cleared) alarms similar to the colours described in the modes of operation or as per qualifying statements in the Standard Specifications. New alarms shall be latched until acknowledged. Acknowledge alarms shall be cleared only once the field condition has been rectified.

Alarm and event lists shall be fully sortable, searchable and provide filtering functionality. Sorting shall be typically by the Alarm or Events date and time stamp, filtering shall be typically by plant section and or Tag number.

It shall be possible to configure alarms for automatic printing to either hardcopy or software (PDF) file format. Non-sensible alarms shall be suppressed in the event of communications or power failures where it will be known that large numbers of controlled equipment may raise unnecessary alarms.

Measured value alarms shall be time and date stamped at source.

PSI 8.4 HMI Mimics to be Provided

The minimum mimics to be provided are listed in the schedules and shall reflect all the items in the P&ID's and resemble the actual equipment as accurately as possible.

PSI 8.5 HMI Measured Values Trends and Historical Data

The HMI package shall provide historical data compression and measured value logging based on rate of change or value deviation.

It shall be possible to view and analyse historical data from the HMI trending functions for at least two days.

All measured values and control loops shall be trended based on real time or historical data.

Data logging shall be provided on the HMI and measured values logged on an hourly basis and shall be stored over a period of 5 days on an external memory card. Measured Values to be trended and recorded (logged) are as follows:

- Flow
- Pressure
- Level

SI 8.6 HMI Operator Access Security

The HMI system shall provide access security to prevent unauthorised access to the system. Securing the system through usernames and passwords will prevent accidental reconfiguring provide a traceable log of all HMI activity.

At least three levels of security shall be provided as described below. The HMI security groups should be used or created as follows or as per qualifying statements in the Project Specification.

Process Controllers:

The process controllers must logon to be able to perform their functions as follows:

- a) View and move from mimic to mimic.
- b) View all trends and events.
- c) Stop, start and reset all equipment.
- d) Change value settings.
- e) Acknowledge alarms.

Managers:

In addition to the permissions of process controllers, the managers must be able to perform the following functions:

- a) Reconfigure the TRENDS pages.

Administrators:

Will have access to all HMI design time/ configuration menu items and functionality.

A mimic shall be available with buttons for easy access to the following:

- a) Operating System Task Manager.
- b) Operating System Explorer.
- c) Operating System User Manager.

- d) HMI Software Setup.
- e) HMI Communications Protocol Monitor.

PSI 8.7 Installation, Inspection and Testing

The HMI shall be installed in the PLC compartment of the MCC at such a height that it can be easily accessed by the Operator.

The HMI will be inspected and shall be simulation tested in the factory together with the PLC. Tenderers shall allow for at least three iterations of inspections and testing of the configuration before the PLC / HMI is released to site.

Simulation testing shall include communications with the power meters, PLC's, IED's and standby generator, switching of all states, testing of all alarms, setting of all parameters and correct layouts, colours and functionality of all mimics.

The Contractor shall also prove the logging and successful data export of all measured values, historical trends and related log files during the FAT stage.

PSI 8.8 Minimum Inspections and Tests

The minimum inspection of the HMI shall include the following:

- a) Correct choice of HMI and all components.
- b) Correct and neat assembly of all components.
- c) Correct configuration.
- d) Review of all HMI software configuration.

The minimum testing of the HMI shall include the following:

- a) Correct operation of all Mimics and Dynamic Elements.
- b) Correct operation of all Modes of Operation.
- c) Correct detection and annunciation of simulated Faults/ Alarms.
- d) Correct scaling, trending and logging of measured values.
- e) Correct data communication to all connected equipment.
- f) HMI command and load time response measurements.
- g) Data communications response time measurement.

The method of testing shall be by using the actual HMI connected to a PLC that will ultimately be delivered to site, set up in a simulated environment. Simulation of the process to be controlled shall be as simple and as cost effective as possible. The HMI and its software shall not be released to site until full off-site simulation has been performed off-site.

PSI 9 UNINTERRUPTIBLE POWER SUPPLY (UPS)

PSI 9.1 General

An Uninterruptable Power Supply shall be provided in each MCC tier to provide backup power to all electronic systems as well as analytical instrumentation on site.

The UPS's shall be installed within the PLC tier and shall provide power to the PLC components, network equipment, HMI, and to analytical field instrumentation. Power shall be provided to the UPS from the LV MCC board.

The complete UPS systems shall be tested in the factory and on site. The Contractor shall ensure that, following a power failure, the PLC and HMI components shutdown and restart automatically without losing any information or requiring operator intervention should the UPS standby period expire for any reason.

PSI 9.2 Detailed Specification

The PLC UPS's shall comply with SANS 62040-3 as varied by this Project Specification for high availability, high stability under varying supply and loads. The following minimum specifications shall be met:

Attribute:	Specification:
Type of configuration	UPS with bypass and isolation transformer
Bypass to	Primary power
Standby power generator	Yes
Nominal input voltage	230V $\pm$ 15%
No. of phases	Single
Nominal input frequency	50 Hz $\pm$ 5%
Harmonics compatibility levels	Normal service conditions in SANS 62040-3
Load type	PLC, HMI, and analytical field instrumentation
Rated output power	To suit load plus 30% (minimum 1 kVA)
No of output phases	Single
Output voltage	230V ac $\pm$ 0.5%
Nominal output frequency	50 Hz
Rated stored energy time	Standard in 10-15 minutes range
Relay required	Relay interface to PLC (mains failure, inverter failure, battery
	LCD status display / alarm panel
Preferred equipment	Schneider or similar
Battery life	Minimum 10 years
Battery type	Sealed, maintenance free, lead acid contained in UPS
Corrosion protection	As required for site conditions
System fault level	As per single line diagram
UPS type	Rack mounted for standalone installation (in PLC Panel)

UPS alarms and warning messages shall be relayed via relays to the PLC and for display on the HMI.

PSI 1.1. Installation and Site Testing

Adequate provision shall be made for ventilation of the UPS system when installed in the MCC panels.

The UPS system shall be tested off site AND on site and the Contractor shall ensure that the associated PLC and HMI shutdown and restart automatically without losing any information or requiring operator intervention should the UPS standby period expire. This test shall form part of the FAT testing and accordingly, documented by the Contractor.

PSI 10 FIELD INSTRUMENTATION

PSI 10.1 General

Field instrumentation shall be provided in accordance with the Field Instrumentation List, mechanical specification and the proposed P&ID drawing.

The sizing specifications of all process instrumentation shall be calculated by the Contractor who shall take into consideration the mechanical equipment offered. It must be understood that this tender is based on typical sizing information as the Engineer does not have the final specifications of mechanical equipment which will only be known post tender award.

Field instrumentation shall be connected via distributed, Remote I/O panels to the PLC to provide the required monitoring and control described in the control philosophy.

Adequate I/O capacity shall also be supplied where offered mechanical equipment instrumentation requirements differ from tender requirements.

For this purpose, the Tenderer is free to re-calculate the required I/O capacity as required.

PSI 10.2 Instrumentation Junction Boxes

Junction boxes shall be provided for connecting instrumentation to Remote I/O panels.

Junction boxes shall also be provided for instrumentation with separate transmitters, irrespective of their IP rating.

The integral cables shall be connected to via screw terminal strips in the junction boxes.

Junction boxes shall be manufactured from non-corroding material and shall have an environmental protection rating of IP65.

PSI 10.3 Installation

Field instrumentation shall be installed in accordance with the typical instrumentation detail drawings provided. The Contractor shall use these drawings as a basis for his tender and further engineer the installation details to suit the instrumentation supplied. The final installation details shall be provided by the Contractor in the form of instrumentation 'hook-up' type drawings.

Where sensors are installed in buildings or in close proximity to the PLC, the associated transmitters shall be installed in IP 65 rated, wall mounted enclosures within the particular building.

Where the instrumentation is mounted in the field, the transmitters shall be housed in a field instrument enclosure of 3CR12 stainless steel material, IP65 rated; and include a lockable door with glass window in it.

All instrumentation shall be installed in easily accessible locations and where they include local displays, be clearly visible and readable from the usual point of access.

PSI 10.4 Level Meters

Level meters shall be provided as per the issued Instrument List.

Ultrasonic level measurement shall be by means of sensors and separate transmitters with the sensors powered via the transmitters. The sensors shall be mounted on suitably-sized brackets of glass-fibre reinforced construction, stainless steel or similar non-corroding material directly over the medium being monitored.

The sensor shall have a stainless steel diaphragm and shall be equipped with an integral cable long enough to reach the associated instrumentation cable junction box with the complete unit being IP68 rated.

The transmitters shall be installed in an IP65 enclosure, manufactured from 1,6mm 3CR12 sheet metal, installed at each location.

The transmitters shall be installed so that their digital displays are visible through the window in the door of the enclosures.

The transmitters shall conform to the following:

Power supply	: 230V ac
Output	: Isolated 4-20 mA
	: Relay (discrete outputs)
Calibration	: Independent adjustments for zero and span
Accuracy	: 1% of span or better
Repeatability	: 0.2% of span
Resolution	: 0.1% of span or 2mm, whichever is greater
Dead band	: < 0.2% of span
Ambient temperature effect	: < 0.5% of maximum span per 10°C change

PSI 10.5 Electromagnetic Flow Meters

Flow meters shall be provided as per the issued Instrument List.

Flow meters shall conform to the following specifications:

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

The electro-magnetic flow meters shall be flange-connected for process connection sizes and pressures specified on the P&I Diagram. Cutting in and preparation of the pipework shall form part of the mechanical portion of the Works.

The primary element casing shall be of aluminium, mild steel or cast iron appropriately coated, painted and treated for corrosion protection. The tube material shall be at least of 316 stainless constructions with a polyurethane lining. The electrode shall be constructed of 316 stainless steel. The sensor shall have an environmental protection rating of IP68 and shall be equipped with integral cables long enough to reach the transmitter.

The transmitter shall have microprocessor-based electronics with local flow indication with measuring, reference and empty pipe detection capabilities. The transmitter shall conform to the following:

Power supply	: 230V ac
Output	: Isolated 4-20 mA
	: Pulse for totalising
	: Status (error) output
Accuracy	: 0.5% of span
Repeatability	: 0.2% of span
Ambient temperature effect	: < 0.5% of maximum span per 10°C change

The transmitters for the flow meters shall be installed remotely IP65 enclosure, manufactured from 1,6mm 3CR12 sheet metal, installed at each location.

PSI 10.6 Pressure Measurement

A Pressure transmitter shall be provided for the motive water supply. The pressure transmitter shall adhere to the following minimum specifications.

Element Type	Ceramic cell
Wetted parts	316 Stainless Steel
Process Connection	½" BSP, to suit mechanical standards with
Electronics Housing Protection	IP65
Mounting	Pipestand or direct process connection as
Output	4-20 mA, HART
Supply	Loop powered
Calibration Adjustments	Independent Zero and span
Accuracy	0.5% span or better
Repeatability	0.1% of span

PSI 10.7 Float Level Switches

Float Level Switches shall be provided as per the issued Instrument List.

Float switches shall be of the complete sealed IP65, mercury switch type and shall be supplied complete with integral cables long enough to reach the associated instrumentation cable junction boxes, including a stainless-steel anchoring arrangement.

Float switches installed within hazardous areas shall be intrinsically safe and installed according to the relevant legislation.

PSI 11

RADIO TELEMETRY

The pumpstation is to be connected to the Municipal Office via GSM type radio telemetry.

The radio telemetry shall be supplied in the form of GSM modems with serial interfaces to each PLC.

The telemetry system will also be used to transmit SMS notifications to selected mobile users. Minimum SMS notifications for each site shall be as follows:

MCC:

- Mains power failure
- Generator failure
- Generator low fuel
- Sump level high high
- General MCC Failure

The modems shall comply with the following specifications:

Mounting type:	DIN rail mounting within panel
Supply voltage range:	10 V DC ... 30 V DC
Typical current consumption:	< 350 mA (24 V DC)
Interfaces:	RS-232
Connection method:	D-SUB-9 plug
Interface description:	GSM / GPRS
Data rate:	<= 85.6 kbps
SIM interface 1:	1.8 volt, 3 volt
Electrical isolation:	VCC // RS-232 // GSM
Test voltage data interface/power supply:	1.5 kV (50 Hz, 1 min.)
Degree of protection:	IP20
Ambient temperature (operation):	-25 °C ... 60 °C
Altitude:	5000 m
Antenna cable:	Minimum, 10m, 50ohm impedance, surge protected

The cost for SIM cards and data transmission during trial operations and the defects liability period shall be included in the rate of the telemetry system components. The Employer will be responsible for data transmission costs post defects liability.

PSI 12**MEASUREMENT AND PAYMENT****PSI 12.1 General**

Payment for particular items scheduled shall conform to the payment clauses of the Conditions of Contract as amended by the following:

- g) Unless scheduled separately, the tendered rates or sums shall cover the cost of drawings and instructions as required.
- h) The tendered rates or sums shall cover the costs of anything not specially mentioned but which an experienced contractor can reasonably foresee as being required, (e.g., all ancillaries, including all bolts, fastenings and brackets, safety guards and any work or material or equipment required for the proper execution and installation of such apparatus and equipment, piping, valves, gauges, instruments, either severally or collectively in complete working order), to enable the apparatus and equipment to be installed and/or function safely and correctly as specified. No claims whatsoever for extras will be allowed on the grounds that a necessary piece of equipment or a part thereof is not specifically mentioned in the Schedule of Quantities.
- i) The Contractor will not be entitled to any payment until the three copies of the Progress Statement have been submitted by him to the Engineer. The Statement shall contain an invoice of all items as scheduled in the Schedule of Quantities and reflect the progress made on each item. If a pro forma is enclosed in the Contract Documents the Contractor's Progress Statement shall conform to it. If there is no pro forma in the document the form of the Progress Statement used by the Contract will be subject to the approval of the Engineer.

PSI 12.2 Preliminary and general items

Unit:..... Sum

Where provision is made in the Schedule of Quantities for Preliminary and General items, the sum(s) tendered shall cover the cost of all responsibilities specified in the Specifications. In interim certificates, payment for Preliminary and General Items will be made, unless otherwise provided for, as a percentage of the tendered lump sum(s) pro rata to the value of work certified for payment.

Where no provision is made in the Schedule of Quantities for Preliminary and General Items the rates tendered for the scheduled items shall cover the cost of all responsibilities specified in the Specification together with all responsibilities.

PSI 12.3 Supply

Unit:.....No or Sum

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

The tendered rate or sum shall cover the cost for supply of the goods, testing as required, provision of test certificates certifying compliance of the goods with SABS, IEC, ISO or BS standards, corrosion protection, if designated and not scheduled separately, and supply of all special tools and keys.

Payment for supply of the relevant equipment will not be effected until the draft copies the following have been submitted:

- o) Drawings of the equipment detailing all part numbers and materials, and, if required by the Engineer, detailed drawings showing the complete installation.
- p) A complete spare list.
- q) A lubrication and maintenance schedule showing all maintenance and lubrication operations, their recommended frequency and the grades of lubricant required.
- r) A maintenance brochure describing all maintenance, adjustment and replacement procedures.
- s) Operating manual describing the operation of the equipment with performance curves where applicable.
- t) A manual detailing all dismantling and reassembly procedures.
- u) A manual detailing the maintenance procedure for the corrosion protection painting systems.

PSI 12.4 Delivery

Unit:.....No or Sum

The tendered rate or sum shall cover the cost of delivery of the goods and offloading at the delivery point stated in the Project Specification.

Where a rate or sum has been tendered for delivery of goods which are then stored as provided, the Engineer at his sole discretion may certify an amount for partial or full payment of the relevant item, if in the Engineer's opinion such a payment is justified by reason of the transportation of such goods to their place of storage.

PSI 12.5 Installation

Unit:.....No or Sum

The tendered rate or sum shall cover the cost of all necessary site oriented activities such as handling at the Site, storing, sorting, erecting, all painting, testing and commissioning (unless scheduled separately), including all costs of transport of personnel and their erection gear to Site.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

PSI 12.6 Testing**Unit:.....No or Sum**

The tendered rate or sum shall cover the cost of testing as specified including all costs of transport to and from Site, and Site accommodation of personnel and their gear.

PSI 12.7 Commissioning (where scheduled separately)**Unit:.....No or Sum**

The tendered rate or sum shall cover the cost of commissioning as below, including all costs of transport to and from the Site, and Site accommodation of personnel and their gear.

Commissioning: The Contractor shall be responsible for commissioning the equipment which shall comprise putting it into operation, calibration, proper adjustment of the equipment, and thoroughly running in the whole of the installation after completion under all sections of the Contract. The Contractor shall also train the Employer's staff regarding the operation and maintenance of the equipment. When all these operations have been carried out and, in the opinion of the Engineer, the installation is operating satisfactorily it will be considered to have been commissioned.

PSI 12.8 Servicing visits**Unit:.....Sum or No of Visits**

The tendered rate or sum shall exclude the cost of providing lubricants but shall cover the cost of servicing visits and operations as specified below. Payment of 95% of the tendered amount will become due monthly on a pro rata basis or after each visit, as the case may be. The remaining 5% will be regarded as Retention Money and paid at the end of the Defects Liability Period.

Servicing: Without limiting in any way the liability of the Contractor for remedying defects, the Contractor shall make regular quarterly visits to the installation during the Defects Liability Period to service and supervise the operation and maintenance of the equipment. During these visits he shall make all adjustments and do everything necessary to ensure the proper running of the equipment.

After each servicing visit to the Site the Contractor shall submit to the Engineer a report on:

- i) the condition of the equipment and the servicing work carried out,
- j) any adjustments which may have been made,
- k) any further instruction to the operator, and
- l) the degree to which the operator has become conversant with the equipment.

The last servicing visit shall be carried out during the last week of the Defects Liability Period during which visit the Contractor shall carry out full checks on the equipment to ensure that the alignment, clearances and any other settings are correct and he shall carry out any adjustments necessary.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

The Final Certificate will not be issued until the last servicing visit has been carried out to the satisfaction of the Engineer.

PSI 12.9 Tools and spares

Unit:.....Sum

The cost of special tools and keys shall be covered by the tendered rate or price for the supply of the relevant equipment. Payment for spares will be made at the price tendered in the Spares Schedule which price shall cover the cost of supply, crating and labelling where applicable, and delivery to the Site of the relevant items.

PSI 12.10 Interim storage

Unit:.....Month

When interim storage is to be paid, the minimum period measured will be three months. The tendered rate shall cover the cost of providing storage in the ordered or approved store, protecting and maintaining the goods in storage, handling the goods in and out of the said store, and labelling and packing.

No separate payment for storage will be made where normal delivery is effected, nor where storage is ordered on the following terms:

In the event of the Engineer not being satisfied with the provisions for storage provided by the Contractor on Site, he may order all goods and erection equipment to be delivered to the Employer's stores and stored therein at the Contractor's risk and cost.

Whether goods are stored at the Employer's stores on the order of the Engineer or on the request of the Contractor, the Contractor shall provide all handling and transport to move the goods and erection equipment to the Site of the Works when required.

PSI 12.11 Insurance for goods stored.

Unit:.....Month

When insurance for goods stored is to be paid, the minimum period measured will be three months. The tendered rate shall cover the cost of insuring the goods while in storage.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

PSI 12.12 Additional visits to Site

Additional visits to Site ordered by the Engineer (other than visits required as a result of malfunctioning of, or defects in the Contractor's materials or workmanship, or as a result of circumstances for which the Contractor is responsible in terms of the Contract) will be scheduled as:

- e) **Transport.....Unit: No of Visits**

The tendered rate for transport shall cover the total cost of transporting personnel and equipment to and from Site.

- f) **Site operations.....Unit: Day**

The tendered rate for site operations shall cover the full daily cost of the wages, equipment, accommodation and local transport.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

C3.4.6 Structural Project Specification

Waterstop dura.joint external C.

Externally placed waterstop for construction and contraction joints in walls and floors to water retaining and water excluding structures. The waterstop will be **dura.joint external C**, an externally placed extruded plasticized PVC compound applied in accordance with the recommendations of **a.b.e.® Construction Chemicals**. The waterstop will comply with the requirements of CKS 389:1973 and have an elongation at break of 300%

Waterstop dura.joint dumbell.

A centrally placed waterstop for construction and contraction joints in walls and floors to water retaining and water excluding structures. The waterstop will be **dura.joint dumbell**, a centrally placed extruded plasticized PVC compound applied in accordance with the recommendations of **a.b.e.® Construction Chemicals**. The waterstop will comply with the requirements of CKS 389:1973 and have an elongation at break of 300%.

Waterstop dura.joint centre bulb

Centrally placed waterstop for expansion joints in walls and floors to water retaining and water excluding structures. The waterstop will be **dura.joint centre bulb**, an externally placed extruded plasticized PVC compound applied in accordance with the recommendations of **a.b.e.®**

Strength Concrete

Concrete grade: C35/19

The minimum cement content should be 350 kg/m³.

Maximum cement water ratio 0.5

Cement types

CEM 1 + pulverized-fuel ash (pfa not more than 30%)

CEM 1 + ground granulated blast furnace slag (ggbfs not more than 50%)

The blinding layer shall be same grade of concrete as for the structure to provide an opportunity to check the strength and consistency of the concrete at a non-critical stage of the job.

C3.5 MANAGEMENT

C3.5.1 Management of the works

C3.5.1.1 Applicable Specifications

The Standard for Civil Engineering Construction SANS 1200 published the South African Bureau of Standards and referred to as the "Standard Specifications" shall be applicable to this project.

C3.5.1.2 Concurrent construction contracts

The Contractor's attention is drawn to the fact that there might be other contiguous works will be executed concurrently by independent Contractor's under separate contracts in the vicinity of the Site.

The other Works which will be in progress or will come into operation on or adjacent to the Site of the Works during the progress or tenancy of this contract are likely to include, but are not limited to the following:

- a) (Other Project Description if applicable)
- b) (Other Project Description if applicable)

The Contractor shall ensure that neither his operations nor those of his sub-Contractors nor the activities of his employees shall interfere with or of the Employer or of other Contractors and he shall indemnify the Employer against all claims arising through default of this requirement.

The Contractor shall hand over portions of the Site of the Works (whether completed or not), or completed portion of the Works, to these Contractors when required by the Employer or detailed elsewhere in this document. The Contractor shall cause no interference with or delays in the execution of these contiguous contracts.

No discounts or commission for the Contractor is allowed on these contracts, and it will be assume that he has fully allowed in the Contract Price for the presence of these Contractors on Site. Any service rendered or assistance given by the Contractor to these Contractors, save as are provided for in the Project Specifications, shall be for their accounts only since the Employer shall in no will be responsible to the Contractor for any payments in this respect.

The Contractor shall protect all known existing services as well as all work being carried out and structures being erected on the Site by other Contractor. Any damage caused to their services or structures, or any obstructions or hindrance caused to other Contractors by the Contractor, and all claims arising there from, will be sole responsibility of the Contractor.

All repair work shall be carried out at the Contractor's expense to the entire satisfaction of the Engineer.

The same obligations shall be imposed on the Employer and on other Contracts in respect of the Works being executed under this Contract.

C3.5.1.3 Contractor's Project Management Plan

The Contractor is required to prepare and submit a project management plan for the Construction. The particular Contents that should be included in the Contractor's Project Management Plan are listed below:

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

- **Project structure and agreements**

The Contractor shall indicate how responsibility for the various work packages will be divided between joint ventures partners (where applicable) and sub-Contractors.

A contract organogram shall be provided showing work appointment and project management responsibilities. The particular division of work shall match the establishment capabilities and capacities of each particular partners of Sub-Contractor.

- **Plant, materials and equipment**

The Contractor shall prepare s Plant and Materials procurement plan, indicating the source of key Plant and Materials designated for inclusion in the Works, and demonstration that such Plant and Materials have proven track record of successful maintenance support in South Africa.

The Contractor shall also prepare a plan of Contractor's Equipment, indicating the sources and details of construction equipment planned for use on the Contract and based on the Contractor's particular approach.

- **Staffing plan**

The Contractor shall prepare a detailed staffing plan showing in an organogram all key members of the Contractor's Personnel, proving a detailed CV for each such key position. The Contractor shall also show numbers and source of all non-key staff and indicating the particular approach.

- **Method statement**

The Contractor shall clearly describe the overall methodology proposed for construction of the Works and include particular method statement for each work discipline include in the Works.

C3.5.1.4 Construction Programme

The Contractor shall submit together with his tender, a proposed construction programme and schedule, which shall be updated and finalized within the period stated in the Contract Data a suitable and realistic construction programme for the consideration of the Engineer.

The programme shall be in the form of a Gantt chart and shall include the following details:

- A work breakdown structure (WBS), identifying the major activities and group of activities.
- For each activity and/or group of activities, further details shall be provided with regard to the scheduled and end dates of individual activities.
- The (F/S; S/S; F/F and association lead and lag) linkages between activities shall be clearly indicated and the logical network upon which the programme is based shall be separately submitted to the engineer if requested. Any constraints shall be classified as being time-related or resource-related.
- The critical path(s) shall be clearly indicated and floats on non-critical activities shall be shown.
- The Contractor shall indicate the working hours per day, night, week and month allowed for in the programme.
- Where relevant the Contractor shall state the production rates for key activities, e.g. earthworks, etc.
- The Contractor shall submit together with his tender, a detailed method statement of how he plans to execute the works, taking into account the inter-relationship of the various supply and drainage areas per water network and sewer branch pipeline layouts.

Together with the programme as detailed above the Contractor shall submit to the engineer as cash flow projection, indicating projected monthly invoice amounts. The cash flow projection shall be updated at monthly intervals to reflect actual payments to date and anticipated further payments.

The programme will be reviewed at the monthly site meetings at which the Contractor shall provide sufficient detail that will allow the comparison of completed work per activity that has fallen behind. The updated programme shall be submitted to the Engineer at least two days prior to the monthly meetings.

If the programme has to be revised by reason of the Contractor falling behind his programme, he shall produce a revised programme showing how he intends to regain lost time in order to ensure completion of the Works within the time for completion or any granted extension of time. Any proposal to increase the tempo of work must be accompanied by positive steps to increase production by providing more labour and plant on site, or by using the available labour and plant in a more efficient manner.

Failure on the part of the Contractor to submit the programme or to work according to the programme or revised programme shall be sufficient reason for the Engineer to take steps as provided in the General Conditions of Contract.

The approval by the Engineer of any programme shall have no contractual significance other than the Engineer will be satisfied that the work is carried out according to such programme and that the Contractor undertakes to carry out the

work in accordance with the programme. It shall not limit the right of the Engineer to instruct the Contractor to vary the programme if required by circumstances.

C3.5.1.5 Quality Assurance

The Contractor shall institute the quality management plan (QMP), as well as institute a quality management assurance system (QMAS) and provide experienced personnel as well as all the necessary transport, instruments and equipment, to ensure adequate supervision, positive control and testing of the work at all times in order to comply with the minimum standard specifications and requirements. The Contractor shall deliver to the Engineer, for his consideration, all the required QMP and QMAS quality assurance programme prior to the Contractor's appointment of any suppliers or commencement of the Works. Failure to comply with these requirements shall be just cause for the Engineer to order supervision of the Works without additional remuneration or for him to recommend termination to the Employer in terms of the Conditions of the Contract.

The Contractor shall do at least the quality control test at the frequencies specified in SANS for the required Scope of Work. If the scale of the works, construction method or any other circumstances dictates, the Contractor shall do more tests when required for quality assurance purposes.

The Contractor shall keep systematic records of the test results and all worksheets related thereto. All test results obtained by the Contractor in the course of his process requesting inspection of the relevant portions of the Works. Any request for inspection shall be submitted on the prescribed forms.

The Employer is at liberty to carry out such tests as he deems necessary to determine compliance with the contract requirements and will make available the results of all tests to the Contractor.

Acceptance control, record keeping, and payments certificates shall be done in accordance with the Engineer's standards system except if the Engineer approves that the Contractor's QMP and standard QMAS system may be used.

C3.5.1.6 Site administration

- **Daily Site Diary**

The daily site diary shall be kept to date by the Contractor's Site Agent and will be signed on a daily basis by the Engineer's Representative.

- **Information in Respect of Plant**

Information relating to plant on Site shall be recorded in the daily site diary. In addition, the Contractor shall deliver to the Engineer, on a monthly basis, a detailed summary of construction plant kept on the Site, full particulars given each day of the month. Distinction shall be made between plant in working orders and plant out

of order. Such inventory shall be submitted by the first day of the month following the month to be reported.

- **Information in Respect of Employees**

Information relating to labour and management on Site shall be recorded in the daily site diary. In addition, the Contractor shall deliver to the Engineer, on a monthly basis, a detailed summary of Supervisory staff, labour employed (own and local labour) by category, and sub-Contractors (both local and imported) for each day of the month. Such return shall be submitted by the first day of the month following the month to be reported.

- **Rainfall Records**

Rainfall records for the period of construction shall be taken on Site and record in the daily site diary. The Contractor shall provide and install all the necessary equipment for accurately measuring the rainfall. The Contractor shall also provide, erect and maintain a security fences plus gate, padlock and keys at each measuring station, all at his own costs. The Engineer or his Representative shall take and record the daily rainfall readings. The Contractor shall be permitted to attend these readings, in the company of the Engineer's Representative. Access to the measuring gauge(s) shall at all times be under the Engineer's control.

C3.5.1.7 Site instructions

Site instructions by the Engineer, addressed to the Contractor at his office on the Site will be numbered consecutively and will be deemed to have been received by the notice of the Engineer in writing immediately.

C3.5.1.8 Site Meetings

The Contractor and his authorized representative shall attend all meetings held on the Site with Employer and the professional team at dates and time to be determined by the Engineer. Such meeting will be held to evaluate the progress of the Contract, and to discuss matters pertaining to the Contract which any of the parties represented may wish to rise. It is not the intentions to discuss day-to-day technical matters at such meetings.

C3.5.1.9 Payment Certificates

Monthly Progress Payment Certificates shall be submitted to the Engineer's Representative on Site not later than the 15th of each month (or on the last working day prior to this date) in order to allow for checking each and reconciliation of all quantities, rates, extension and additions in the certificate. Each progress payment certificate shall include work executed or reasonable expected to be executed up to 30th day of the specific month. The Engineer's Representative shall have a period of

five (5) calendar days to view the draft certificate in collaboration with the Contractor. All quantity calculations and certificates submitted by the Contractor for checking shall be in accordance with the Engineer's standards site administration forms and formats.

Upon agreement by the Engineer's Representative by not later than the 20th of each month, the certificate shall be submitted by the Contractor in a typed form in accordance with the prescribed format, and with the correct spelling, to the Engineer by no later than the 20th of each month (or on the first working day thereafter), together with four additional copies, for certificates.

Where days' work has been instructed by the Engineer, the Contractor shall submit the return to the Engineer for signature and approval within twenty-four (24) hours of the end of the working day on which the work was executed. Day work returns shall be submitted on forms according to the Engineer's standard format. Failure to comply with terms of this clause will result in non-payment for such day works.

C3.5.1.10 Drawings, Operations and maintenance Manuals

All the information in possession of the Contractor that is required by the Engineer's Representative in order to complete the As-built drawings and to prepare a close-out report for the Employer must be submitted before a certificate of completion is issued for the works. Similarly, the Contractor will be required to submit full details of all materials/ fittings/ equipment in a maintenance procedure (where applicable) related thereto, for incorporation in the overall operation and maintenance manual for the completed works prior to issuing of the certificate of completion of the Works.

Only figured dimensions, levels and co-ordinates on the Drawings may be used in the interpretation thereof, and the Drawings shall not be scaled unless the Contractor is specifically instructed by the Engineer in writing. The Contractor shall notify the Engineer in writing of any lack of information or conflict in the information on the Drawings. The Engineer will upon written request provide any dimensions, levels and co-ordinates that may have been omitted from the Drawings.

C3.5.2 Management of the Environment

C3.5.2.1 The Environmental Management Plan (EMP)

The Contractor shall comply with the conditions of the Record of Decision and the Environmental Management Plan for the project.

An Environmental Management Programme (EMP), in the context of the regulations, is a tool that takes a project from a high-level consideration of issues down to detailed workable mitigation measures that can be implemented in a cohesive and controlled manner.

The objectives of an EMP are to minimize disturbance to the environment, present mitigation measures for identified impacts, maximise potential

environmental benefits, assign responsibility for actions to ensure that the pre-determined aims are met.

C3.5.2.2 Environmental Authorization

The Contractor shall comply with the conditions of the Environmental Authorization - Record of Decision for the project.

C3.5.3 Management of Health and Safety on site

The Contractor shall comply with the Occupational Health and Safety (OHS) Agreement included in Section C1.2 – Contract Data

C3.5.3.1 Health and Safety Specifications

The Contractor shall comply with the requirements of the Occupational Health and Safety Specifications of the Municipality.

C3.5.3.2 Health and Safety Plan

The Contractor shall use the Occupational Health and Safety Specifications of the Municipality to develop and OHS Plan for the approval of the Employer/ Employer's Safety Agent. Once the OHS Plan is approved, it shall be included in OHS File on site for regular monitoring.

C3.5.3.3 Covid-19 OHS Specifications

The Department of Employment and Labour has appealed to employers to use the prescriptions of the Occupational Health and Safety (OHS) Act of 1993 in governing workplaces in relation to COVID-19.

The Contractor shall comply with the requirements of the specification.

C3.5.3.4 Covid-19 Risk Assessment

The purpose of this Risk Assessment is to:

- a) Identify the health hazards that employees may be exposed to while performing their work,
- b) Evaluate the initial risk, control measures currently used and the residual risk,
- c) Recommend control measures where applicable and
- d) Compile a Risk Assessment to manage COVID-19 in the workplace and on site,
- e) Produce a Risk Assessment in accordance with the requirements of the Disaster Management Act, 2002. Regulations issued in terms of Section 27(2) of the Disaster Management Act, 2002 (As amended on the 15th of March 2020),

- f) Ensure the Safety of all personnel involved with the activity,
- g) Put in place a way of communication to all personnel involved with the activity

C3.5.3.5 Covid-19 OHS Checklists

This checklist will assist the contractor to implement health and hygiene measures at a workplace and do a review of your facilities concerning Covid-19.

C3.6 ANNEXURES

The following specialised studies and licences are available on request:

- a) Geotechnical Studies
- b) Drainage Report
- c) Environmental Studies

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Contractor

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Witness 1

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Witness 2

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Employer

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Witness 1

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Witness 2

BELA-BELA LOCAL MUNICIPALITY



BID NO: 9/3/1/350

UPGRADING OF THE LESEDING SEWER PUMP STATION (WARD 6)

C4 SITE INFORMATION

267

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

C4.1 Site Inspection

The Bidder shall familiarize him/herself on the nature of the site and inspect the site if necessary.

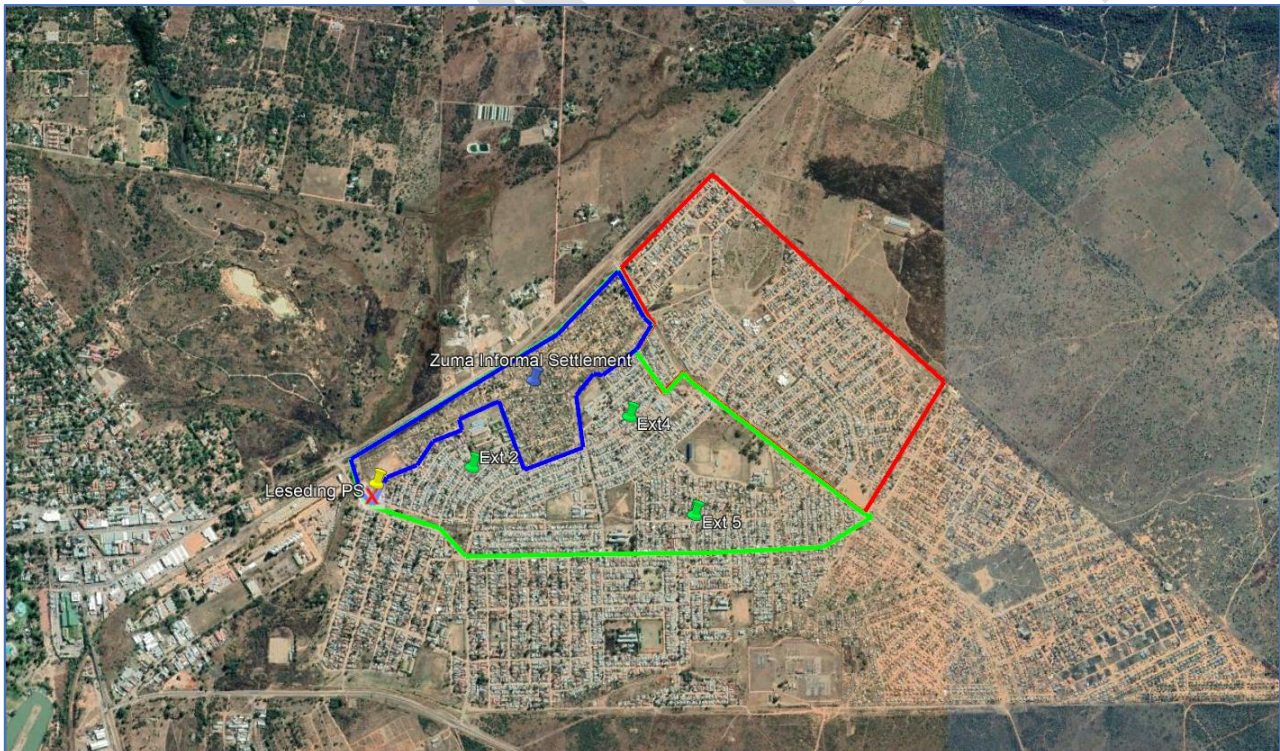
C4.2 Site Location

The Bela-Bela Local Municipal area is situated on the southern side of the Waterberg District Municipality in the Limpopo Province. It borders the Gauteng Province on the south and south-east, the Northwest Province on the west and Modimolle Local Municipality on the northern side. The Municipality is located 105km north of Pretoria and 8km to the west of the N1 North. Elevation is 700m – 1000m above sea level.

The GPS Co-ordinates for the project are as follows:

The central coordinates of the site are:

LATITUDE	LONGITUDE
24°53'0.70"S	28°18'24.67"E



Contractor

Witness 1

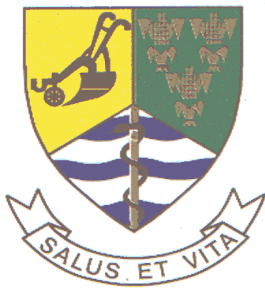
Witness 2

Employer

Witness 1

Witness 2

BELA-BELA LOCAL MUNICIPALITY



BID NO: 9/3/1/350

UPGRADING OF THE LESEDING SEWER PUMP STATION (WARD 6)

C5 DRAWINGS

C5.1 Contract Drawings

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

C5.1 Contract Drawings

CIVIL ENGINEERING:	
ROM-134-07-076-03-01	LOCALITY PLAN
ROM-134-07-076-03-02	SITE LAYOUT PLAN
ROM-134-07-076-03-03	SURVEY LAYOUT PLAN
ROM-134-07-076-03-04	DETAILS
ROM-134-07-076-03-05	CONTRACT NAMEBOARD
ROM-134-07-076-03-06	CONCRETE PALISADE FENCE DETAILS
MECHANICAL AND ELECTRICAL ENGINEERING:	
ROM-134-07-078-03-01	PUMP STATION LAYOUT PLAN
ROM-134-07-078-03-02	PUMP STATION SECTIONS
ROM-134-07-078-03-03	TYPICAL WALL MOUNTED GATE VALVES
ROM-134-07-078-03-04	SCREEN DETAILS
ROM-134-07-078-03-05	PUMP STATION LAYOUT PLAN: PIPE SCHEDULES
STRUCTURAL ENGINEERING:	
ROM-134-07-075-03-01	HEAD OF WORKS STRUCTURAL DETAILS
ROM-134-07-075-03-02	WET SUMP AND DRY SUMP STRUCTURAL DETAILS
ROM-134-07-075-03-03	WET SUMP AND DRY SUMP STRUCTURAL DETAILS
ROM-134-07-075-03-04	PUMP STATION 3D LAYOUT

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2