GAMAGARA LOCAL MUNICIPALITY

BID No: GM2025/30

UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1

TENDER DOCUMENT

APRIL 2025

GAMAGARA LOCAL MUNICIPALITY

Cnr Frikkie Meyer & Hendrik Van Eck Roads
Civic Centre
KATHU
8446

NAME OF BIDDER :

……

……

FULL NAME, i.e. (CC, (PTY) LTD, LTD, JV, SOLE PROPRIETOR etc.)

CONTACT NUMBER

.:

……

EMAIL :

……

Gamagara Local Municipality

UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1

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TENDER NOTICE AND INVITATION TO TENDER

GAMAGARA LOCAL MUNICIPALITY

CONTRACT No. GM 2025 / 30

FOR
UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1

1INVITATION FOR PROSPECTIVE BIDDERS

GAMAGARA LOCAL MUNICIPALITY hereby invites prospective service providers to submit tenders for the **UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1**.

It is estimated that prospective tenderers should have a CIDB contractor grading of **5CE or higher**. Only tenders who conform to the criteria stated in the Tender Data and Tender Conditions are eligible to submit tenders.

*Tender documents will be available on the E-tender webpage from **17 April 2025**. SCM tender enquiries can be directed to Mrs. Josephine Nampa at tel. (053) 723 6000 email at nampaj@gamagara.gov.za. No tender documents will be made available at the Municipality or during the compulsory clarification meeting.*

A **compulsory clarification** meeting with representatives from the Employer will take place at the **Municipal Town Hall next to Gamagara Municipality offices in Kathu on Tuesday, 06 May 2025 starting at 10h00.** Only tenderers who attend the clarification meeting shall be eligible to submit tenders.

Technical enquiries relating to this tender should be addressed to Mr. Ditebogo Sebuasengwe at tel. +27 53 723 6000 and E-mail: sebuasengwed@gamagara.gov.za Technical and tender enquiries will be accepted and attended to up to **Monday, 12 May 2025**.

The tender will close on Monday, 19 May 2025 at 10:00 and the opening of the Bids will be at the Municipal Town Hall – Boardroom in Kathu. Completed tender documents, sealed in an envelope and clearly marked **GM2025/30 - UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1** and must be placed in the Tender Box in the foyer of the Gamagara Local Municipality at, Cnr Frikkie Meyer & Hendrik Van Eck Roads, Civic Centre, Kathu, and no Tenders will be accepted after the closing time or per facsimile or per e-mail. The opening of tenders will be done immediately after the tender closing.

Gamagara Local Municipality does not bind itself to accept the lowest or any tender and reserves the right to accept the whole or part of a tender. All tenders will remain valid for a period of 90 days after the time and date of opening. This tender will be evaluated in terms of the 80/20 preference point system as prescribed in the Preferential Procurement Regulations, 2022 pertaining to the PPPF Act (No 5 of 2000) and the Supply Chain Management Policy of Gamagara Local Municipality.

Mr. Lebogang Seetile

Municipal Manager

Gamagara Local Municipality

UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1

TENDER DATA

The conditions of tender are the Standard Conditions of Tender as contained in Annex C of the Construction Industry Development Board's Board Notice 423 of 2019 (contained in Government Gazette No. 42622 of 08 August 2019), bound into section T1.3.

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

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

Clause	Addition or Variation to Standard Conditions of Tender
1.1	The Employer is Gamagara Local Municipality.
1.2	The tender documents issued by the Employer comprise two volumes. Volume 1: Contract Document contains the parts and sections (contained in each part) as listed in the Contents List of Volume 1 bound in the front of this document. The General Conditions of Contract for Construction Works, 3rd Edition (2015), published by the South African Institution of Civil Engineering, is applicable to this Contract. The General Conditions of Contract are not bound into this document, will form part of Volume 1 and are available at the Contractor's expense from the Secretary of the South African Institution of Civil Engineering, Private Bag X200, Halfway House, Midrand, 1685 Tel: 011 805 5947 or www.saice.org.za or email: civilinfo@saice.org.za The SANS Standard Specifications on which this contract is based are the South African Bureau of Standard's Standardized Specifications for Civil Engineering Construction. Although not bound in nor issued with this Document, the relevant sections of the standard specifications shall form part of Volume 1. These documents are available at the Contractor's expense from the SA Bureau of Standards, Private Bag X191, PRETORIA, 0001 Volume 2: Book of Drawings contains the drawings listed in the Drawing Register bound in the front of Volume 2.

Clause	Addition or Variation to Standard Conditions of Tender
1.3.2	Replace the sub-clause with the following: These Conditions of Tender, the Tender Data, List of Returnable Documents and Returnable Schedules which are required for tender evaluation purposes, shall form part of the Contract arising from the invitation to tender.
1.4	The Employer's agent is (also known as the Engineer): BVi Consulting Engineers Central (Pty) Ltd 17 Pres Steyn Avenue, Westdene BLOEMFONTEIN South Africa, 9330 T: +27 (0)51 447 2137 F: +27 (0)51 4476056 Email: bfn@bvifs.co.za www.bvi.co.za
2.1	Only those tenderers who are registered with the CIDB, or are capable of being registered prior to the evaluation of submissions, in a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations, for a 5CE class of construction work, are eligible to have their tenders evaluated. Joint ventures are eligible to submit tenders provided that: 1. every member of the joint venture is registered with the CIDB; 2. the lead partner has a contractor grading designation in the construction works "Civil Engineering" class of construction work; not lower than one level below the required grading designation in the class of works construction works under consideration and possess the required recognition status; and 3. the combined contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a contractor grading designation determined in accordance with the sum tendered for an 5CE class of construction work, or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations.
2.2	Add the following to the sub-clause: Accept that the Employer will not compensate the tenderer for any costs incurred in attending interviews in the office of the employer or the employer's agent (if required).
2.7	Compulsory Tender briefing or clarification meeting will be held for this bid.
2.10	Add the following sub-clause 2.10.5:

Clause	Addition or Variation to Standard Conditions of Tender
	A digital copy of the Bill of Quantities will be available to download from the Employer's web page.
2.11	Add the following to the clause: To correct errors made, draw a line through the incorrect entry and write the correct entry above in black ink and place the full signatures of the authorised signatories next to the correct entry.
2.12.1	Add the following to the clause: All alternative tender offers shall be referred to in Section T2.2.1 – Alterations to Tender.
2.12.2	Alternative offers will be considered, but only if the schedules are priced in full according to the project specifications and drawings. Should the Tenderer wish to offer alternative designs and/or construction materials, he shall include with this Tender, full details thereof, including a complete Schedule of Quantities, formal design calculations, and full details of all alternative components proposed to be included in the Works. Refer also to the Contract Data in this regard. Failure to properly comply with this clause, thereby preventing the Employer and/or the Engineer to properly assess the full implications of the alternative tender, is likely to disqualify the alternative offered from further consideration. No submission by the Contractor after award for additional payment or time for completion of Works relating to the alternative offer will be considered, the tendered rates submitted shall be considered to reflect the full and final cost implications of the alternative offer.
2.13	Add the following to the clause: No claim will be entertained for faults in the tender price resulting from any discrepancies, omissions or indistinct figures.
2.13.2	Replace the contents of the clause with the following: Return all volumes of the tender document to the Employer after completion of the relevant sections of each volume in their entirety, by writing in black ink. The electronically issued Bill of Quantities (Excel format) must be completed with the tender rates and submitted in the same format, along with the bid. All volumes are to be left intact in its original format and no pages shall be removed or re-arranged.
2.13.3	Tenderers are required to submit along with their Bids a scanned copy of their completed Bid document in electronic format, either on CD disk or flash drive/memory stick.

Clause	Addition or Variation to Standard Conditions of Tender
	CD disk / flash drive / memory stick must be clearly marked with the bidder's name.
2.13.4	Add the following to the clause: Only authorised signatories may sign the original and all copies of the tender offer where required in terms of 2.13.3.
2.13.5	The Employer's address for delivery of tender offers and identification details to be shown on each tender offer package are: Tender box location : Gamagara Local Municipality Physical address : Cnr Frikkie Meyer & Hendrik Van Eck Roads, Civic Centre, Kathu Identification details :BID No GM2025/30 : UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1 The name and address of the tender shall be entered on the back of the envelope.
2.13.6	A two-envelope procedure will not be followed.
2.13.10	Add the following to the clause: Accept that all conditions, which are printed or written upon any stationary used by the Tenderer for the purpose of or in connection with the submission of a tender offer for this Contract, which are in conflict with the conditions laid down in this document shall be waived, renounced and abandoned.
2.14	Add the following to the clause: The Tenderer is required to enter information in the following sections of the document: Section T2.2 : Returnable Schedules Section C1.1 : Form of Offer and Acceptance Section C1.2 : Contract Data (Part 2) Section C2.2 : Schedule of Quantities The above sections shall be signed by the Tenderer (and witnesses where required). Individual pages should only be initialled by the successful Tenderer and by the witnesses after acceptance by the Employer of the Tender Offer. The Tenderer shall complete and sign the Form of Offer prior to the submission of a Tender Offer for each portion of the Tender. The Schedule of Deviations (if applicable) shall be signed by the successful Tenderer after acceptance by the Employer of the Tender Offer.

Clause	Addition or Variation to Standard Conditions of Tender

Clause	Addition or Variation to Standard Conditions of Tender

Accept that failure on the part of the Tenderer to submit any one of the Returnable Documents listed in clause 2.23 within the period stipulated, shall be just cause for the Employer to consider the tender offer as being regarded as non-responsive.

Accept that the Employer shall in the evaluation of tender offers take due account of the Tenderer'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 T2.2.3 of contracts of a similar nature and magnitude which they have successfully executed in the past.

Accept that submitting inferior and inadequate information relating to health and safety (as required in clause 2.23) shall be regarded as justifiable and compelling reasons not to accept the Tender Offer of the Tenderer scoring the highest number of tender evaluation points.

2.15.1 The closing time and location for the submission of tender offers are:

Time : **10:00, on Monday, 19 May 2025**

Location : Tender Box in the foyer of Gamagara Local Municipality,
Cnr Frikkie Meyer & Hendrik Van Eck Roads, Civic Centre, Kathu.

2.16.1 Add the following to the clause:

The tender offer validity period is 120 days, once portion 1 has been signed then the offer of portion 2 will stay valid until or if portion 2 will commence. The Employer will notify the Tenderer in writing if portion 2 will not commence.

2.16.2 Add the following to the clause:

If the tender validity expires on a Saturday, Sunday or public holiday, the tender shall remain valid and open for acceptance until the closure of business on the following working day.

2.16.5 Add the following new clause:

Accept that should the Tenderer unilaterally withdraw his tender during this period, the Employer shall, without prejudice to any other rights he may have, be entitled to accept any less favourable tender for the Works from those received, or to call for fresh tenders, or to otherwise arrange for execution of the Works, and the Tenderer shall pay on demand any additional expense incurred by the Employer on account of the adoption of the said courses, as well as either the difference in cost between the tender withdrawn (as corrected in terms of clause 3.9 of the Conditions of Tender) and any less favourable tender accepted by the Employer, or the difference between the tender withdrawn (as corrected) and the cost of execution of the

Clause	Addition or Variation to Standard Conditions of Tender
	Works by the Employer as well as any other amounts the Employer may have to pay to have the Works completed.
2.18.1	Add the following to the clause: Accept that if requested, the Tenderer shall within 7 days of the date upon which he is requested to do so, submit a full report from his banker as to his financial standing. The Employer may, in its discretion, and subject to the provisions of Section 4(1)(d) of the State Tender Board Act 86 of 1968, condone any failure to comply with the foregoing condition. Accept that the Employer or his agent, reserves the right to approach the Tenderer's banker or guarantor(s) as indicated in the tender document, or the bankers of each of the individual members of any joint venture that is constituted for purposes of this Contract, with a view to ascertaining whether the required guarantee will be furnished, and for purposes of ascertaining the financial strength of the Tenderer or of the individual member of such venture.
2.22	Return all retained tender documents prior to the closing time for the submission of Tender Offers.
2.23	The following certificates / information are to be provided with the tender offer: a) Declaration of Interest, MBD 4 b) The B-BBEE status level of the contributor must be included on the valid, original or certified copy of the B-BBEE certificate of the contributor that is to be submitted with this bid documentation, should the bidder wish to claim preference points for the specific bid. Act 53 of 2013 published in Government Gazette No. 36928 dated 11 October 2013 (In case of a Joint Venture, or Consortium a consolidated B-BBEE certificate will be required) MBD 6.1. c) Certified copy of a Workmen's Compensation Certificate, Act 4 of 2002, d) Copy of Certificate of Incorporation (if tenderer is a Company), e) Certified copy of Founding Statement (if tenderer is a Closed Corporation), f) Certified copy of Identity Document (if tenderer is a One-man concern), g) Signed Joint Venture Agreement (if tenderer is a Joint Venture), h) Curriculum Vitae of all supervisory staff. i) CIDB registration information (Contractor's CRS number) for CIDB grading in the grading designation stipulated in clause 2.1 above, j) Central Supplier Database report k) Declaration of Bidder's Past Supply Chai Management Practices, MBD 8

Clause	Addition or Variation to Standard Conditions of Tender
	l) Certificate of Independent Bid Determination, MBD 9
	m) Authority of Signatory
	n) Municipal account of the bidding entity and all its directors

Clause	Addition or Variation to Standard Conditions of Tender
3.1	Replace the contents of the clause with the following: Respond, to a request for clarification received in accordance with clause 2.8, within 7 days prior to the closing time stated in clause 2.15 and notify all tenderers who drew procurement documents.
3.4	Tenders will be opened in public immediately after the closing time for tenders, at the same venue.
3.5	A two-envelope procedure will not be followed.
3.8.1	Add the following to the clause: Failure on the part of the Tenderer to submit a tender offer as stipulated in clause 2.13 prior to the closing time as stipulated in clause 2.15 shall be just cause for the Employer to consider the tender offer as being non-responsive. Failure on the part of the Tenderer to submit any one of the returnable documents or certificates listed in clause 2.23 within the period stipulated shall be just cause for the Employer to consider the tender offer as being non-responsive.
3.9	Replace the contents of the clause with the following: Check responsive tender offers for arithmetical errors, correcting them in the following manner: a) If a Schedule of Quantities (or bill of quantities) applies and there is an error in the line-item total resulting from the product of the unit rate and the quantity, the unit rate shall govern and the line-item total shall be corrected. b) Where there is an error in the total of the prices, either as a result of other corrections required by this checking process or in the tenderer's addition of prices, the corrected total of the prices shall govern. c) Where there is a discrepancy between the amount indicated in the Tenderer's tender offer and the corrected amount obtained after completing the above steps, the corrected amount shall govern.
3.11.1	Add the following new clause:

Clause	Addition or Variation to Standard Conditions of Tender
	Scoring preference Up to (100-W_1) tender evaluation points (W_p) will be awarded to tenderers who complete the preferencing schedule (bound into Section T2.2) and who are found to be eligible for the preference claimed. Method 2 (as described in Clause 3.11.3 of the Standard Conditions of Tender) will be used to evaluate all responsive tender offers, where the value for W_1 is: 90 where the financial value inclusive of VAT of all responsive tenders received have a value in excess of R 50 000 000,00 (50 Million); or 80 where the financial value inclusive of VAT of one or more responsive tender offers equals or is less than R 50 000 000,00 (50 Million).
3.11.2	The financial offer will be scored in terms of formula 2 option 1 of the Standard Conditions of Tender (Section T1.3 of the document) and the total amount for portion 1 and 2 will be used as the tendered value.
3.12	Replace the contents of the clause with the following: If requested by any Tenderer, submit for the Tenderers' information the policies or certificates of insurance (or both) which the conditions of contract identified in the Contract Data require the Employer to provide.
3.13.1	A Tender offer will only be accepted on condition that such acceptance is not prohibited in terms of clause 44 of the Municipal Supply Chain Management Regulations published in terms of the Municipal Finance Management Act, 2003.
3.13.2	Add the following to the clause: The Tender offer and acceptance will be divided into two portions. Initially only portion 1 will be accepted. The Empolyer will reserve the right to the appointment of the same tenderer for portion 2, if or when funding for portion 2 becomes available. Only then would portion 2 be accepted. The Employer will notify the Tenderer in writing if portion 2 will not commence
3.16.2	Replace the contents of the clause with the following: Notice of non-acceptance of tender will not be sent to individual unsuccessful tenderers. Particulars of the accepted tender can be obtained from the Employer's Agent.
3.17	The successful tenderer shall receive one copy of the signed contract.

END OF SECTION

Gamagara Local Municipality

UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1

STANDARD CONDITIONS OF TENDER

As published in Annexure C of the CIDB Standard for Uniformity for construction Procurement, Board Notice 423 Government Gazette No 42622 of 08 August 2019.

END OF SECTION

Gamagara Local Municipality

UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1

RETURNABLE DOCUMENTS

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END OF SECTION

Gamagara Local Municipality

UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1

LIST OF RETURNABLE DOCUMENTS

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

   a) Declaration of Interest, MBD 4

   b) The B-BBEE status level of the contributor must be included on the valid, original or certified copy of the B-BBEE certificate of the contributor that is to be submitted with this bid documentation, should the bidder wish to claim preference points for the specific bid. Act 53 of 2013 published in Government Gazette No. 36928 dated 11 October 2013 (In case of a Joint Venture, or Consortium a consolidated B-BBEE certificate will be required). MBD 6.1

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

   d) Copy of Certificate of Incorporation (if tenderer is a Company),

   e) Certified copy of Founding Statement (if tenderer is a Closed Corporation),

   f) Certified copy of Identity Document (if tenderer is a One-man concern),

   g) Signed Joint Venture Agreement (if tenderer is a Joint Venture),

   h) Curriculum Vitae of all supervisory staff.

   i) CIDB registration information (Contractor's CRS number) for CIDB grading in the grading designation stipulated in clause 2.1 above,

   j) Central Supplier Database report

   k) Declaration of Bidder's Past Supply Chain Management Practices, MBD 8

   l) Certificate of Independent Bid Determination, MBD 9

   m) Authority of Signatory

   n) Municipal account of the bidding entity and all its directors

2. The returnable schedules included in Section T2.2 will be used to evaluate tenders received. These schedules will also form part of the Contract.

3. Failure on the part of the Tenderer to submit with their tender offer any one of the documents listed in Item No. 1 above or to complete any of the returnable schedules included in Section T2.2, may result in the tender being classified non-responsive and could be eliminated from further consideration.

END OF SECTION

Gamagara Local Municipality

UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1

RETURNABLE SCHEDULES

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FORM T2.2.1 - ALTERATIONS BY TENDERER

Should the Tenderer desire to make any departures from or modifications to the General or Special Conditions of Contract, the Specifications, the Schedule of Quantities or the Drawings, or to qualify his tender in any way, he shall set out his proposals clearly hereunder or alternatively state them in a covering letter attached to his tender and referred to hereunder, failing which the tender will be deemed to be unqualified.

Page and Clause/Item	Alteration / Amendment

SIGNED ON BEHALF OF TENDERER	**DATE:**

FORM T2.2.2 - DECLARATION OF INTEREST **MBD 4**

1. No bid will be accepted from persons in the service of the state [1].

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 and/or take an oath declaring his/her interest.

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

3.1 Full Name: ……

3.2 Identity Number: ……

3.3 Company Registration Number: ……

3.4 Tax Reference Number: ……

3.5 VAT Registration Number: ……

3.6 Are you presently in the service of the state? [1] **YES / NO**

3.6.1 If so, furnish particulars.

……

……

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

3.7.1 If so, furnish particulars.

……

3.8 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

3.8.1 If so, furnish particulars. ……

……

3.9 Are you, aware of any relationship (family, friend, other) between a 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**

3.9.1 If so, furnish particulars.

……

……

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

3.10.1 If so, furnish particulars.

……

……

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

3.11.1 If so, furnish particulars. ……

……

CERTIFICATION

I, THE UNDERSIGNED ……CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM IS CORRECT. I ACCEPT THAT THE STATE MAY ACT AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.

SIGNED ON BEHALF OF TENDERER	**DATE:**
POSITION	**NAME OF BIDDER**

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

(a) a member of –

(i) any municipal council;

(ii) any provincial legislature; or

(iii) the national Assembly or the national Council of provinces;

(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

FORM T2.2.3 - WORKS PREVIOUSLY EXECUTED

The following is a statement of works done on **bulk water** projects that were successfully executed by the bidder in the last 10 years. Failure to detail the required information could signify that the tender is submitted by an inexperienced tenderer.

Employer (Name, tel. no & email)	Consulting Firm Name, tel. no & email)	Nature of Works / Description of Work	Value of Construction Works Rm	Duration and Completion Date
Contact Name Telephone No.	Contact Name Telephone No.			
Contact Name Telephone No.	Contact Name Telephone No.			
Contact Name Telephone No.	Contact Name Telephone No.			

Note : Only the projects listed in the Table above will be evaluated for experience points in the Functionality stage.

FORM T2.2.3 - WORKS PREVIOUSLY EXECUTED (continued)

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

I. Description of work
II. Value
III. Contract Construction Period
IV. Actual Construction Period
V. Date Completed

Note:-

1. Failure to affix such documentation as prescribed to this page could result in this bid not being further considered for the award of the Contract.

SIGNED ON BEHALF OF TENDERER	**DATE:**

FORM T2.2.4 - SUPERVISORY AND SAFETY PERSONNEL

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

Name	% Time on Site	Position (Current)	Accredited Qualifications	Service (Years)	Name of Project And year executed	Value of Works Rm	Position Occupied
Contracts Manager							
Construction Manager/Site Agent							
Foreman							
Construction Health and Safety Officer							

Specific knowledge: Names of various employees occupying the positions above must be stated, CVS and certified copies of qualifications must be attached in order to qualify for points

Note:-

1. Failure to affix such documentation as prescribed to this page could result in this bid not being further considered for the award of the Contract.

SIGNED ON BEHALF OF TENDERER **DATE:**

MBD 9

FORM T2.2.5 - CERTIFICATE OF INDEPENDENT BID DETERMINATION

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

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

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

a. take all reasonable steps to prevent such abuse;

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

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

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

5 In order to give effect to the above, the attached Certificate of Bid Determination (MBD9) 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.

MBD 9

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 appears on the accompanying bid has been authorized by the bidder to determine the terms of, and to sign, the bid, on behalf of the bidder;

5 For the purposes of this Certificate and the accompanying bid, I understand that the word "competitor" shall include any individual or organization, other than the bidder, whether or not affiliated with the bidder, who:

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

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

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

6 The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However, communication between partners in a joint venture or consortium[3] will not be construed as collusive bidding.

7 In particular, without limiting the generality of paragraphs 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:

(a) prices;

(b) geographical area where product or service will be rendered (market allocation)

(c) methods, factors or formulas used to calculate prices;

(d) the intention or decision to submit or not to submit, a bid;

(e) the submission of a bid which does not meet the specifications and conditions of the bid; or

(f) bidding with the intention not to win the bid.

8 In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the products or services to which this bid invitation relates.

9 The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.

[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.

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

FORM T2.2.6 - COMPLIANCE WITH OHSA (ACT 85 OF 1993)

Tenderers are required to satisfy the Employer and the Engineer as to their ability and available resources to comply with the above by answering the following questions and providing the relevant information required below.

1. Is the Contractor familiar with the OHSA (ACT 85 OF 1993) and its Regulations? **YES / NO**

2. Who will prepare the Contractor's Health and Safety Plan? (Provide a copy of the person/s curriculum vitae/s or company profile).

3. Does the Contractor have a health and safety policy? If yes, provide a copy. **YES / NO**
   How is this policy communicated to all employees?

4. Does the Contractor keep records of safety aspects of each construction site? **YES / NO**
   If yes, what records are kept?

5. Does the Contractor conduct monthly safety meetings? If yes, who is the chairperson of the meeting, and who attends these meetings? **YES / NO**

6. Does the Contractor have a safety officer in his employment, responsible for the overall safety of his company? If yes, please explain his duties and provide a copy of his CV - (Attach) **YES / NO**

7. Does the Contractor have trained first aid employees? If yes, indicate who. **YES / NO**

8. Does the Contractor have a safety induction training project in place? If yes, provide a copy. **YES / NO**

SIGNED ON BEHALF OF TENDERER **DATE:**

FORM T2.2.7 - AUTHORITY OF SIGNATORY

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

a company, and attach hereto a certified copy of the required resolution of the Board of Directors	☐
a partnership, and attach hereto a certified copy of the required resolution by all partners	☐
a close corporation, and attach hereto a certified copy of the required resolution of the Board of Officials	☐
a one-man business, and attach hereto certified proof that I am the sole owner of the business submitting this tender	☐
a joint venture, and attach hereto	☐

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

Name of Lead Firm_____

A signed original certified copy of the joint venture agreement showing clearly the percentage contribution of each partner to the joint venture shall be appended to this schedule.

SIGNATURE OF TENDERER	**DATE:**

FORM T2.2.8 - CERTIFICATE OF AUTHORITY FOR JOINT VENTURE

This Returnable Schedule is to be completed by joint ventures.

We, the undersigned, are submitting this bid offer in Joint Venture and hereby authorise:

FULL NAME

, authorised signatory of the company:

COMPANY

, acting in the capacity of lead partner, to sign all documents in connection with the bid offer and any contract resulting from it on our behalf.

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

The Joint Venture Agreement must be bid specific. All parties must be registered on the Central Supplier Database (CSD).

FORM T2.2.9 - PREFERENCE POINTS CLAIM I.T.O PREFERENTIAL PROCUREMENT REGULATIONS 2022 (MBD 6.1)

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

NB: BEFORE COMPLETING THIS FORM, BIDDERS MUST STUDY THE GENERAL CONDITIONS, DEFINITIONS AND DIRECTIVES APPLICABLE IN RESPECT OF B-BBEE, AS PRESCRIBED IN THE PREFERENTIAL PROCUREMENT REGULATIONS, 2022.

---

1. GENERAL CONDITIONS

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

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

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

1.3 Points for this bid shall be awarded for:

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

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

	POINTS
PRICE	**80**
SPECIFIC GOALS	**20 (10 – B-BBEE Status level 10 – Location)**
TOTAL POINTS FOR PRICE AND SPECIFIC GOALS MUST NOT EXCEED	**100**

1.5 Failure on the part of a bidder to submit proof of B-BBEE Status level of contributor together with the bid, will be interpreted to mean that preference points for B-BBEE status level of contribution are not claimed.

B-BBEE Level Contributor

Failure on the part of a tenderer to submit a B-BBEE Verification Certificate from a Verification Agency accredited by the South African National Accreditation System (SANAS), or a sworn affidavit confirming annual turnover and level of black ownership in case of an EME and QSE together with the bid, will be interpreted to mean that preference points for B-BBEE status level of contribution are not claimed.

Locality

Failure on the part of tenderer to submit the following:

- where the tenderer is the owner of the property / business:
  - municipal account registered in the name of the tenderer not older than 3 months;

- where the tenderer is not the owner of the property / business:
  - a valid lease agreement; or
    - affidavit from the property owner that the address used to claim points in the MBD 6.1 is being rented out to the tenderer at no cost not older than 3 months.

- where the tenderer submitted incorrect or outdated information (account, lease agreement or affidavit) or none of the above, it will be interpreted to mean that preference points for Locality are not claimed.

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

2. DEFINITIONS

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

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

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

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

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

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

(g) **"tender for income-generating contracts"** means a written offer in the form determined by an municipality 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 municipality and a third party that produces revenue for the municipality, 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

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

3. POINTS AWARDED FOR PRICE

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

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

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

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

Where

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

4. POINTS AWARDED FOR SPECIFIC GOALS

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

B-BBEE Status Level of Contributor	Number of points (90/10 system)	Number of points (80/20 system)
1	5.0	10
2	4.0	8
3	3.5	7
4	3.0	6
5	2.0	4
6	1.5	3
7	1.0	2
8	0.5	1
Non-compliant contributor	0	0

4.2 In cases where municipality intend to use the Preferential Procurement policy of Council section 8.7, which states that, if it is unclear whether the 80/20 or 90/10 preference point system applies, a municipality 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 municipality must indicate the points allocated for specific goals for both the 90/10 and 80/20 preference point system.

Local Office within area of jurisdiction	Number of points (90/10 system)	Number of points (80/20 system)
Within the boundaries of Gamagara Local Municipality	5	10
Outside the boundaries of Gamagara Local Municipality, but within the boundaries of Northern Cape Province	2.5	5
Outside the Northern Cape Province	0	0

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 (90/10 system) (To be completed by the organ of state)	Number of points allocated (80/20 system) (To be completed by the organ of state)	Number of points claimed (90/10 system) (To be completed by the tenderer)	Number of points claimed (80/20 system) (To be completed by the tenderer)
LOCALITY		10		
B-BBEE STATUS LEVEL OF CONTRIBUTOR		10		

5. BID DECLARATION

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

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

6.1 B-BBEE Status Level of Contributor: . = ...(maximum of 5 or 1 0 points)

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

7. SUB-CONTRACTING

7.1 Will any portion of the contract be sub-

contracted? (***Tick applicable box***)

YES		NO	

7.1.1 If yes, indicate:

i) What percentage of the contract will be subcontracted.....%

ii) The name of the sub-contractor……..……

iii) The B-BBEE status level of the sub-contractor.....……..

iv) Whether the sub-contractor is an EME or QSE

(Tick applicable box)

YES		NO	

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

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

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

8.1 Name of company/firm:……………………………………………………………………..…….

8.2 VAT registration number:……………………………….…………………………………

8.3 Company registration number:…………….……………………….…………………………….

8.4 TYPE OF COMPANY/ FIRM

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

8.5 DESCRIBE PRINCIPAL BUSINESS ACTIVITIES

………………………………………………………………………………………………………
………………………………………………………………………………………………………

8.6 COMPANY CLASSIFICATION

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

8.7 MUNICIPAL INFORMATION

Municipality where business is situated: ……….…………..………………………….

Registered Account Number: ………….……………………………….……………… Stand Number:……………………………………………………….……………..….

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

8.9 I/we, the undersigned, who is / are duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the B-BBEE status level of contributor indicated in paragraphs 1.4 and 6.1 of the foregoing certificate, qualifies the company/ firm for the preference(s) shown and I / we acknowledge that:

i) The information furnished is true and correct;

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

iii) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 1.4 and 6.1, the contractor may be required to furnish documentary proof to the satisfaction of the purchaser that the claims are correct;

iv) If the B-BBEE status level of contributor has been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the purchaser may, in addition to any other remedy it may have —

(a) disqualify the person from the bidding process;

(b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;

(c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;

(d) recommend that the bidder or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted by the National Treasury from obtaining business from any organ of state for a period not exceeding 10 years, after the *audi alteram partem* (hear the other side) rule has been applied; and

(e) forward the matter for criminal prosecution.

NB: THE TENDERER SHALL ATTACH B-BBEE CERTIFICATE Failure to affix such documentation as prescribed to this page could result in this bid not being further considered for the award of the Contract

In case of a joint venture, or consortium **a consolidated B-BBEE certificate** will be required

SIGNATURE OF TENDERER **DATE:**

FORM T2.2.10 - CONTRACTOR'S BANKING DETAILS CONTRACTOR'S

BANK RATING

The bidder to provide: Account Number, Name of Bank and branch code

Name of Bank: _____

Account Name: _____

Account Number: _____

Branch Code : _____

& PARTNER

Name of Bank: _____

Account Name: _____

Account Number: _____

Branch Code : _____

SIGNATURE OF TENDERER	**DATE:**

SIGNATURE OF TENDERER	**DATE:**

MBD 8

FORM T2.2.11 - DECLARATION OF THE BIDDER's PAST SUPPLY CHAIN MANAGEMENT PRACTICES

Item	Question	Yes	No
1.1	Is the Tenderer or any of its directors listed on the National Treasury's database as a company or person 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 National Treasury after the *audi alteram partem* rule was applied).**	Yes ☐	No ☐
1.1.1	If so, furnish particulars:		
1.2	Is the Tenderer 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)? **(To access this Register enter the National Treasury's website, www.treasury.gov.za, click on the icon "Register for Tender Defaulters" or submit your written request for a hard copy of the Register to facsimile number (012) 3265445).**	Yes ☐	No ☐
1.2.1	If so, furnish particulars:		
1.3	Was the Tenderer 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 ☐
1.3.1	If so, furnish particulars:		
1.4	Does the Tenderer 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? **Attach proof not older than three months.**	Yes ☐	No ☐
1.4.1	If so, furnish particulars:		
1.5	Was any contract between the Tenderer 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 ☐
1.5.1	If so, furnish particulars:		

CERTIFICATION

I, THE UNDERSIGNED ..... CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM IS CORRECT. I ACCEPT THAT, IN ADDITION TO CANCELLATION OF A CONTRACT, ACTION MAY BE TAKEN AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.

SIGNED ON BEHALF OF TENDERER	**DATE:**
POSITION	**NAME OF BIDDER**

***where the entity tendering is a joint venture, each party to the joint venture must sign a declaration (FormT2.2.10) in terms of the Municipal Finance Management Act and attach it to this schedule.**

FORM T2.2.12 - CERTIFICATE FOR MUNICIPAL SERVICES AND PAYMENTS TO SERVICE PROVIDER

To: THE MUNICIPAL MANAGER, GAMAGARA LOCAL MUNICIPALITY

CERTIFICATE FOR MUNICIPAL SERVICES AND PAYMENTS TO SERVICEPRO VIDER

Information required in terms of the Municipal's Supply Chain Management Policy, Sections 51.1 and 111.2

GAMAGARA LOCAL MUNICIPALITY: DIBENG BULK WATER SUPPLY (PHASE 1)

NAME OF THE BIDDER: ……..

FURTHER DETAILS OF THE BIDDER(S); Director / Shareholder / Partners, etc:

Directors /Shareholder/ Partner	Physical address of the **Business**	Municipal Account number(s)	Physical **residential** address of the Director / shareholder / partner	Municipal Account number(s)

NB: Please attach Certified copy(ies) of ID document(s)

I, _____, the undersigned,

(full name in block letters)

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

SIGNED ON BEHALF OF TENDERER / BIDDER **DATE:**

(i) For office use (comments): Telephone relevant Local Municipality

……
……
……

NB: Bidders to furnish proof of payment of Municipal Services and any other Contract with Landlord / Home Owner, or letter from Tribal Authority.

FORM T2.2.13 - AUTHORISATION FOR THE DEDUCTION OF OUTSTANDING AMOUNTS OWED TO COUNCIL

TO:	**THE MUNICIPAL MANAGER, GAMAGARA LOCAL MUNICIPALITY**
FROM:	

(NAME OF BIDDER / TENDERER)

AUTHORISATION FOR THE DEDUCTION OF OUTSTANDING AMOUNTS OWED TO COUNCIL

Extract from Supply Chain Management Policy, Section 51.1:

"The Municipal Manager may reject the bid or quote of any person if that person or any of its directors has:
51.1 failed to pay municipal rates and taxes or municipal service charges and such rates, taxes and charges are in arrears for more than three months; …"

I, THE UNDERSIGNED, _____,
(FULL NAME IN BLOCK LETTERS)

hereby authorise the Gamagara Local Municipality to deduct the full amount outstanding by the business organization / Director, shareholder, partner, etc from any payment due from Gamagara Local Municipality or any Local Municipality within the District.

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

SIGNED ON BEHALF OF TENDERER / BIDDER	**DATE:**

in the presence of the subscribing

witnesses. AS WITNESSES:

SIGNATURE WITNESS 1	**NAME IN BLOCK LETTERS**

SIGNATURE WITNESS 2	**NAME IN BLOCK LETTERS**

FORM T2.2.14 - QUALITY CRITERIA AND POINTS CLAIMED

1. Points for Quality Threshold

Description			Section no.	No of Points	
				Maximum	Claimed
Specific Rural Roads expertise	Company Capacity and capability	Experience of Tenderer	T2.2.3	40	
		Bank Rating	T2.2.3	10	
		Experience of Key Personnel	T2.2.9	30	
	Project Team	Plant & Equipment	T2.2.5	20	
	Total (Specific project applicable expertise)			100	

Note:
The minimum number of evaluation points for quality for a tender to be considered responsive is 70 points.

Explanation of Points for Quality Threshold:

QUALITY ASSESSMENT CRITERIA

1 Experience in bulk water Projects **(40 Points)**
Previous bulk water projects (Appointment letters and Completion certificates from Employers should be attached to claim points)

- Tenderer has successfully completed 5 water reticulations and/or bulk water lines projects with Construction Value greater than R 10 million of which at least 1 is greater that R 15 million **(40 Points)**
- Tenderer has successfully completed 3 water reticulations and/or bulk water lines projects with Construction Value greater than R 5 million of which at least 1 is greater that R 10 million **(25 Points)**
- Tenderer has successfully completed 2 water reticulations and/or bulk water lines projects with Construction Value greater than R 3 million of which at least 1 is greater that R 5 million **(10 Points)**
- Tenderer has successfully completed 1 water reticulation and/or bulk water line project with Construction Value greater than R 3 million **(5 Points)**
- Tenderer has submitted no and or inadequate information to determine scoring level. **(0 Points)**

2 Bank Rating **(10 Points)**
The Tenderer shall complete T2.2.9 in full and attach a Bank Classification (rating) to T2.2.13 from the bank as per criteria below. The bank rating should be for this tender specific, on an original bank letterhead with bank stamp based on the tender amount or any amount within the 5CE CIDB classification. **(R 6m to R 10m)**

I. "E" or lower rating	High risk – not to be recommended	**0 Points**
II. "D" rating	Reasonable business risk	**2 Points**
III. "C" rating	Good for the amount, strictly in accordance with business	**5 Points**
IV. "B" rating	Good for the amount mentioned	**8 Points**
V. "A" rating	Indisputable for enquiries	**10 Points**

3 Experience of Proposed Construction Site Supervisor & Safety Officer **(30 Points)**

(CV's and supporting documentation of the proposed site staff and Safety Officer must be attached with the following information available)

Full Name:
Date of Birth:
Years with Current Firm:
Years' Experience:
Detailed Tasks Assigned:
Key Qualifications:
[Give an outline of staff member's experience and training most pertinent to tasks on assignment. Describe degree of responsibility held by staff member on relevant previous assignments and give dates and locations. Use about half a page.]

Education:
[Summarize college/university and other specialised education of staff member, give names of schools, dates attended, and degrees obtained. Use about one quarter of a page.]

Employment Record:
[Starting with present position, list in reverse order every employment held. List all positions held by staff member since graduation, giving dates, names of employment organizations, titles of positions held, and locations of assignments. For experience in last ten years, also give types of activities performed and employer references, where appropriate.

NB: Please note, upon successful appointment the Contractor shall ensure that the Project Manager, Construction Manager and Health & Safety Officer employed on the project is the same or similar in terms of points scrod than the individual which CV was submitted at tender stage.

Scoring - **(Maximum 30 Points)**

Contracts Manager Minimum Requirements

- Tertiary education (NQF Level 5 or Higher) in Civil Engineering, Construction management of labour-intensive construction projects, Quantity Surveying or Build Environment Construction Management accredited qualification
- 2 years of project related project management experience and /or
- Completed at least 1 similar project in the capacity as the Project Manager

1. Accredited Tertiary qualification with at least 2 years project specific experience and completed at least 1 similar project in this capacity **(3 Points)**
2. Accredited Tertiary qualification with 3 to 7 years project specific experience or completed at least 2 similar projects in this capacity **(7 Points)**
3. Accredited Tertiary qualification with more than 7 years project specific experience and completed at least 5 similar projects in this capacity **(12 Points)**

Construction Manager/Site Agent Minimum Requirements

- Tertiary education (NQF Level 5 or Higher) in Civil Engineering, Construction management of labour-intensive construction projects, Quantity Surveying or Build Environment Construction Management accredited qualification
- 2 years of project related construction management experience and
- Completed at least 1 similar project in the capacity as the Construction Manager

1. Accredited Tertiary qualification with at least 2 years project specific experience and completed at least 1 similar project in this capacity **(3 Points)**
2. Accredited Tertiary qualification with 3 to 7 years project specific experience and completed at least 2 similar projects in this capacity **(7 Points)**
3. Accredited Tertiary qualification with more than 7 years project specific experience and completed at least 5 similar projects in this capacity **(12 Points)**

Construction Health & Safety Officer Minimum Requirements

- Occupational / Construction Health and Safety qualification or
- Construction management qualification with additional Construction Health and Safety training or
- Qualification with small components of OHS with additional training or
- Extensive work experience (7 years or more) in the field of OHS in terms of Section 19(4) of the Project and Construction Management Professions Act.
- At least 2 years of Construction Health and Safety experience and / or
- Completed at least 1 similar project in the capacity as the CHSO
- Registered as a CHSO SACPCM

Accredited Tertiary qualification with 7 years or more experience in the field of construction Health & Safety Section 19(4) and registered as CHSO SACPCMP. **(6 Points)**

4 Plant and Equipment **(20 Points).**

Proof of ownership (valid eNaTis) or commitment letter with ownership registration (valid eNaTis where applicable) from the supplier of plant to be provided to claim maximum points. Failure to submit proof will result in 0 points for each of the below.

-	TLB	(Owned = **3 Points**	/	hired = **2 Points**)
-	Excavator	(Owned = **6 Points**	/	hired = **4 Points**)
-	Tipper (6m3)	(Owned = **3 Points**	/	hired = **2 Points**)
-	Roller (Walk behind)	(Owned = **2 Points**	/	hired = **1 Points**)
-	Pump for Pressure testing	(Owned = **3 Points**	/	hired = **2 Points**)
-	Water Tanker	(Owned = **3 Points**	/	hired = **2 Points**)

Note:-
Failure to affix sufficient documentation as prescribed to this form could result in the loss of point and could result in the bid not being further considered for the award of the Contract.

Signature of Tenderer : ._____Date : _____

FORM T2.2.15 - RECORD OF ADDENDA TO BID DOCUMENT

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

	Date	**Title or Details**
1.		
2.		
3.		
4.		
5.		
6.		

Attach additional pages if more space is required.

Note:-

Failure to affix such documentation as prescribed to this page may result in this bid not being further considered for the award of the Contract.

SIGNATURE OF TENDERER **DATE:**

FORM T2.2.16 - COMPULSORY ENTERPRISE QUESTIONNAIRE

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

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

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

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

Section 4: Particulars of sole proprietors and partners in partnerships

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

Section 5: Particulars of companies and close corporations

Company registration number . . . . . .

Close corporation number . . . . . .

Tax reference number . . . . . .

Section 6: Record of service of the state

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

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

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

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

*insert separate page if necessary

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

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

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

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

*insert separate page if necessary

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

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

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

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

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

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

SIGNATURE OF TENDERER **DATE:**

FORM T2.2.17 - CONSTRUCTION INDUSTRY DEVELOPMENT BOARD (CIDB) REGISTRATION

The Bidder is to affix to this page :-

- Written proof of his registration with the CIDB as a Category 5CE or Higher Contractor.

Note:-

1. Failure to affix such documentation as prescribed to this page may result in this bid not being further considered for the award of the Contract.

2. All subcontractors are required to be registered in the relevant categories for them to participate in this contract

SIGNATURE OF TENDERER **DATE:**

FORM T2.2.18 - COMPANY REGISTRATION

The Bidder is to affix to this page :-

- Certified copy of Company/Close corporation registration documents from Registrar of Companies (eg. CK1, CM1, CM29 etc).
- Certified copy of Partnership Agreement (if bidder is a Partnership)
- Certified copy of deed of Trust (if a Trust is involved)
- Certified copies of Identity documents for all directors/members.
- Recent statement as proof of payment of municipal services (rates and taxes) for both company and all directors of the company. Not older than three months.
- Proof of company address or lease agreement whichever applies obtainable from your local municipality, tribal office or landlord.
- Proof of residence of all directors as they appear on the company registration certificate obtainable from your local municipality or tribal authority.
- Proof of company registration on the Central Supplier Database (CSD).

Note:-

Failure to affix such documentation as prescribed to this page may result in this bid not being further considered for the award of the Contract.

SIGNATURE OF TENDERER **DATE:**

END OF SECTION

Gamagara Local Municipality

UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1

AGREEMENTS AND CONTRACT DATA

INDEX

END OF SECTION

Gamagara Local Municipality

UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1

FORM OF OFFER AND ACCEPTANCE

OFFER

The employer, identified in the acceptance signature block, has solicited offers to enter into a contract for the procurement of:

Gamagara Local Municipality: UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1.

The tenderer, identified in the offer signature block, has examined the documents listed in the tender data and addenda thereto as listed in the returnable schedules, and by submitting this offer has accepted the conditions of tender.

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

The offered total of the Prices inclusive of Value Added Tax for portion 1 is

RANDS ……..

and the offered total of the Prices inclusive of Value Added Tax for portion 2 is

RANDS ……..

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

Signature(s) _____ _____

Name(s) _____ _____

Capacity _____ _____

for the tenderer _____

(Name and address of organisation)

Name & signature
of witness _____ Date _____

ACCEPTANCE

By signing this part of this form of offer and acceptance, the employer identified below accepts the tenderer's offer as per the portion signed below. The Employer will reserve the right to the acceptance of portion 2 at a later stage, once he is in a position to proceed with the works under portion 2. In consideration thereof, the employer shall pay the contractor the amount due in accordance with the conditions of contract identified in the contract data. Acceptance of the tenderer's offer shall form an agreement, between the employer and the tenderer upon the terms and conditions contained in this agreement and in the contract that is the subject of this agreement.

The terms of the contract, are contained in

Part C1	Agreements and Contract Data, (which includes this agreement)
Part C2	Pricing Data
Part C3	Scope of Work
Part C4	Site Information

and drawings and documents or parts thereof, which may be incorporated by reference into Parts C1 to C4 above.

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

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

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

ACCEPTANCE OF PORTION 1:

Signature(s) _____ _____

Name(s) _____ _____

Capacity _____ _____

for the Employer _____
(Name and address of organisation)

Name & signature

of witness _____ Date _____

ACCEPTANCE OF PORTION 2: (IF OR WHEN APPLICABLE)

Signature(s) _____ _____

Name(s) _____ _____

Capacity _____ _____

for the Employer _____
(Name and address of organisation)

Name & signature

of witness _____ Date _____

SCHEDULE OF DEVIATIONS

Notes :

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

1. Subject .....

   Details .....

2. Subject .....

   Details .....

3. Subject .....

   Details .....

4. Subject .....

   Details .....

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

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

END OF SECTION

Gamagara Local Municipality

UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1

CONTRACT DATA

GENERAL CONDITIONS OF CONTRACT

The General Conditions of Contract for Construction Works, 3rd Edition (2015), published by the South African Institution of Civil Engineering, is applicable to this Contract.

The General Conditions of Contract are not bound into this document but are available at the Contractor's expense from the Secretary of the South African Institution of Civil Engineering, Private Bag X200, Halfway House, Midrand, 1685 or www.saice.org.za.

CONTRACT SPESIFIC DATA

In terms of clause 1.1.1.8 of the General Conditions of Contract for Construction Works, 3rd Edition (2015), the following Contact Data apply to this Contract.

The Contract Data consists of two parts. Part 1 contains information provided by the Employer, while Part 2 contains information to be provided by the Contractor.

Part 1: Data Provided by the Employer

Clause	Contract Data
1.1.1.2	Add the following: "Schedule of Quantities" means the document so designated in the Pricing Data and forming part of the written instruction by the Employer's Agent to the Contractor to execute the specified portion of works.
1.1.1.5	Add the following to the clause: The "Commencement Date" means the date on which the contactor receives a written instruction from the Employer to commence with a portion of the Works.
1.1.1.7	Add onto the word "parties" in the last sentence: "…… and shall include any written instruction by the Employer's Agent to the Contractor to execute any specified portion of the works."
1.1.1.9	"Contract Price" means the total estimated value of different portions of the works executed by the Contractor on instruction and approval by the Employer's Agent.
1.1.1.13	Add the following to the end of this definition: The Defects Liability Period is 12 months.
1.1.1.14	Add the following to the end of this definition: This clause shall apply *mutatis mutandis* to any portion or phase of the Works that may be described in the Scope of Works or in the Contract Data, or agreed subsequently between the Contractor and the Employer, and committed to writing. The time for completion of a specified portion of work shall be as per works instruction. The time for completion of all works under this project shall be **4 months** for portion 1 and **3 months** for portion 2. The Employer also reserves the right to the acceptance of portion 2 of the works and to reallocate works to another Contractor, should the Contractor not perform adequately.
1.1.1.15	The Employer is Gamagara Local Municipality.
1.1.1.16	For this specific contract only, the word "Employer's Agent" means any Registered Professional appointed, generally or specifically by Gamagara Local Municipality to fulfil the functions of the Employer's Agent in terms of the Conditions of Contract.

Clause	Contract Data
1.1.1.25	"Pricing Data" means the document that contains the Schedule of Quantities and provides the criteria and assumptions which it will be assumed in the Contract that were taken into account by the Contractor when developing his price.
1.1.1.26	The pricing strategy is Re-measurement Contract for each portion of works and/or instruction.
1.2.1	Add the following to the clause: 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.
1.2.1.2	The address of the Employer is: - Gamagara Local Municipality Cnr Frikkie Meyer & Hendrik Van Eck Roads, KATHU 8446
1.3.6	Replace this clause with: The copyright in all documents, drawings and records (prepared by the Employer's Agent) related in any manner to the Works shall vest in the Employer or the Employer's Agent or both (according to the dictates of the Contract that has been entered into by the Employer's Agent and the Employer for the Works), and the Contractor shall not furnish any information in connection with the Works to any person or organisation without the prior approval of the Employer to this effect.
3.1.1	Add the following words into to the sentence…. ……. "*shall be a registered professional in a built environment profession* with a minimum of 10 years' experience *that is appropriate to*" ……..
3.2.3	The Employer's Agent is, in terms of his appointment by the Employer for the design and administration of the Works included in the Contract, required to obtain the specific approval of the Employer for the execution of the following duties: 3.2.3.1 The issuing of an order to suspend the progress of the Works, the extra cost resulting from which order is to be borne by the Employer in terms of

Clause	Contract Data
	Clause 5.11 or the effect of which is liable to give rise to a claim by the Contractor for an extension of time under Clause 5.12 of these conditions. 3.2.3.2 The issuing of an instruction or order to vary the nature or quantity of the Works in terms of Clause 6.3, the estimated effect of which will be to increase the Contract Price by an amount exceeding R50 000, the valuation of all variation orders in terms of Clause 6.4 and the adjustment of the sum(s) tendered for General Items in terms of Clause 6.11. 3.2.3.3 The approval of any claim submitted by the Contractor in terms of Clause 10.1.
4.1.2	Add the following to the clause: The Contractor shall provide the following to the Employer's Agent 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 Employer's Agent 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 Employer's Agent 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 DXF electronic format after completion of the Works. The Contractor shall be responsible for the design of the Temporary Works.
4.3.3	Add the following new clause: The Ministerial Determination, Special Public Works Projects, issued in terms of the Basic Conditions of Employment Act of 1977 by the Minister of Labour in Government Notice No 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.
4.3.4	Add the following new clause: The Contractor shall comply with the Occupational Health and Safety Specification prepared by the Employer in terms of the Construction Regulations, 2014 promulgated in terms of Section 43 of the Occupational Health and Safety Act (Act No. 85 of 1993).

Clause	Contract Data
	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. The Contractor shall submit an approved Health and Safety Plan to the Employer's Agent within 14 days from the date that the Agreement made in terms of the Form of Offer and Acceptance comes into effect.
4.3.5	Add the following new clause: Contractor's liability as mandatory Notwithstanding any actions which the Employer may take, the Contractor accepts sole liability for due compliance with the relevant duties, obligations, prohibitions, arrangements and procedures imposed by the Occupational Health and Safety Act, 1993 (Act 85 of 1993), and all its regulations, including the Construction Regulations, 2014, for which he is liable as mandatory. By entering into this Contract it shall be deemed that the parties have agreed in writing to the above provisions in terms of Section 37 (2) of the Act.
4.3.6	Add the following new clause: Contractor to notify Employer The Employer retains an interest in all inquiries conducted under this Contract in terms of Section 31 and/or 32 of the Occupational Health and Safety Act, 1993 (Act 85 of 1993) and its Regulations following any incident involving the Contractor and/or Sub-Contractor and/or their employees. The Contractor shall notify the Employer in writing of all investigations, complaints or criminal charges which may arise pursuant to work performed under this Contract in terms of the Occupational Health and Safety Act, 1993 (Act 85 of 1993) and Regulations.
4.3.7	Add the following new clause: Contractor's Designer The Contractor and his designer shall accept full responsibility and liability to comply with the Occupational Health and Safety Act, 1993 (Act 85 of 1993) and the Construction Regulations, 2014 for the design of the Temporary Works and those part of the Permanent Works which the Contractor is responsible to design in terms of the Contract.
4.4.4	Add the following to the clause: …. 30 % of the construction amount should be spend locally within the Gamagara LM project area. The cost of local labour, local sub-contractors and local suppliers will form part of the 30% Local Economic Development.

Clause	Contract Data
4.10.3	Add the following new clause: The Contractor shall use local labour in accordance with the requirements contained within the Scope of Work.
5.3.1	Add the following: The documentation required before commencement with Works Execution are: • Health and Safety Plan (Refer to Clause 4.3) • Initial construction programme (Refer to Clause 5.6) • A detailed cashflow forecast (Refer to Clause 5.6.2.6) • Security/Performance Guarantee (Refer to Clause 6.2) • Insurance (Refer to Clause 8.6)
5.3.2	Add the following: The time to submit the documentation required (Refer to Clause 5.3.1) before commencement with Works execution is 14 days.
5.4.2	The access and possession of Site shall not be exclusive to the Contractor but as set out in the site information.
5.6.1	Add the following to the clause: In this regard the Contractor shall have regard for the phases and sub-phases (if applicable) for the Development, which shall also be the order in which the Permanent Works shall be constructed, unless otherwise agreed between the parties and committed to writing. If phased construction is applicable, the phases and sub-phases will be described in the Specifications and/or will be indicated on the Phasing Plan which forms part of the Drawings.
5.8.1	The non-working days are Sundays. Special non-working days shall be all South African Statutory holidays and the official building holidays commencing on 16 December and ending 5 January.
5.12.5	Add the following new clause: Extension of time due to Abnormal Rainfall Extension of time for completion of the Contract shall be allowed in the event of abnormal rainfall in accordance with the following formula:

$V = (N_w - N_n) + (R_w - R_n)/20$

Where:

V = Extension of time in calendar days for the calendar month under consideration

Nw = Actual number of days during the calendar month under consideration on which a rainfall of 10mm and more is recorded

R_w = Actual total rainfall in mm recorded during the calendar month under consideration

Nn = Average number of days, derived from rainfall records, on which a rainfall of 10mm and more was recorded during the relevant calendar month as per the data tabulated hereinafter

Rn = Average total rainfall in mm for the relevant calendar month, derived from rainfall records, as tabulated hereinafter

Where the extension of time due to abnormal rainfall has to be calculated for portion of a calendar month, pro rata values shall be used. Should V be negative for any particular month, and should its absolute value exceed the corresponding value of N_n, then V shall be taken as being equal to minus N_n. The total extension of time to be granted shall be the algebraic sum of all the monthly extensions, provided that if this total is negative then the time for completion shall not be reduced due to subnormal rainfall.

Rainfall records for the period of construction shall be taken on Site. The Contractor shall provide and install all the necessary equipment for accurately measuring the rainfall. The Contractor shall also provide, erect and maintain a security fence plus gate, padlock and keys at each measuring station, all at his own cost. The Employer's Agent 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 Employer's Agent's Representative. Access to the measuring gauge(s) shall at all times be under the Employer's Agent's control.

The rainfall records applicable to this Contract are those recorded at Weather Station Kathu. The following values of N_n and R_n shall apply:

Clause	Contract Data

Month	R_n (mm)	N_n (days)
January	83	7.6
February	83	8.8
March	81	9
April	50	6
May	20	2.7
June	7	1.7
July	3	1.2
August	8	1.4
September	6	1.2
October	27	4
November	43	6.4
December	46	6.4
Total	457	56

5.13.1 The penalty for failing to complete the Works is R5 000/day per phase of works and/or Employer's Agent's instruction.

5.13.3 Add the following new Clause.

The imposition of penalties in terms of Clause 5.13.1 shall not relieve the Contractor from his obligation to complete the works, nor from any of his obligations and liabilities under the Contract.

5.13.4 Add the following new Clause:

If the Contractor shall, without the prior written permission of the Employer's Agent, in respect of any portions of the Works which are prescribed in the Scope of Work to be executed using labour intensive construction methods, or for which the maximum size and capacity of mechanical plant and equipment is restricted in terms of the Contract:

- fail to execute such portions of the Works, or any parts thereof, utilising labour intensive construction methods strictly in accordance with the provisions of the Contract; or
- utilise in the execution of such portions of the Works, or any parts thereof, mechanical plant or equipment which is in conflict with the terms of the Contract; or
- utilise in the execution of such portions of the Work, workers drawn from sources other than those allowed in terms of the Contract;

Clause	Contract Data
	then the Contractor shall be liable to the Employer for the percentage stated below of the value of the Works so executed in conflict with the provisions of the relevant Scope of Work, as a penalty for non-compliance. The penalty for non-compliance is: 15% of the value of Works specified. The imposition of penalties in terms of this clause shall not relieve the Contractor from his obligation to complete the Works, nor from any of his obligations and liabilities under the Contract.
5.16.3	The Latent defect period is 10 years after the issue of the Final Approval Certificate in terms of Clause 15.6.1
6.1.1	Add the following to the clause: Payment for works identified in the Scope of Work 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.
6.2.1	Add the following to this Clause: The guarantee shall remain valid until the issue of the Certificate or Certificates of Completion in respect of the whole of the Permanent Works. The Pro Forma Form of Guarantee bound into the General Conditions of Contract is replaced by the Form of Guarantee (Deed of Suretyship) is appended to the Contract Data as Annexure A.
6.8.2	The application of a Contract Price Adjustment factor will apply to this Contract.
6.8.3	Price Adjustments for variations in the cost of special materials is not allowed.
6.8.4	In line 6 delete the words "between the Employer and the Contractor".
6.10.1.5	The percentage advance on materials not yet built into the Permanent Works is 80%. Proof of purchase must accompany the claim
6.10.3	The percentage retention is 10% of a payment claim of the total construction value per Works Instruction.
6.11.1.3	Delete this clause in total.
8.6.1.3	The limit of indemnity for liability insurance is R10 000 000 per event, the number of events being unlimited.
9.2.1.3.5	Add the following to this Clause:

Clause	Contract Data
	… or is find to deliver poor performance in the execution of the scope of work or any part thereof,
10.5.3	The number of Adjudication Board Members to be appointed is 1 (one).

CONTRACT PRICE ADJUSTMENT SCHEDULE

Clause	Contract Data
1.	No Contract Price Adjustment will apply to Portion 1 of this Contract. For portion 2 of this Contract, the application of a Contract Price Adjustment factor will apply only if the contract period exceeds 12 months. The price adjustment formula provided in the General Conditions of Contract will apply, together with the following coefficients and the definition of the relevant indices indicated below; X=0,15 a=0,15 b=0,20 c=0,55 d=0,10
2.	Replace the definitions of the relevant indices with the following: "L" is the "Labour Index" and shall be the "Consumer Price Index" for the urban area of Northern Cape as published in the Consumer Price Index Statistical Release P0141 (Table 5 – Consumer Price Index and percentage change according to Urban Area) of Statistics South Africa. "P" is the "Plant Index" and shall be the "Civil Engineering Plant" index as published in the Production Price Index Statistical Release P0151.1 (Table 4 – Price Index for selected materials) of Statistics South Africa. "M" is the "Materials Index" and shall be the "Civil Engineering" index as published in the Production Price Index Statistical Release PO 151.1 (Table 6 – Production Price for materials used in certain industries) of Statistics South Africa. "F" is the "Fuel Index" and shall be the "Diesel oil – Coast and Witwatersrand" index as published in the Production Price Index Statistical Release PO 142.1 (Table 1 - Production Price Index for selected materials) of Statistics South Africa. The Base month for this Contract will be April 2025 and the following base indices, as published in the month of March on Statistics South Africa website, will be applicable: L – 101,3 (published on the 19th of March 2025) P – 111,3 (published on the 27th of March 2025) M – 107,4 (published on the 27th of March 2025) F – 92,8 (published on the 27th of March 2025)

Part 2: Data provided by the Contractor

Clause	Contract Data
1.1.1.9	The name of the Contractor is: _____ _____
1.2.1.2	The address of the Contractor is: _____ _____
6.2.1	The security to be provided by the Contractor shall be one of the following:

Type of Security	Contractor's choice. Indicate "Yes" or "No"
Cash deposit	
Performance guarantee	

END OF SECTION

Gamagara Local Municipality

UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1

(To be supplied on the
official letterhead
of "The *Bank/Company*")

PERFORMANCE GUARANTEE

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

GUARANTOR DETAILS AND DEFINITIONS

"*Guarantor*" means:	……
Physical address:	……
	……
"*Employer*" means:	Gamagara Local Municipality
"*Contractor*" means:	……
"*Employer's Agent*" means:	……
"*Works*" means:	PROJECT: UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1
"*Site*" means:	As per site layout drawing included in Volume 2 of the Tender document.
"*Contract*" means:	The Agreement made in terms of the Form of Offer and Acceptance and such amendments or additions to the Contract as may be agreed in writing between the parties.
"*Contract Sum*" means:	The Contract Amount in terms of the Form of Offer and Acceptance.
Amount in words:	Contract Sum written out in words.
"*Guaranteed Sum*" means:	The maximum aggregate amount of 10% of the Contract Amount at the time that the agreement comes into effect

Amount in words:	Guaranteed Sum written out in words.
"*Expiry Date*" means:	14 Days after receipt of Certificate of Completion.

CONTRACT DETAILS

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

PERFORMANCE GUARANTEE

1. The Guarantor's liability shall be limited to the amount of the Guaranteed Sum.

2. The Guarantor's period of liability shall be from and including the date of issue of this Performance Guarantee and up to and including the Expiry Date or the date of issue by the Employer's Agent of the Certificate of Completion of the Works or the date of payment in full of the Guaranteed Sum, whichever occurs first. The Employer's Agent and/or the Employer shall advise the Guarantor in writing of the date on which the Certificate of Completion of the Works has been issued.

3. The Guarantor hereby acknowledges that:

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

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

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

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

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

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

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

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

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

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

6. It is recorded that the aggregate amount of payments required to be made by the Guarantor in terms of 4 and 5 shall not exceed the Guarantor's maximum liability in terms of 1.

7. Where the Guarantor has made payment in terms of 5, the Employer shall upon the date of issue of the Final Payment Certificate submit an expense account to the Guarantor showing how all monies received in terms of this Performance Guarantee have been expended and shall refund to the Guarantor any resulting surplus. All monies refunded to the Guarantor in terms of this Performance Guarantee shall bear interest at the prime overdraft rate of the Employer's bank compounded monthly and calculate from the date payment was made by the Guarantor to the Employer until the date of refund.

8. Payment by the Guarantor in terms of 4 and 5 shall be made within seven (7) calendar days upon receipt of the first written demand to the Guarantor.

9. Payment by the Guarantor in terms of 5 will only be made against the return of the original Performance Guarantee by the Employer.

10. The Employer shall have the absolute right to arrange his affairs with the Contractor in any manner which the Employer may deem fit and the Guarantor shall not have the right to claim his release from this performance Guarantee on account of any conduct alleged to be prejudicial to the Guarantor.

11. The Guarantor chooses the physical address as stated above for the service of all notices for all purposes in connection herewith.

12. This Performance Guarantee is neither negotiable nor transferable and shall expire in terms of 2, where after no claims will be considered by the Guarantor. The original of this Guarantee shall be returned to the Guarantor after it has expired.

13. This Performance Guarantee, with the required demand notices in terms of 4 or 5, shall be regarded as a liquid document for the purposes of obtaining a court order.

14. Where this Performance guarantee is issued in the Republic of South Africa the Guarantor hereby consents in terms of Section 45 of the Magistrate's Courts Act No 32 of 1944, as amended, to the jurisdiction of the Magistrate's Court of any district having jurisdiction in terms of Section 28 of the said Act, notwithstanding that the amount of the claim may exceed the jurisdiction of the Magistrate's Court.

Signed on this _____day of _____20_____

at _____(place)

Guarantor's Signatory

1. _____ _____
Signature Name

_____
Capacity

2. _____ _____
Signature Name

_____
Capacity

As Witnesses:

1. _____ _____
Signature Name

2. _____ _____
Signature Name

END OF SECTION

Gamagara Local Municipality

UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1

PRICING DATA

INDEX

END OF SECTION

Gamagara Local Municipality

UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1

PRICING INSTRUCTIONS

1. GENERAL

These pricing instructions provide the Tenderer with guidelines and requirements with regard to the completion of the Schedule of Quantities. These pricing instructions also describe the criteria and assumptions which will be assumed in the Contract to have been taken into account by the Tenderer when developing his prices.

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

The following words have the meaning hereby assigned to them:

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

2. PAY ITEMS

The Schedule of Quantities has been drawn up generally in accordance with the relevant provisions of the Standard Specifications for Water Reticulation Works for Municipal Services.

The Schedule of Quantities has been drawn up in accordance with the South African Standard System for measuring building work. (6th edition – revised February 1999). The items in the Schedule are to be read and priced in conjunction with and the descriptions regarded as amplified by the Model Preambles for Trades as recommended and published by the Association of South African Quantity Surveyors, 1999 edition, and no claim arising from brevity of description of items fully described in the said Model Preambles for Trades will be entertained.

The short descriptions of the items in the Schedule of Quantities are for identification purposes only and the measurement and payment clause of the Standard Specifications and the Particular Specifications, read together with the relevant clauses of the amendments and additions contained in the Project Specification and directives on the drawings, that set out

what ancillary or associated work and activities are included in the rates for the operations specified.

The item numbers appearing in the Schedule of Quantities refer to the corresponding item numbers in the Standard Specifications. Item numbers prefixed by the letters PS refer to items of payment described in Part B amendments to the standard specification.

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

mm	=	millimetre	h	=	hour
m	=	metre	kg	=	kilogram
km	=	kilometre	t	=	ton (1000kg)
m^2	=	square metre	No.	=	number
m^2.pass	=	square metre pass	sum	=	lump sum
ha	=	hectare	MN	=	meganewton
m^3	=	cubic metre	MN.m	=	meganewton-metre
m^3.km	=	cubic metre-kilometre	PC sum	=	Prime Cost Sum
l	=	litre	Prov sum	=	Provisional sum
kl	=	kilolitre	%	=	per cent
MPa	=	megapascal	kW	=	kilowatt
KPa	=	kilopascal	wt	=	wall thickness
w/day	=	workday	dia	=	diameter
BH	=	borehole	R/only	=	rate only

3. QUANTITIES

3.1 The quantities given in the Schedule of Quantities are for the evaluation of the tender only (Rates only contract for three years) and is not an indication of the actual quantities that may be required for the contract. Quantities will be measure during the execution of the work. The quantities finally accepted and certified for payment and not the quantities given in the Schedule of Quantities, shall be used to determine payments to the Contractor. The Contractor shall obtain the Employer's Agent's detailed instructions for all work before ordering any materials or executing work or making arrangements for it. The quantities of material or work stated in the Schedule of Quantities shall not be regarded as authorisation for the Contractor to order material or to execute work.

3.2 The Works as finally completed in accordance with the Contract shall be measured and paid for as specified in the Schedule of Quantities and in accordance with the General and Special Conditions of Contract, the Standard Specifications and Project Specifications and the Drawings. Unless otherwise stated, items are measured net in accordance with the Drawings, and no allowance has been made for waste.

3.3 The validity of the contract will in no way be affected by differences between the quantities in the Schedule of Quantities and the quantities finally certified for payment.

4. RATES

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

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

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

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

(a) an alternative item or material is contemplated;
(b) variations of specified components in the make-up of a pay item may be expected;
(c) no work under the item is foreseen at tender stage but the possibility that such work may be required is not excluded.

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

4.5 The Tenderer shall not group together a number of items and tender one rate for such group of items.

4.6 All rates and sums of money quoted in the Schedule of Quantities shall be in whole Rands only. Cent shall be discarded.

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

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

4.9 Reasonable compensation will be established where no payment item appears in respect or work required in terms of the Contract which is not covered in any other pay item.

4.10 Incorrect entries shall not be erased or obliterated with correction fluid but must be crossed out neatly with a single line. The correct figures must be entered above or adjacent to the crossed-out entry, and the alteration must be initialled by the Tenderer.

4.11 Arithmetical errors found in the Schedule of Quantities shall be dealt with as set out in the Tender Data.

4.12 Where the Contractor is required to furnish detailed drawings and designs or other information in terms of the Contract Documents, all costs thereof shall be deemed to have been provided for and included in the unit rates and sum amounts tendered for the items scheduled in the Schedule of Quantities, and separate additional payments will not be made.

4.13 In order to ensure that payments certified by the Employer's Agent are reasonably consistent with the market value of the work done, and that variations in quantities do not distort the contract valuation, the rates, prices and amounts tendered in the Schedule of quantities are required to be in balance.

A tender will be considered out of balance if:

(i) the combined, extended total tendered for Section 1300: Contractors Establishment on Site and General Obligations (Fixed-, value- and time-related obligations) charges exceeds a maximum of 15% of the Tender Sum (excluding contingencies, escalation and VAT).

(ii) the rates, prices or amounts tendered for any other items differ by more than 20 (twenty) percent from either the next highest or next lowest rates, prices or amounts tendered, or else from the latest departmental estimates.

4.14 Any such unbalanced tender may be rejected if, after seven (7) days of having been given written notice by the Employer to adjust those rates or lump sums which are unreasonable or out of balance, the Tenderer fails to make the necessary satisfactory adjustments. These adjustments in rectification will be such that increases are balanced by decreases, leaving the tender sum unchanged.

1 PAYMENTS

5.1 Unless otherwise specified in the Specifications and Project Specifications, progress payments in Interim Certificates, referred to in Clause 6.10.1 of the General Conditions of Contract 2015, in respect of "sum" items in the Schedule of Quantities shall be by means of interim progress instalments assessed by the Employer's Agent and based on the measure in which the work actually carried out, relates to the extent of the work to be done by the Contractor.

Notwithstanding any custom to the contrary, the work as executed will be measured for payment in accordance with the methods described in the contract documents under the various items of payment.

The nett measurements or mass of the finished work in place shall be taken for payment, and any quantity of work in excess of that prescribed shall be excluded.

END OF SECTION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
	SABS 1200A	SCHEDULE 1 : GENERAL (PORTION 1)				
1.1	8.3	FIXED-CHARGE ITEMS				
1.1.1	8.3.1	Contractual Requirements				
		Contractual requirements including all sureties and insurance	Sum	1		
1.1.2	8.3.2PSA 16.1	First Establishment of Facilities on the Site at the Depot or Contractor's Main Camp for the Contract :				
	8.3.2.1	a) Facilities for Engineer (SABS 1200 AB)				
		i) Nameboard (Two required) (PSAB1)	No.	1		
		ii) Furnished Office (PSAB2)	Sum	1		
		iii) Cellular telephone and combination fax telephone (One each required) (PSAB3)	Sum	1		
		iv) Survey Equipment (PSAB6)	Sum	1		
		v) Carport (PSAB7)	Sum	1		
		vi) Personal Computer and printer (PSAB4)	Sum	1		
		vii) Digital Camera (PSAB8)	Sum	1		
		viii) Survey Assistants (PSAB5)	Sum	1		
	8.3.2.2	b) Facilities for Contractor				
		i) Offices and storage sheds	Sum	1		
		ii) Workshops	Sum	1		
		iii) Living accommodation	Sum	1		
		iv) Ablution and latrine facilities	Sum	1		
		v) Tools and equipment	Sum	1		
		vi) Water, Electric power and Communications	Sum	1		
		vii) Dealing with water	Sum	1		
		viii) Access	Sum	1		
		ix) Plant	Sum	1		
1.1.3	8.3.3	Other fixed charge obligations				
		All other fixed charge and obligations	Sum	1		
Total Carried Forward						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
1.1.4	8.3.4	Removal of contractor's site establishment on completion of contract or interim de-establishment (only on written instruction)	Sum	1		
	8.3.4	Additional establishment cost to the contractor when re-establishing (Only on written instruction)	Sum	Rate Only		Rate Only
1.2	8.4 PSA 16.5	TIME-RELATED ITEMS				
1.2.1	8.4.1	Contractual Requirements	month	4		
1.2.2	8.4.2	Operate and maintain facilities on the Site:				
	8.4.2.1	a) Facilities for Engineer for the duration of Construction (SABS 1200AB)				
		i) Nameboards (PSAB1)	month	4		
		ii) Furnished Office (PSAB2)	month	4		
		iii) Telephone (PSAB3)	month	4		
		iv) Survey Equipment (PSAB6)	month	4		
		v) Carport (PSAB7)	month	4		
		vi) Personal Computer (PSAB4)	month	4		
		vii) Digital Camera (PSAB8)	month	4		
		viii) Survey Assistants (PSAB5)	month	4		
	8.4.2.2PS7	b) Facilities for Contractor for duration of construction, except where otherwise stated				
		i) Offices and storage sheds	month	4		
		ii) Workshops	month	4		
		iii) Living accommodation	month	4		
		iv) Ablution and latrine facilities	month	4		
		v) Tools and equipment	month	4		
		vi) Water supplies, electric power and communications	month	4		
		vii) Dealing with water	month	4		
		viii) Access	month	4		
		ix) Plant	month	4		
1.2.3	8.4.3	Supervision for duration of construction	month	4		
Total Carried Forward						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
1.2.4	8.4.4	Company and head office overhead costs for the duration of the contract	month	4		
1.2.5	8.4.5	Other time related obligations. All other time related obligations, including custody of drawings and programme to be furnished.	month	4		
Total Carried Forward To Summary						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		SCHEDULE 2 : PROVISIONAL SUMS (PORTION 1)				
2.1	PSA11	SUMS STATED PROVISIONALLY BY THE ENGINEER				
2.1.1	PSA11.3	Materials for Dayworks	P.Sum	1	25 000	25 000
2.1.1.1		Overheads, charges and profit on Item 2.1.1	%	25 000		
2.1.2	PSA11.4	Royalties for Borrow Materials	P.Sum	1	25 000	25 000
2.1.2.1		Overheads, charges and profit on Item 2.1.2	%	25 000		
2.2	PSA12	PRIME COST ITEMS				
2.2.1	PSA12.3	Artisan and Skills Training	P.Sum	1	15 000	15 000
2.2.1.1		Overheads, Charges and Profit on Item 2.2.1	%	15 000		
2.2.2	PSA12.1	Acceptance Control Testing of Earthworks	P.Sum	1	15 000	15 000
2.2.2.1		Overheads, Charges and Profit on Item 2.2.2	%	15 000		
2.2.3	PSA12.4	Telephone calls and Rental for the Engineers Representative	P.Sum	1	10 000	10 000
2.2.3.1		Overheads, Charges and Profit on Item 2.2.3	%	10 000		
2.2.4	PSA12.5	Payments to ESKOM in respect of electrical connection fees for borehole equipment	P.Sum	1	1 100 000	1 100 000
2.2.4.1		Overheads, Charges and Profit on Item 2.2.4	%	1 100 000		
2.2.5	PSA12.6	Specialist Contractors (Chlorination unit upgrades, Borehole and flow monitoring system)	P.Sum	1	635 000	635 000
2.2.5.1		Overheads, Charges and Profit on Item 2.2.5	%	635 000		
2.2.6	PSA12.2	Payments made to Labour Desk Officers	P.Sum	1	50 000	50 000
2.2.6.1		Overheads, Charges and Profit on Item 2.2.6	%	50 000		
2.3		NOMINATED SUB-CONTRACTOR				
2.3.1	PSA12.7	Management of approved emerging local sub-contractors	%	1 800 000		
Total Carried Forward To Summary						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		SCHEDULE 3 : PIPE WORK (PORTION 1)				
	SABS 1200DB	EARTHWORKS : PIPE TRENCHES				
3.1		SITE CLEARANCE				
3.1.1	8.3.1(a)	Clear 3m wide vegetation and trees of girth up to 1m	m	2 470		
3.1.2	8.3.1(b)	Remove trees over 1 m and up to 2 m girth	No.	6		
3.2	PSDB12	EXCAVATION - "MECHANICAL"				
3.2.1		Excavate in all materials for trenches for pipes with a diameter between 63 mm and 400 mm, backfill compact and dispose of surplus/unsuitable material				
		Note : See different length categories				
3.2.1.1		Up to 1,5m in depth for the following:				
		a) Total pipe line length (as per instruction) ≥ 2000m	m³	1 976		
3.2.1.2	8.3.2(b)	Extra-over item 3.2.1.1 incl. for excavation (provisional) in:				
		a) Intermediate material	m³	198		
		b) Hard rock material	m³	1 581		
3.2.1.3		Extra over Item 3.2.1.1				
	LIC	a) Backfill and compact by means of labour intensive construction methods in layers of 200mm compacted to 90% mod AASHTO	m³	948		
	LIC	b) Disposal of surplus material by means of labour intensive construction methods within 20m from the source of spoil utilising wheel barrows	m³	99		
3.2.2	8.3.2(c)	Excavate unsuitable material from trench bottom and dispose thereof within the free haul distance (Provisional)	m³	79		
3.3		EXCAVATION ANCILLARIES - "MECHANICAL"				
3.3.1	8.3.3.1(a)	Imported backfill materials from designated borrow pits (Only if approved by Engineer)	m³	758		
Total Carried Forward						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
3.3.2	8.3.3.2	Opening up and closing down of designated borrow pit	No.	1		
3.3.3	8.3.3.4	Overhaul :				
		a) Short haul	m³	758		
		b) Truck haul	m³/km	3 032		
3.4	SABS 1200LB	BEDDING (PIPES)				
3.4.1		PROVISION OF BEDDING "MECHANICAL"				
3.4.1.1	8.2.1	Provision of bedding material by importation from borrow pits (freehaul within the village boundaries)				
		a) Selected granular material	m³	247		
		b) Selected fill material	m³	741		
3.4.1.2	8.2.5	Overhaul of material for bedding cradle and selected fill blanket	m³/km	3 952		
3.4.2	PSDB12 LIC	EXCAVATION - "LABOUR BASED"				
		Excavate in all materials for trenches for pipes with a diameter between 20 mm and 200 mm, backfill compact and dispose of surplus/unsuitable materials:				
3.4.2.1		Up to 1,5m in depth	m³	15		
3.4.2.2	8.3.2(b)	Extra-over item 3.3.1.1 incl. for excavation (provisional) in :				
		b) Soft excavation Class 3	m³	15		
3.4.3	LIC	EXCAVATION ANCILLARIES - "LABOUR BASED"				
3.4.3.1	8.3.3.1(a)	Imported backfill materials from designated borrow pits (Only if approved by Engineer)	m³	3		
3.4.3.2	8.3.3.3	Compaction in road reserves	m³	3		
3.4.4	LIC	FINISHING - "LABOUR BASED"				
3.4.4.1	8.3.6.1	Reinstate road surfaces complete with:				
		a) Gravel (G5 material)	m²	6		
Total Carried Forward						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
3.5	1200L	PIPE WORK				
	8.2.1	Supply, lay, joint, bed, test and disinfect the following pipes complete with couplings to the relevant SABS standards including short lengths				
3.5.1		uPVC pipes				
		a) 200 Class 12	m	Rate Only		Rate Only
		b) 160 Class 12	m	2 210		
		c) 110 Class 12	m	Rate Only		Rate Only
		d) 90 Class 12	m	Rate Only		Rate Only
		e) 75 Class 12	m	260		
		f) 63 Class 12	m	Rate Only		Rate Only
3.6		VALVES				
3.6.1		Line valve assemblies.				
		Extra over item 3.4 for supplying, installing, bedding and testing line valve assemblies, complete with manhole as per Drawing No. B35145.01C-143-05 complete cutting of pipes and couplings included				
		a) 90 mm	No.	Rate Only		Rate Only
		b) 160 mm	No.	1		
3.6.2		Scour valve assemblies				
		Extra over item 3.4 for supplying, installing, bedding and testing scour valve assemblies as per Drawing No. B35145.01C-143-06 (Including Manhole). Scour tee, cutting of pipes and couplings included.				
		a) On 75 mm Ø main	No.	1		
		b) On 160 mm Ø main	No.	4		
3.6.3		Air valve assemblies				
3.6.3.1		Extra over item 3.4 for supplying, installing and testing air valve assemblies as per Drawing No. B35145.01C-143-07 complete (Including Manhole, Air valve measured elsewhere)				
		a) On 160 mm Ø main	No.	3		
Total Carried Forward						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
3.6.3.2		Valve to be supplied and installed complete for the following:				
		a) 25ND double orifice "Bermad, or similar approved"	No.	3		
		b) 25ND double orifice "Vent-O-Mat, or similar approved"	No.	Rate Only		Rate Only
3.6.4	8.2.3	Extra over item 3.4 for supplying, installing and testing Wafer type non-return valve assemblies similar to Drawing No. B35145.01-143-05 (only replacing the Isolation valve with a flanged NRV) including cutting of pipes, fittings and valve complete, excluding chamber				
		a) On 160 mm Ø main	No.	3		
3.6.5		Watermeters				
		Complete supply & installation of Meinecke Cosmos watermeters (Reducers excluded, manhole measured elsewhere)				
		a) 100 mm	No.	Rate Only		Rate Only
		b) 150 mm	No.	3		
3.7		FITTINGS AND SPECIALS				
		Extra over item 3.4 for supplying, installing, bedding and testing in PVC mains the following fittings and specials complete. Cutting of pipes and couplings included				
		Fittings of PVC, cast iron or aluminium				
3.7.1		Bends 90 °				
		a) 160 Ø	No.	4		
		b) 110 Ø	No.	Rate Only		Rate Only
3.7.2		Bends 45 °				
		a) 160 Ø	No.	3		
3.7.3		Bends 22 °				
		a) 160 Ø	No.	2		
Total Carried Forward						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
3.7.4		Tees				
		a) 110 x 90 mm	No.	Rate Only		Rate Only
		b) 110 x 110 mm	No.	2		
		c) 160 x 110 mm	No.	2		
3.7.5		Reducers				
		a) 90 x 75 mm	No.	1		
		b) 110 x 75 mm	No.	2		
		c) 110 x 90 mm	No.	1		
		d) 160 x 110 mm	No.	1		
3.7.6		Repair Coupling				
		a) 90 mm Ø	No.	1		
		b) 110 mm Ø	No.	1		
3.9		SUNDRIES				
3.9.1		Position markers as per specification Drawing No. B35145.01C-143-04	No.	12		
3.9.2		Thrust blocks as per typical details on specification Drawing No. B35145.01C-143-03 including formwork				
		a) Concrete Class 15/19	m^3	20		
3.9.3		Existing Plot Fences (Provisional)				
3.9.3.1		Taking down of existing fence, keep at a safe place and re-erect after construction activities.	m	65		
3.10	SABS 1200DB	SERVICES				
3.10.1		Existing Services (Provisional ESKOM Overhead power line)				
		a) Alongside service	m	1 075		
		b) When intersect a service	No.	2		
Total Carried Forward						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
3.10.2		Existing Services (Provisional TELKOM Overhead line)				
		a) Alongside service	m	780		
		b) When intersect a service	No.	2		
3.11	LIC	MANHOLES (as per Drawings No. B35145.01C-143-005 to 07)				
		a) 750 mm Ø	No.	6		
		b) 1200 mm	No.	Rate Only		Rate Only
Total Carried Forward To Summary						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		SCHEDULE 4 : ELEVATED TANKS (PORTION 1)				
4.1		PIPEWORK FOR STEELTANKS				
4.1.1		Flanged GMS Pipework at Structural Steel Tanks				
		a) 100ND	m	Rate Only		Rate Only
		b) 150ND	m	26		
4.1.2		Flanged GMS Fittings				
		a) Bends 90°				
		i) 100ND	No.	Rate Only		Rate Only
		ii) 150ND	No.	4		
4.1.3		Supply and install Leveldex Float valve complete				
		a) 80 mm Ø	No.	2		
		b) 100 mm Ø	No.	1		
		c) 150 mm Ø	No.	1		
Total Carried Forward To Summary						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		SCHEDULE 5 : PUMPS (PORTION 1)				
5.1	PD9	SUBMERSIBLE PUMPS				
5.1.1		Supply and delivery of centrifugal submersible pumps with installation and adequate lightning protection for the following duty points (Stainless Steel type):				
		Manufacturer : _____				
		"a) Head = 80m Flow = 5,4m³/h (Model: _____)"	No.	1		
		"b) Head = 80m Flow = 10,8m³/h (Model: _____)"	No.	2		
		"c) Head = 80m Flow = 15,2m³/h (Model: _____)"	No.	Rate Only		Rate Only
5.1.2		Installation and commissioning of centrifugal submersible pumps of manufacturer in Item 5.1.1.				
		"a) Head = 80m Flow = 5,4m³/h (Model: _____)"	No.	1		
		"b) Head = 80m Flow = 10,8m³/h (Model: _____)"	No.	2		
		"c) Head = 80m Flow = 15,2m³/h (Model: _____)"	No.	Rate Only		Rate Only
5.1.3		Supply, delivery, installation and commissioning of submersible pump pipework (HDPE/10) and nylon rope (Electric cable measured under schedule 6) for :				
		a) 65 mm HDPE	m	60		
		b) 80 mm HDPE	m	120		
		c) 100 mm HDPE	m	Rate Only		Rate Only
5.2		COMPLETE SUPPLY, DELIVERY & INSTALLATION OF:				
5.2.1		Baseplates				
		a) 65 mm HDPE	No.	1		
		b) 80 mm HDPE	No.	2		
		c) 100 mm HDPE	No.	Rate Only		Rate Only
Total Carried Forward						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
5.3	PD10	ANCILLARY PIPE WORK				
5.3.1		Alternative 1 - Supply and installation of ancillary pipework and Mechanical equipment as described in particular specification PD 10 and detailed on Drawings No. Drawing No. B35145C-143-09 Complete				
		a) 65 mm Ø piping	No.	1		
		b) 80 mm Ø piping	No.	2		
		c) 100 mm Ø piping	No.	Rate Only		Rate Only
5.4		MISCELLANEOUS				
5.4.1		Piezometer Tubes				
5.4.1.1		Supply, deliver and install piezometer tubes in the boreholes. The tubes will consist of 25mm LDPE Class 6 pipe strapped to the pipework of the borehole equipment	m	Rate Only		Rate Only
5.4.2		Borehole information plate				
		a) Supply, deliver and install the borehole information plate as per Drawing No. B35145.01C-143-10 (Information plate to be fixed inside the pumphouse)	No.	3		
		b) Supply, deliver and install the borehole information plate as per Drawing No. B35145.01C-143-10 (Information plate to be fixed on the outside of the pumphouse)	No.	3		
		c) Supply, deliver and install the borehole information plate as per Drawing No. B35145.01C-143-10 (Information plate to be cast into the floor outside of the pumphouse door)	No.	3		
Total Carried Forward To Summary						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		SCHEDULE 6 : ELECTRICAL WORK (PORTION 1)				
6.0		ELECTRICAL WORK - LV INSTALLATION				
		Note: All items to include for supply, design manufacture, delivery, installation, commissioning and maintenance as per specifications				
6.1	PEB 14	LOW VOLTAGE CABLES				
		The supply and installation of stranded copper cables installed in cable trenches, on cable racks or trays or fixed to steel structure. Prices to include for terminations and all fixing materials.				
6.1.1		Supply Cable from Eskom Metering Kiosk to MCC's				
		a) 6 mm² x 4 core	m	10		
		b) 10 mm² x 4 core	m	10		
		c) 16 mm² x 4 core	m	240		
6.1.2		Supply Submersible Cable from MCC to Pump motor				
		a) 4 mm² x 3 core	m	10		
		b) 6 mm² x 3 core	m	150		
		c) 10 mm² x 3 core	m	10		
6.1.3		Control Cables to Protection Instruments				
		a) 1.5 mm² x 3 core	m	50		
6.2	EB 25	EARTH CONDUCTORS				
6.2.1		The supply and installation of bare stranded copper conductors installed in the same route as the cables including terminations				
		a) 10 mm²	m	10		
		b) 16 mm²	m	200		
6.2.2		The supply and installation of a 1.5m Earth rod with clamps	No.	12		
6.3	LIC	CABLE TRENCH EXCAVATION				
6.3.1		Excavations of cable trenches, bedding, backfilling compacting and making good of cable trenches in:				
Total Carried Forward						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
		a) Soft excavation 0-1 m deep	m³	154		
		b) Extra over (for intermediate excavation)"	m³	15		
		c) Extra over (for hardrock excavation"	m³	108		
6.4	PE 12	MOTOR CONTROL CENTRES				
6.4.1		Supply and installation of MCC's complete with all equipment, internal wiring, labels, protection equipment and earthing for the following kW ratings. Including fixing materials to install MCC on pedestal in pumphouse.				
6.4.1.1		Three phase with Variable Speed Drives starting				
		a) 2,2 kW	No.	1		
		b) 5,5 kW	No.	2		
		c) 7,5 kW	No.	Rate Only		
6.5		LOCKS				
		Supply and installation of No. 2 locks.				
6.5.1		No. 2 Locks	No.	8		
6.6		GENERAL ELECTRICAL INSTALLATION				
6.6.1		Conduit				
6.6.1.1		The supply and installation of heavy gauge galvanised conduit complete with draw boxes and accessories surface mounted.				
		i) 25mm dia	m	30		
6.6.2		Conductors and Earth Conductors				
6.6.2.1		The supply and installation of PVC insulated copper conductors drawn into conduit.				
		i) 2,5mm.sq PVC wire	m	30		
6.6.3		Light Switches				
6.6.3.1		The supply and installation industrial type, surface mounted light switches complete with outlet boxes.				
Total Carried Forward						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
		"i) 16A, one lever, one way, waterproof light switch rotary type"	No.	3		
6.6.4	PE9	Luminaries The supply and installation of 1500mm fluorescent waterproof light fitting including lamps, control gear and fixing materials as specified.				
6.6.4.1		Fluorescent vapour proof 1500mm light fitting	No.	3		
6.6.5		Flow Switches The supply and installation of Flow Switches installed in steel pipe. The rate shall include for reduction of pipe work where required.				
6.6.5.1		Flow Switch	No.	3		
6.6.6		Pressure Gauge The supply, installation, calibration and commissioning of pressure gauges as specified Type Wika complete with macrolon contacts, snubber and shut-off valve installed onto stainless steel niple.				
6.6.6.1		0 - 1600 kPA	No.	3		
6.7		MEDIUM DUTY GAL. WIRE MESH TRAY				
6.7.1		Supply and installation of medium duty cable tray complete with bends, corners, T-pieces and fixing materials				
		a) 150mm	m	30		
6.8		DOUBLE POLE ISOLATER				
6.8.1		Supply and installation of double pole isolator 16 Amp				
		a) Type GEWEISS GW 70431	No.	3		
6.9		SMALL POWER INSTALLATION				
6.9.1		Supply and installation of 16 Amp switch socket outlet, surface mounted.	No.	3		
6.9.2		Supply and installation of light switch, 1 lever surface mounted.	No.	3		
6.9.3		Supply and installation of power point complete with galv. conduit and GP wiring.				
Total Carried Forward						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
		a.) Light switch and light point 1.5mm² GP wire.	No.	3		
		b.) SSO point 2.5mm² GP wire.	No.	3		
		c.) Welding plug point 6mm² GP wire.	No.	3		
6.9.4		Light fitting, 2PL 18Watt Bulkhead, Beka.	No.	3		
6.10		DRAWINGS				
6.10.1		Work drawings of all MCC's and equipment for approval by the Engineer.	L/Sum	3		
6.10.2		The supply of As-build drawings in electronic format (Autocad) DXF files. Amount is per installation.	No.	3		
6.11		GENERAL				
		a) Electrical spares per borehole installation	No.	3		
		b) Operation and maintenance manuals including circuit diagrams (3 sets) per borehole installation measured under Schedule 5	No.	3		
		c) All items and labour necessary to complete test and commission the complete electrical installation including the issuing of all relevant test certificates and the certificate of compliance. Per borehole)	No.	3		
Total Carried Forward To Summary						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
7.1		SCHEDULE 7 : PUMPHOUSES (PORTION 1)				
7.1.1		PUMPHOUSES				
		Complete manufacture and delivery to site of concrete pumphouse complete including welded borehole number on 5 x 50 x 400mm Flat bar.				
7.1.2		a) As per Drawing No. B35145.01C-143-09	No.	3		
		Complete construction of appurtenant concrete work for pumphouses :				
7.1.3		a) As per Drawing No. B35145.01C-143-09 (Electrical Unit)	No.	3		
		Complete erection of pumphouses :				
7.2		a) As per Drawing No. B35145.01C-143-09	No.	3		
7.2.1	PB LIC	SECURITY FENCING				
		Supply and erect fencing complete as per Drawing No. B35145.01C-143-08				
		a) Corner posts	No.	16		
		b) Intermediate posts	No.	15		
		c) Gate posts	No.	8		
		d) Double gate 3,6m total width, with locking chain, hinges and drop bolts.	No.	4		
		e) Razor mesh with wires	m	176		
		f) Cast-insitu Concrete Class 15/19 (200 x 200 mm) around fence	m	176		
Total Carried Forward To Summary						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
	PHS	SCHEDULE 8 : HEALTH AND SAFETY (PORTION 1)				
8.1		NOTIFICATION OF CONTRUCTION WORK				
8.1.1		Allow for the cost of notification of construction work by the Principal Contractor.	Sum	1		
8.2		HEALTH AND SAFETY PLAN				
8.2.1		Allow for the cost of setting up a Health and Safety Plan as required in the specifications for the Principal Contractor. (To be approved by Agent before commencement of work.)	No.	1		
8.2.2		Allow for the cost of setting up a Health and Safety Plan as required in the specifications for each sub-contractor appointed by the Principal Contractor.	No.	1		
8.2.3		Overheads, charges and profit on Item 8.2.2 (Note: Transfer 8.2.2 Amount to 8.2.3 Qty.)	%			
8.3		HEALTH AND SAFETY MAIN FILE				
8.3.1		Allow for the cost to compile a health and safety file to include all the required supporting documention as follows: (NOT TO BE REMOVED FROM SITE) (All files shall be lever arch files with original colour document of acceptable standards including dividers. Emergency numbers to be displayed on the back of the file. The file will be expanded during the project as and when required by the client.) Copy of H&S Act Proof of registration with COID Insurer Notification of construction work Mandatory agreement H&S Specification provided by client Copy of tender document, drawings etc Company Safety Policy to be signed by CEO Company organigramme with respect to H&S on specific sites. Letters of appointment for specific site List of sub-contractors Evacuation plan Risk assessments and method statements Safe work procedures and material safety data sheets Fall protection plan Incident recordings Medical records Minutes of H&S meetings	Sum	1		
Total Carried Forward						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
8.3.2		Allow for the cost of compiling a Health and Safety file for each sub-contractor including all the applicable supporting documentation as for the Principal Contractor. (NOT TO BE REMOVED FROM SITE)	No.	1		
8.3.3		Overheads, charges and profit on Item 8.3.2 (Note: Transfer 8.3.2 Amount to 8.3.3 Qty.)	%			
8.4		HEALTH AND SAFETY REGISTER FILE				
8.4.1		Allow for the cost to compile a health and safety Register file to include all the required Registers.	Sum	1		
8.4.2		Allow for the cost of compiling a Health and Safety Register file for each sub-contractor including all the applicable supporting documentation as for the Principal Contractor.	No.	1		
8.4.3		Overheads, charges and profit on Item 4.4.2 (Note: Transfer 4.4.2 Amount to 4.4.3 Qty.)	%			
8.5		HEALTH AND SAFETY TRAINING FILE				
8.5.1		Allow for the cost to compile a health and safety Register file to include all the required Training material.	Sum	1		
8.5.2		Allow for the cost of compiling a Health and Safety Register file for each sub-contractor including all the applicable supporting documentation as for the Principal Contractor.	No.	1		
8.5.3		Overheads, charges and profit on Item 8.5.2 (Note: Transfer 8.5.2 Amount to 8.5.3 Qty.)	%			
8.6		SERVICE PROVIDER APPOINTMENTS				
8.6.1		Allow for the appointment of a SHE Coordinator to do monthly inspections. (Control on SHE Representative)	month	4		
8.6.2		Allow for the appointment of a H&S trainer to train the SHE representative.	Sum	1		
8.7		SHE REPRESENTATIVE				
8.7.1		Allow for the cost of a SHE representative to be permanently on site (for Principal Contractor).	month	4		
Total Carried Forward						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
8.8		FIRST AID EQUIPMENT				
8.8.1		First aid box	No.	1		
8.8.2		First ais boxes for sub-contractor	No.	1		
8.8.3		Stretcher	No.	Rate Only		Rate Only
8.9		FIRE FIGTHINIG EQUIPMENT				
		Allow for the cost of:				
8.9.1		Fire extinguishers	No.	1		
8.9.2		Fire extinguishers of sub-contractors	No.	Rate Only		Rate Only
8.9.3		Fire extinguishers test certificates	No.	1		
8.10		PERSONNEL PROTECTIVE CLOTHING				
		Allow for the cost of:				
8.10.1		Hardhats	No.	10		
8.10.2		Safety shoes	No.	10		
8.10.3		Dust masks	No.	50		
8.10.4		Safety goggles	No.	10		
8.10.5		Gum boots	No.	Rate Only		Rate Only
8.10.6		Overalls	No.	10		
8.11		BARACADING				
		Allow for the cost of barricading of excavations as instructed by Agent				
8.11.1		Danger tape	m	3 000		
8.11.2		1.2m Dayglo Mesh	m	800		
8.12		CHEMICAL TOILETS				
		Allow for chemical toilets on site as required by the specification				
8.12.1		For male workers	No.	1		
8.12.2		For female workers	No.	1		
Total Carried Forward						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
8.13		EATING FACILITIES				
8.13.1		Allow for eating facilities in the form of a shaded net, table and chairs.	No.	1		
8.14		SIGNS				
		Allow for sign boards to be displayed on site as required				
8.14.1		No entry signs	No.	4		
8.14.2		First aid signs	No.	2		
8.14.3		Fire equipment signs	No.	2		
8.14.4		Warning signs (Construction area boards)	No.	2		
8.14.5		Traffic control boards	No.	6		
8.15		MEDICAL TESTS				
		Allow for medical tests for workers as required				
8.15.1		Medical fitness tests for operators on construction vehicles	No.	4		
8.15.2		Fitness tests for workers (Including exit medicals)	No.	20		
Total Carried Forward To Summary						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
	SABS 1200A	SCHEDULE 1 : GENERAL (PORTION 2)				
1.1	8.3	FIXED-CHARGE ITEMS				
1.1.1	8.3.1	Contractual Requirements				
		Contractual requirements including all sureties and insurance	Sum	1		
1.1.2	8.3.2PSA 16.1	First Establishment of Facilities on the Site at the Depot or Contractor's Main Camp for the Contract :				
	8.3.2.1	a) Facilities for Engineer (SABS 1200 AB)				
		i) Nameboard (Two required) (PSAB1)	No.	1		
		ii) Furnished Office (PSAB2)	Sum	1		
		iii) Cellular telephone and combination fax telephone (One each required) (PSAB3)	Sum	1		
		iv) Survey Equipment (PSAB6)	Sum	1		
		v) Carport (PSAB7)	Sum	1		
		vi) Personal Computer and printer (PSAB4)	Sum	1		
		vii) Digital Camera (PSAB8)	Sum	1		
		viii) Survey Assistants (PSAB5)	Sum	1		
	8.3.2.2	b) Facilities for Contractor				
		i) Offices and storage sheds	Sum	1		
		ii) Workshops	Sum	1		
		iii) Living accommodation	Sum	1		
		iv) Ablution and latrine facilities	Sum	1		
		v) Tools and equipment	Sum	1		
		vi) Water, Electric power and Communications	Sum	1		
		vii) Dealing with water	Sum	1		
		viii) Access	Sum	1		
		ix) Plant	Sum	1		
1.1.3	8.3.3	Other fixed charge obligations				
		All other fixed charge and obligations	Sum			
Total Carried Forward						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
1.1.4	8.3.4	Removal of contractor's site establishment on completion of contract or interim de-establishment (only on written instruction)	Sum	1		
	8.3.4	Additional establishment cost to the contractor when re-establishing (Only on written instruction)	Sum	1		
1.2	8.4 PSA 16.5	TIME-RELATED ITEMS				
1.2.1	8.4.1	Contractual Requirements	month	3		
1.2.2	8.4.2	Operate and maintain facilities on the Site:				
	8.4.2.1	a) Facilities for Engineer for the duration of Construction (SABS 1200AB)				
		i) Nameboards (PSAB1)	month	3		
		ii) Furnished Office (PSAB2)	month	3		
		iii) Telephone (PSAB3)	month	3		
		iv) Survey Equipment (PSAB6)	month	3		
		v) Carport (PSAB7)	month	3		
		vi) Personal Computer (PSAB4)	month	3		
		vii) Digital Camera (PSAB8)	month	3		
		viii) Survey Assistants (PSAB5)	month	3		
	8.4.2.2PS7	b) Facilities for Contractor for duration of construction, except where otherwise stated				
		i) Offices and storage sheds	month	3		
		ii) Workshops	month	3		
		iii) Living accommodation	month	3		
		iv) Ablution and latrine facilities	month	3		
		v) Tools and equipment	month	3		
		vi) Water supplies, electric power and communications	month	3		
		vii) Dealing with water	month	3		
		viii) Access	month	3		
		ix) Plant	month	3		
1.2.3	8.4.3	Supervision for duration of construction	month	3		
Total Carried Forward						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
1.2.4	8.4.4	Company and head office overhead costs for the duration of the contract	month	3		
1.2.5	8.4.5	Other time related obligations. All other time related obligations, including custody of drawings and programme to be furnished.	month	3		
Total Carried Forward To Summary						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		SCHEDULE 2 : PROVISIONAL SUMS (PORTION 2)				
2.1	PSA11	SUMS STATED PROVISIONALLY BY THE ENGINEER				
2.1.1	PSA11.3	Materials for Dayworks	P.Sum	1	25 000	25 000
2.1.1.1		Overheads, charges and profit on Item 2.1.1	%	25 000		
2.1.2	PSA11.4	Royalties for Borrow Materials	P.Sum	1	25 000	25 000
2.1.2.1		Overheads, charges and profit on Item 2.1.2	%	25 000		
2.2	PSA12	PRIME COST ITEMS				
2.2.1	PSA12.3	Artisan and Skills Training	P.Sum	1	10 000	10 000
2.2.1.1		Overheads, Charges and Profit on Item 2.2.1	%	10 000		
2.2.2	PSA12.1	Acceptance Control Testing of Earthworks	P.Sum	1	10 000	10 000
2.2.2.1		Overheads, Charges and Profit on Item 2.2.2	%	10 000		
2.2.3	PSA12.4	Telephone calls and Rental for the Engineers Representative	P.Sum	1	10 000	10 000
2.2.3.1		Overheads, Charges and Profit on Item 2.2.3	%	10 000		
2.2.4	PSA12.6	Specialist Contractors (Refurbishment of 520kL elevated steel tank and stand, Borehole and flow monitoring system)	P.Sum	1	635 000	635 000
2.2.4.1		Overheads, Charges and Profit on Item 2.2.5	%	635 000		
2.2.5	PSA12.2	Payments made to Labour Desk Officers	P.Sum	1	40 000	40 000
2.2.5.1		Overheads, Charges and Profit on Item 2.2.6	%	40 000		
2.3		NOMINATED SUB-CONTRACTOR				
2.3.1	PSA12.7	Management of approved emerging local sub-contractors	%	1 100 000		
Total Carried Forward To Summary						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
		SCHEDULE 3 : PIPE WORK (PORTION 2)				
	SABS 1200DB	EARTHWORKS : PIPE TRENCHES				
3.1		SITE CLEARANCE				
3.1.1	8.3.1(a)	Clear 3m wide vegetation and trees of girth up to 1m	m	1 325		
3.1.2	8.3.1(b)	Remove trees over 1 m and up to 2 m girth	No.	4		
3.2	PSDB12	EXCAVATION - "MECHANICAL"				
3.2.1		Excavate in all materials for trenches for pipes with a diameter between 63 mm and 400 mm, backfill compact and dispose of surplus/unsuitable material				
		Note : See different length categories				
3.2.1.1		Up to 1,5m in depth for the following:				
		a) Total pipe line length (as per instruction) ≥ 2000m	m³	1 060		
3.2.1.2	8.3.2(b)	Extra-over item 3.2.1.1 incl. for excavation (provisional) in:				
		a) Intermediate material	m³	106		
		b) Hard rock material	m³	848		
3.2.1.3		Extra over Item 3.2.1.1				
	LIC	a) Backfill and compact by means of labour intensive construction methods in layers of 200mm compacted to 90% mod AASHTO	m³	509		
	LIC	b) Disposal of surplus material by means of labour intensive construction methods within 20m from the source of spoil utilising wheel barrows	m³	53		
3.2.2	8.3.2(c)	Excavate unsuitable material from trench bottom and dispose thereof within the free haul distance (Provisional)	m³	42		
3.3		EXCAVATION ANCILLARIES - "MECHANICAL"				
3.3.1	8.3.3.1(a)	Imported backfill materials from designated borrow pits (Only if approved by Engineer)	m³	407		
Total Carried Forward						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
3.3.2	8.3.3.2	Opening up and closing down of designated borrow pit	No.	1		
3.3.3	8.3.3.4	Overhaul :				
		a) Short haul	m³	407		
		b) Truck haul	m³/km	1 628		
3.4	SABS 1200LB	BEDDING (PIPES)				
3.4.1		PROVISION OF BEDDING "MECHANICAL"				
3.4.1.1	8.2.1	Provision of bedding material by importation from borrow pits (freehaul within the village boundaries)				
		a) Selected granular material	m³	133		
		b) Selected fill material	m³	398		
3.4.1.2	8.2.5	Overhaul of material for bedding cradle and selected fill blanket	m³/km	2 124		
3.4.2	PSDB12 LIC	EXCAVATION - "LABOUR BASED"				
		Excavate in all materials for trenches for pipes with a diameter between 20 mm and 200 mm, backfill compact and dispose of surplus/unsuitable materials:				
3.4.2.1		Up to 1,5m in depth	m³	10		
3.4.2.2	8.3.2(b)	Extra-over item 3.3.1.1 incl. for excavation (provisional) in :				
		b) Soft excavation Class 3	m³	10		
3.4.3	LIC	EXCAVATION ANCILLARIES - "LABOUR BASED"				
3.4.3.1	8.3.3.1(a)	Imported backfill materials from designated borrow pits (Only if approved by Engineer)	m³	2		
3.4.3.2	8.3.3.3	Compaction in road reserves	m³	2		
3.4.4	LIC	FINISHING - "LABOUR BASED"				
3.4.4.1	8.3.6.1	Reinstate road surfaces complete with:				
		a) Gravel (G5 material)	m²	4		
Total Carried Forward						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
3.5	1200L	PIPE WORK				
	8.2.1	Supply, lay, joint, bed, test and disinfect the following pipes complete with couplings to the relevant SABS standards including short lengths				
3.5.1		uPVC pipes				
		a) 160 Class 12	m	260		
		b) 90 Class 12	m	185		
		c) 75 Class 12	m	880		
3.6		VALVES				
3.6.1		Line valve assemblies.				
		Extra over item 3.4 for supplying, installing, bedding and testing line valve assemblies, complete with manhole as per Drawing No. B35145.01C-143-05 complete cutting of pipes and couplings included				
		a) 90 mm	No.	1		
3.6.2		Scour valve assemblies				
		Extra over item 3.4 for supplying, installing, bedding and testing scour valve assemblies as per Drawing No. B35145.01C-143-06 (Including Manhole). Scour tee, cutting of pipes and couplings included.				
		a) On 75 mm Ø main	No.	1		
3.6.3		Air valve assemblies				
3.6.3.1		Extra over item 3.4 for supplying, installing and testing air valve assemblies as per Drawing No. B35145.01C-143-07 complete (Including Manhole, Air valve measured elsewhere)				
		a) On 90 mm Ø main	No.	1		
3.6.3.2		Valve to be supplied and installed complete for the following:				
		a) 25ND double orifice "Bermad, or similar approved"	No.	1		
Total Carried Forward						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
3.7		FITTINGS AND SPECIALS				
		Extra over item 3.4 for supplying, installing, bedding and testing in PVC mains the following fittings and specials complete. Cutting of pipes and couplings included				
		Fittings of PVC, cast iron or aluminium				
3.7.1		Bends 90 °				
		a) 160 Ø	No.	1		
		b) 90 Ø	No.	1		
		c) 75 Ø	No.	1		
3.7.2		Bends 45 °				
		a) 160 Ø	No.	1		
3.7.3		Bends 22 °				
		a) 160 Ø	No.	1		
3.7.4		Tees				
		a) 160 x 110 mm	No.	2		
3.7.5		Reducers				
		a) 110 x 75 mm	No.	2		
3.7.6		Repair Coupling				
		a) 90 mm Ø	No.	1		
		b) 110 mm Ø	No.	1		
3.8		SUNDRIES				
3.8.1		Position markers as per specification Drawing No. B35145.01C-143-04	No.	8		
3.8.2		Thrust blocks as per typical details on specification Drawing No. B35145.01C-143-03 including formwork				
		a) Concrete Class 15/19	m³	20		
Total Carried Forward To Summary						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
		SCHEDULE 5 : PUMPS (PORTION 2)				
5.1	PD9	SUBMERSIBLE PUMPS				
5.1.1		Supply and delivery of centrifugal submersible pumps with installation and adequate lightning protection for the following duty points (Stainless Steel type):				
		Manufacturer : _____				
		"a) Head = 80m Flow = 10,8m³/h (Model: _____)"	No.	2		
		"b) Head = 80m Flow = 15,2m³/h (Model: _____)"	No.	1		
5.1.2		Installation and commissioning of centrifugal submersible pumps of manufacturer in Item 5.1.1.				
		"a) Head = 80m Flow = 10,8m³/h (Model: _____)"	No.	2		
		"b) Head = 80m Flow = 15,2m³/h (Model: _____)"	No.	1		
5.1.3		Supply, delivery, installation and commissioning of submersible pump pipework (HDPE/10) and nylon rope (Electric cable measured under schedule 6) for :				
		a) 80 mm HDPE	m	120		
		b) 100 mm HDPE	m	60		
5.2		COMPLETE SUPPLY, DELIVERY & INSTALLATION OF:				
5.2.1		Baseplates				
		a) 80 mm HDPE	No.	2		
		b) 100 mm HDPE	No.	1		
5.3	PD10	ANCILLARY PIPE WORK				
5.3.1		Alternative 1 - Supply and installation of ancillary pipework and Mechanical equipment as described in particular specification PD 10 and detailed on Drawings No. Drawing No. B35145.01C-143-09 Complete				
		a) 80 mm Ø piping	No.	2		
		b) 100 mm Ø piping	No.	1		
Total Carried Forward						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
5.4		MISCELLANEOUS				
5.4.1		Piezometer Tubes				
5.4.1.1		Supply, deliver and install piezometer tubes in the boreholes. The tubes will consist of 25mm LDPE Class 6 pipe strapped to the pipework of the borehole equipment	m	180		
5.4.2		Borehole information plate				
		a) Supply, deliver and install the borehole information plate as per Drawing No. B35145.01C-143-10 (Information plate to be fixed inside the pumphouse)	No.	3		
		b) Supply, deliver and install the borehole information plate as per Drawing No. B35145.01C-143-10 (Information plate to be fixed on the outside of the pumphouse)	No.	3		
		c) Supply, deliver and install the borehole information plate as per Drawing No. B35145.01C-143-10 (Information plate to be cast into the floor outside of the pumphouse door)	No.	3		
Total Carried Forward To Summary						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
		SCHEDULE 6 : ELECTRICAL WORK (PORTION 2)				
6.0		ELECTRICAL WORK - LV INSTALLATION Note: All items to include for supply, design manufacture, delivery, installation, commissioning and maintenance as per specifications				
6.1	PEB 14	LOW VOLTAGE CABLES The supply and installation of stranded copper cables installed in cable trenches, on cable racks or trays or fixed to steel structure. Prices to include for terminations and all fixing materials.				
6.1.1		Supply Cable from Eskom Metering Kiosk to MCC's				
		a) 16 mm² x 4 core	m	240		
6.1.2		Supply Submersible Cable from MCC to Pump motor				
		a) 6 mm² x 3 core	m	150		
6.1.3		Control Cables to Protection Instruments				
		a) 1.5 mm² x 3 core	m	50		
6.2	EB 25	EARTH CONDUCTORS				
6.2.1		The supply and installation of bare stranded copper conductors installed in the same route as the cables including terminations				
		a) 16 mm²	m	200		
6.2.2		The supply and installation of a 1.5m Earth rod with clamps	No.	12		
6.3	LIC	CABLE TRENCH EXCAVATION				
6.3.1		Excavations of cable trenches, bedding, backfilling compacting and making good of cable trenches in:				
		a) Soft excavation 0-1 m deep	m³	154		
		b) Extra over (for intermediate excavation)"	m³	15		
		c) Extra over (for hardrock excavation"	m³	108		
Total Carried Forward						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
6.4	PE 12	MOTOR CONTROL CENTRES				
6.4.1		Supply and installation of MCC's complete with all equipment, internal wiring, labels, protection equipment and earthing for the following kW ratings. Including fixing materials to install MCC on pedestal in pumphouse.				
6.4.1.1		Three phase with Variable Speed Drives starting				
		a) 5,5 kW	No.	2		
		b) 7,5 kW	No.	1		
6.5		LOCKS				
		Supply and installation of No. 2 locks.				
6.5.1		No. 2 Locks	No.	6		
6.6		GENERAL ELECTRICAL INSTALLATION				
6.6.1		Conduit				
6.6.1.1		The supply and installation of heavy gauge galvanised conduit complete with draw boxes and accessories surface mounted.				
		i) 25mm dia	m	30		
6.6.2		Conductors and Earth Conductors				
6.6.2.1		The supply and installation of PVC insulated copper conductors drawn into conduit.				
		i) 2,5mm.sq PVC wire	m	30		
6.6.3		Light Switches				
6.6.3.1		The supply and installation industrial type, surface mounted light switches complete with outlet boxes.				
		"i) 16A, one lever, one way, waterproof light switch rotary type"	No.	3		
Total Carried Forward						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
6.6.4	PE9	Luminaries The supply and installation of 1500mm fluorescent waterproof light fitting including lamps, control gear and fixing materials as specified.				
6.6.4.1		Fluorescent vapour proof 1500mm light fitting	No.	3		
6.6.5		Flow Switches The supply and installation of Flow Switches installed in steel pipe. The rate shall include for reduction of pipe work where required.				
6.6.5.1		Flow Switch	No.	3		
6.6.6		Pressure Gauge The supply, installation, calibration and commissioning of pressure gauges as specified Type Wika complete with macrolon contacts, snubber and shut-off valve installed onto stainless steel niple.				
6.6.6.1		0 - 1600 kPA	No.	3		
6.7		MEDIUM DUTY GAL. WIRE MESH TRAY				
6.7.1		Supply and installation of medium duty cable tray complete with bends, corners, T-pieces and fixing materials				
		a) 150mm	m	30		
6.8		DOUBLE POLE ISOLATER				
6.8.1		Supply and installation of double pole isolator 16 Amp				
		a) Type GEWEISS GW 70431	No.	3		
6.9		SMALL POWER INSTALLATION				
6.9.1		Supply and installation of 16 Amp switch socket outlet, surface mounted.	No.	3		
6.9.2		Supply and installation of light switch, 1 lever surface mounted.	No.	3		
6.9.3		Supply and installation of power point complete with galv. conduit and GP wiring.				
Total Carried Forward						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
		a.) Light switch and light point 1.5mm² GP wire.	No.	3		
		b.) SSO point 2.5mm² GP wire.	No.	3		
		c.) Welding plug point 6mm² GP wire.	No.	3		
6.9.4		Light fitting, 2PL 18Watt Bulkhead, Beka.	No.	3		
6.10		DRAWINGS				
6.10.1		Work drawings of all MCC's and equipment for approval by the Engineer.	L/Sum	3		
6.10.2		The supply of As-build drawings in electronic format (Autocad) DXF files. Amount is per installation.	No.	3		
6.11		GENERAL				
		a) Electrical spares per borehole installation	No.	3		
		b) Operation and maintenance manuals including circuit diagrams (3 sets) per borehole installation measured under Schedule 5	No.	3		
		c) All items and labour necessary to complete test and commission the complete electrical installation including the issuing of all relevant test certificates and the certificate of compliance. Per borehole)	No.	3		
Total Carried Forward To Summary						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
		SCHEDULE 7 : PUMPHOUSES (PORTION 2)				
7.1		PUMPHOUSES				
7.1.1		Complete manufacture and delivery to site of concrete pumphouse complete including welded borehole number on 5 x 50 x 400mm Flat bar.				
		a) As per Drawing No. B35145.01C-143-09	No.	3		
7.1.2		Complete construction of appurtenant concrete work for pumphouses :				
		a) As per Drawing No. B35145.01C-143-09 (Electrical Unit)	No.	3		
7.1.3		Complete erection of pumphouses :				
		a) As per Drawing No. B35145.01C-143-09	No.	3		
7.2	PB LIC	SECURITY FENCING				
7.2.1		Supply and erect fencing complete as per Drawing No. B35145.01C-143-08				
		a) Corner posts	No.	12		
		b) Intermediate posts	No.	9		
		c) Gate posts	No.	6		
		d) Double gate 3,6m total width, with locking chain, hinges and drop bolts.	No.	3		
		e) Razor mesh with wires	m	96		
		f) Cast-insitu Concrete Class 15/19 (200 x 200 mm) around fence	m	96		
Total Carried Forward To Summary						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
	PHS	SCHEDULE 8 : HEALTH AND SAFETY (PORTION 2)				
8.1		NOTIFICATION OF CONTRUCTION WORK				
8.1.1		Allow for the cost of notification of construction work by the Principal Contractor.	Sum	1		
8.2		HEALTH AND SAFETY PLAN				
8.2.1		Allow for the cost of setting up a Health and Safety Plan as required in the specifications for the Principal Contractor. (To be approved by Agent before commencement of work.)	No.	1		
8.2.2		Allow for the cost of setting up a Health and Safety Plan as required in the specifications for each sub-contractor appointed by the Principal Contractor.	No.	1		
8.2.3		Overheads, charges and profit on Item 8.2.2 (Note: Transfer 8.2.2 Amount to 8.2.3 Qty.)	%			
8.3		HEALTH AND SAFETY MAIN FILE				
8.3.1		Allow for the cost to compile a health and safety file to include all the required supporting documention as follows: (NOT TO BE REMOVED FROM SITE) (All files shall be lever arch files with original colour document of acceptable standards including dividers. Emergency numbers to be displayed on the back of the file. The file will be expanded during the project as and when required by the client.) Copy of H&S Act Proof of registration with COID Insurer Notification of construction work Mandatory agreement H&S Specification provided by client Copy of tender document, drawings etc Company Safety Policy to be signed by CEO Company organigramme with respect to H&S on specific sites. Letters of appointment for specific site List of sub-contractors Evacuation plan Risk assessments and method statements Safe work procedures and material safety data sheets Fall protection plan Incident recordings Medical records Minutes of H&S meetings	Sum	1		
Total Carried Forward						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
8.3.2		Allow for the cost of compiling a Health and Safety file for each sub-contractor including all the applicable supporting documentation as for the Principal Contractor. (NOT TO BE REMOVED FROM SITE)	No.	1		
8.3.3		Overheads, charges and profit on Item 8.3.2 (Note: Transfer 8.3.2 Amount to 8.3.3 Qty.)	%			
8.4		HEALTH AND SAFETY REGISTER FILE				
8.4.1		Allow for the cost to compile a health and safety Register file to include all the required Registers.	Sum	1		
8.4.2		Allow for the cost of compiling a Health and Safety Register file for each sub-contractor including all the applicable supporting documentation as for the Principal Contractor.	No.	1		
8.4.3		Overheads, charges and profit on Item 4.4.2 (Note: Transfer 4.4.2 Amount to 4.4.3 Qty.)	%			
8.5		HEALTH AND SAFETY TRAINING FILE				
8.5.1		Allow for the cost to compile a health and safety Register file to include all the required Training material.	Sum	1		
8.5.2		Allow for the cost of compiling a Health and Safety Register file for each sub-contractor including all the applicable supporting documentation as for the Principal Contractor.	No.	1		
8.5.3		Overheads, charges and profit on Item 8.5.2 (Note: Transfer 8.5.2 Amount to 8.5.3 Qty.)	%			
8.6		SERVICE PROVIDER APPOINTMENTS				
8.6.1		Allow for the appointment of a SHE Coordinator to do monthly inspections. (Control on SHE Representative)	month	3		
8.6.2		Allow for the appointment of a H&S trainer to train the SHE representative.	Sum	1		
8.7		SHE REPRESENTATIVE				
8.7.1		Allow for the cost of a SHE representative to be permanently on site (for Principal Contractor).	month	3		
Total Carried Forward						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
8.8		FIRST AID EQUIPMENT				
8.8.1		First aid box	No.	1		
8.8.2		First ais boxes for sub-contractor	No.	1		
8.8.3		Stretcher	No.	Rate Only		Rate Only
8.9		FIRE FIGTHINIG EQUIPMENT				
		Allow for the cost of:				
8.9.1		Fire extinguishers	No.	1		
8.9.2		Fire extinguishers of sub-contractors	No.	Rate Only		Rate Only
8.9.3		Fire extinguishers test certificates	No.	1		
8.10		PERSONNEL PROTECTIVE CLOTHING				
		Allow for the cost of:				
8.10.1		Hardhats	No.	5		
8.10.2		Safety shoes	No.	5		
8.10.3		Dust masks	No.	20		
8.10.4		Safety goggles	No.	5		
8.10.5		Gum boots	No.	Rate Only		Rate Only
8.10.6		Overalls	No.	5		
8.11		BARACADING				
		Allow for the cost of barricading of excavations as instructed by Agent				
8.11.1		Danger tape	m	2 000		
8.11.2		1.2m Dayglo Mesh	m	200		
8.12		CHEMICAL TOILETS				
		Allow for chemical toilets on site as required by the specification				
8.12.1		For male workers	No.	1		
8.12.2		For female workers	No.	1		
Total Carried Forward						

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
8.13		EATING FACILITIES				
8.13.1		Allow for eating facilities in the form of a shaded net, table and chairs.	No.	1		
8.14		SIGNS Allow for sign boards to be displayed on site as required				
8.14.1		No entry signs	No.	1		
8.14.2		First aid signs	No.	1		
8.14.3		Fire equipment signs	No.	1		
8.14.4		Warning signs (Construction area boards)	No.	1		
8.14.5		Traffic control boards	No.	1		
8.15		MEDICAL TESTS Allow for medical tests for workers as required				
8.15.1		Medical fitness tests for operators on construction vehicles	No.	2		
8.15.2		Fitness tests for workers (Including exit medicals)	No.	10		
Total Carried Forward To Summary						

SUMMARY OF SCHEDULES

SCHEDULE No.	DESCRIPTION	AMOUNT R
PORTION 1		
1	GENERAL	
2	PROVISIONAL SUMS	
3	WATER RETICULATION	
4	TANKS	
5	PUMPS	
6	ELECTRICAL WORK	
7	PUMPHOUSES	
8	HEALTH AND SAFETY	
	SUB TOTAL 1	
	Add 10% CONTENGENCIES	
	SUB TOTAL 2	
	Add 15% VAT	
	TOTAL (PORTION 1)	

SCHEDULE No.	DESCRIPTION	AMOUNT R
PORTION 2		
1	GENERAL	
2	PROVISIONAL SUMS	
3	WATER RETICULATION	
5	PUMPS	
6	ELECTRICAL WORK	
7	PUMPHOUSES	
8	HEALTH AND SAFETY	
	SUB TOTAL 1	
	Add 10% CONTENGENCIES	
	SUB TOTAL 2	
	Add 5% CONTRACT PRICE ADJUSTMENT	
	SUB TOTAL 3	
	Add 15% VAT	
	TOTAL (PORTION 2)	

PORTION 1 (INCLUDING VAT) TO BE CARRIED TO FORM OF OFFER	
PORTION 2 (INCLUDING VAT) TO BE CARRIED TO FORM OF OFFER	
TOTAL (PORTION 1 + PORTION 2)	

END OF SECTION

Gamagara Local Municipality

UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1

SCOPE OF WORKS

INDEX

END OF SECTION

Gamagara Local Municipality

UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1

SCOPE OF WORKS

SECTION C3.1: DESCRIPTION OF WORKS

C3.1.1 EMPLOYERS OBJECTIVES

Bids are invited for UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1. Prospective tenderers must take note of the fact that the contract will be executed on the basis of a "Re-measurable Schedule of Quantities"contract.

C3.1.2 OVERVIEW OF THE WORKS

This contract comprises of construction of water reticulation pumping mains and equipping of boreholes identified by the Employer. Details of the Works are included in Clause C3.1.3 hereof. The works will be executed by means of "Mechanical" and "labour intensive" construction methods. "Mechanical" methods will only apply to sections / processes of the works where the use of labour is not possible or not safe and accordingly agreed to by the Employer.

C3.1.3 EXTEND OF THE WORKS

The scope of work required to be done consists of, but is not limited to the following:

<u>Portion 1</u>

- Facilitation of ESKOM overhead 3 phase electrical connections (1990m)
- Installation of 3 x boreholes with (1 x new and 2 x existing):
  - Prefabricated concrete pumphouse and concrete base slab;
  - Submersible pump;
  - Installation of electrical work (Pump control panel, MCC);
  - Installation of a pump control monitoring system;
  - Installation of mechanical ancillary pipework;
  - Total of 96m new security fencing at boreholes.
- Installation of the following pumping mains:
  - 260m DN75 uPVC Class 12;
  - 2210m DN160 uPVC Class 12;
  - Air, scour and non-return valves.
- Refurbishment of 160m reservoir complex fencing
- New GMS inlet pipe into the existing 520kL elevated reservoir
- Upgrade of existing one chlorination unit at the existing tanks

<u>Portion 2 (If applicable)</u>

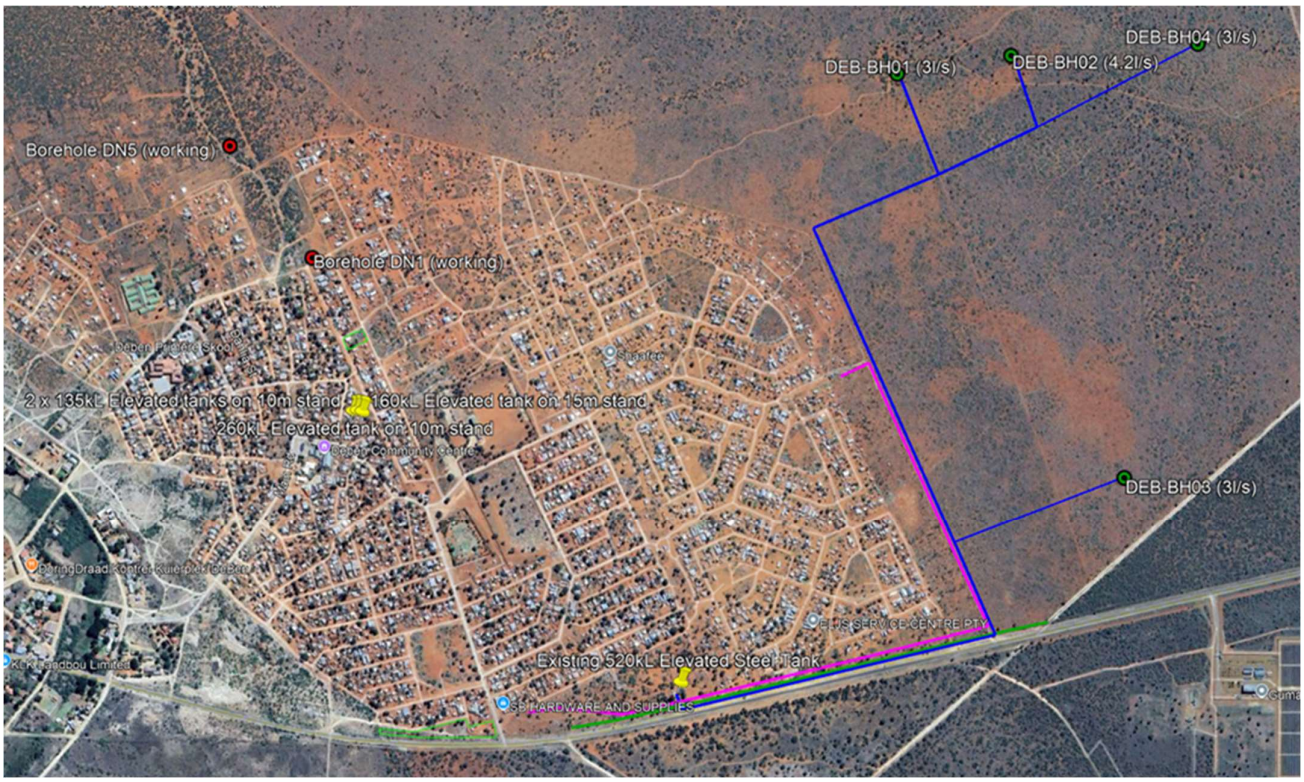
- Installation of 3 x boreholes with (3 x new):
  - Prefabricated concrete pumphouse and concrete base slab;
  - Submersible pump;
  - Installation of electrical work (Pump control panel, MCC);
  - Installation of a pump control monitoring system;

- Installation of mechanical ancillary pipework;
- Total of 96m new security fencing at boreholes.

- Installation of the following pumping mains:
  - 880m DN75 uPVC Class 12;
  - 185m DN90 uPVC Class 12;
  - 260m DN160 uPVC Class 12;
  - Air, scour and non-return valves.
- Upgrade of existing one chlorination unit at the existing tanks

Note: The description of the works above is not necessarily complete and shall not limit the work to be carried out under this contract. Details of the work are shown on the drawings and estimated quantities of the various types of work to be carried out under the contract are given in Section C2: Pricing Data.

C3.1.4 LOCATION OF THE WORKS



Works under this project are to be executed in the Northern Cape Province, within the Gamagara Local Municipality's area of jurisdiction. The operation area for the project will be within Dibeng community and is situated 25km North West of Kathu.

C3.1.5 OTHER GENERAL REQUIREMENTS

C3.1.5.1 ALLOWANCES

The Contractor's programme shall take the following into consideration:

i) expected normal climatic weather conditions;
ii) special non-working days as stipulated in the Contract Data;
iii) expected value of the work performed for each activity;
iv) stipulate any other information required by the engineer.

C3.1.5.2 PROCEDURES DURING CONSTRUCTION

The Contractor to supply, keep up to date and keep the following documents on-site on a daily basis:

I. A full set of the latest construction drawings to be on-site permanently for use by the Engineer and others;
II. The Contractor to supply and keep on-site and A4 triplicate site instruction book, which must be presented to the engineer at all site meetings and site inspections;
III. The Contractor to supply an A4 duplicate diary on-site to be signed off by the Engineers representative. The Contractor to keep a daily diary, with at least the following information:

- Weather condition
- Record of any accidents and detail
- Record of construction activities of the day with associated units measures of progress for each activity.
- Record of resources (labour, materials, plant, etc.) utilized for each day.
- Information of any strikes
- Any other relevant information

C3.1.5.3 SITE FACILITIES AVAILABLE

C3.1.5.3.1 Source of Water Supply

The Contractor is to make his own arrangements with the local authorities for the supply of water for construction purposes.

C3.1.5.3.2 Source of Power Supply

The Contractor is to make his own arrangements with the local authorities for the supply of electricity from a metered point on the existing electrical network at the current electricity rates as stipulated by the Municipality.

C3.1.5.3.3 Location of Camp and Depot

The Contractor is responsible for his own secure campsite, and should make arrangements with the local authority. The Contractor shall make his own arrangements for the accommodation of labour.

C3.1.5.3.4 Spoil Sites

No indiscriminate spoiling of material will be allowed. All unsuitable surplus material shall be removed from the site to a designated area as identified by the Client.
Infrastructure that are removed and replaced such as palisade fencing, old valves, water meters and pipe sections much be deposited at the municipal yard in Dibeng.

C3.1.5.3.5 Borrow pit for gravel and bedding material

Bedding and blanket material can be obtained from the municipal borrow pits. If not suitable, material must be imported.

C3.1.5.4 ABNORMAL RAINFALL

Refer to Contract Data – C1.2

C3.1.5.5 TIME-RELATED ITEMS

An approved extension of time (other than an extension of time granted in terms of Clause 5.12 of the Conditions of Contract) will entitle the Contractor to submit a claim for additional

payment. Any such approved additional payment will be made for proven additional costs for each relevant time-related item but will be limited to a maximum amount determined from the sum tendered for such item and from the designated operation, the period stated for the completion of the item or the tendered contract period, as applicable.

C3.1.5.6 PROJECT NAME BOARD

The Contractor must make provision for two (2) project name boards as per the drawings bound in the document, and the position of the name boards must be communicated with the Employer.

C3.1.5.7 PROTECTION FROM STORMS AND FLOODS

The sum allowed for in the Bills of Quantities shall be deemed to be full compensation for any damage to the Works due to storms, rain, floods, stormwater or subsurface water.

Under no circumstances shall the Contractor be entitled to any additional payment in this regard. The Contractor shall accept full responsibility and costs to handle water from any source on the Site. The preceding shall imply that the Contractor shall also be responsible for the necessary arrangements with regard to the provision of Special Risk Insurance to address any such of the abovementioned occurrences, and the sum allowed for in the Schedule of Quantities shall be deemed to be full compensation for maintaining any such insurance during the full period of the contract.

C3.1.5.8 EXISTING SERVICES

It shall be the full responsibility of the Contractor to obtain Way Leaves from the Local Authorities or any other Service Provider Institutions (Eskom, Telkom, etc) regarding any existing services that will have an impact on the Works or the execution thereof. The Contractor shall make further investigations to determine the exact locality, size and depth of existing connections and/or pipelines before commencing with construction to ensure that no damage is done to any existing pipes or fittings.

The Contractor shall take all reasonable precautions to protect existing pipelines/services during construction and during relocation of such services. **Way-leave arrangements to be made with Telkom, Eskom, Provincial roads and Municipality on the identification of existing services.**

Any pipe, cable, conduit or other services of any nature whatsoever indicated to the Contractor and subsequently damaged as a result of the Contractor's operations shall be repaired and reinstated forthwith by the Contractor or by the authority concerned, all at the expense of the Contractor and to the satisfaction of the Engineer. Whenever services are encountered which interfere with the execution of the Works and which require removing and relocating, the Contractor shall advise the Engineer, who will determine the extent of the work, if any, to be undertaken by the Contractor in removing, relocating, and reinstating such services.

Any work required to be undertaken by the Contractor in the moving and relocation of services for which no provision is made in the contract documents or for which no applicable tender rates exist will be classed and paid for as "Daywork" as prescribed in the General Conditions of Contract.

The Contractor shall work in close co-operation with personnel of the Municipality controlling services that must be protected, removed or relocated. No undertaking can be given as to the exact time of commencement or of completion of the relocation, removal or protection of services, which have to be carried out by the Board or controlling authorities themselves. The Contractor is to make an allowance in his programme for this contingency.

Where services have to be removed or relocated, or protected, the Engineer will, at the request of the Contractor, notify or negotiate with the Municipality or authorities controlling

those services, but the Employer does not accept liability for any costs resulting from delays in the relocation, removal or protection of any service, or delays as a result of delays in negotiations. The sum allowed for in the Schedule of Quantities shall be deemed to be full compensation for the location and protection of existing services.

C3.1.5.9 ACCOMMODATION OF TRAFFIC AND PUBLIC ACCESS

During all his operations and when using his machinery, plant and equipment, the Contractor shall at all times take the necessary care to protect the public and to facilitate the traffic flow. The Contractor must make provision under the designated tariff in the Preliminary and General cost to allow for the following:

I. To create temporary access for both vehicles and pedestrians
II. To provide detours where necessary
III. To provide, install and maintain traffic- and warning signs as required

C3.1.5.10 SETTING OUT OF WORKS

All setting out required to carry out the work shall be undertaken by the Contractor. Setting out of the Works to be priced for in the item provided. The Contractor shall provide for two (2) surveyor assistants to be made available to the Engineer or his representative during the works. The survey equipment must be available on-site for the full duration of the works.

C3.1.5.11 TEMPORARY OFFICE AND COMMUNICATION FACILITIES

No office shall be specifically required for the Engineer or his representative, but the site office of the contractor must be made available and so equipped that the Engineer, his representative or the Community Liaison Officer can perform their work undisturbed at any time during the works. The Contractor shall make provision at his own cost for efficient communication between his site office and the office of the Engineer for the duration of the contract as provided for in the Preliminary and General cost items.

C3.1.5.12 SAFEGUARDING OF MATERIAL, EQUIPMENT AND PROPERTY

The contractor is responsible for providing the necessary precautionary measures to ensure the safety and protect the Works against any losses and vandalism that can occur. The Contractor shall make provision at his own cost for precautionary safeguarding measures for the duration of the contract as provided for in the Preliminary and General cost items.

C3.1.5.13 SANITARY CONDITIONS

The Contractor shall ensure that, during the period of construction, sanitary conditions prevail on the site and surrounding areas. Unhygienic behaviour that may cause contamination of the works or the surrounding area is strictly prohibited, and the Contractor shall bear full responsibility for providing sanitary facilities in accordance with the regulations of Local Authorities and Specifications within the contract.

C3.1.5.14 DEALING WITH WATER

The occurrence of rainwater and/or seepage in pipe trenches and excavated ponds after abnormal rainfall shall be removed, and treatment of water shall be executed by the Contractor at his own cost. The extension of time granted for abnormal rainfall conditions shall be taken as sufficient compensation for the removal of rainwater or seepage and/or for the treatment of water in trenches and ponds as a result of seepage or rainwater accumulation after the occurrence of abnormal rainfall.

C3.1.5.15 CONSTRUCTION IN CONFINED AREAS

It may be necessary for the Contractor to work within confined areas, and no additional payment will be made for work done in restricted areas. The method of construction in these confined areas will depend largely on the Contractor's construction plant. However, the Contractor shall note that measurement and payment will be only in accordance with the specified cross-sections and dimensions and that the tendered rates and amounts shall include full compensation for all special equipment and construction methods and for all difficulties encountered during 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 additional payment be considered in such cases.

C3.1.5.16 DENSITY TESTS / CONCRETE CUBES

The Contractor shall carry out his own density tests on each compacted layer, and these tests shall be submitted to the Engineer for scrutiny and approval before commencing with the construction of the following item and/or stage. The sum allowed for in the Schedule of Quantities shall be deemed to be full compensation for the full-time instalment of the required testing equipment and for the cost of all required testing procedures to be carried out on-site for the duration of the works.

The Contractor also needs to do his own concrete cube tests, which are to be handed to the Engineer for scrutiny and approval. The Engineer may order that further control tests are to be taken.

The Engineer may order that control tests be taken by his own or another independent laboratory. A provisional sum is provided in the Bills of Quantities to allow for the cost of control tests.

The sum allowed shall, however, be under the control of the Engineers, and payment shall only be made to the Contractor on receipt of proof of expenses incurred by the contractor for the tests, i.e. payments to be made to an independent laboratory.

Should these control tests indicate failure to obtain the required standards, the cost of the tests shall be for the Contractor’s account. The required Cube tests and Density tests carried out by the Contractor in the normal course of his work shall not be covered by this Sum and shall be carried out at his own expense. The tendered rates in the Bills of Quantities shall be deemed full compensation for the testing of materials.

C3.1.5.17 COMMUNITY LIAISON OFFICER (CLO)

The CLO official shall be identified by the Employer to act as a liaison person between the Contractor and the persons to be employed. The liaison officer must be appointed by the process of appointment, and the job description is available from the Employer or the employer's Agent, which must be communicated to him/her after the appointment. The remuneration of the CLO must be in line with the rates of the area and is **fixed at a minimum of R10,000.00 per month**.

C3.1.5.18 LABOUR INTENSIVE ACTIVITIES

The normal rules and regulations in terms of the Labour Act must be adhered to. Minimum wages for the region must be paid to the labourers, and formal Labour-contract documentation must be in place during the construction period. The **minimum labour wage of R38.50 per hour** will be applicable for this contract. The appointment of Local Labour shall adhere as far as possible to the requirements stipulated by the WSIG Project

Requirements for the full duration of the works. The contractor shall be responsible for submitting, together with his monthly performance claims, a complete detailed record of all labour on-site to the Engineer for the processing of monthly payment certificates, and failure to do so will result in a breach of contractual compliance and nor the Employer nor his agent will be held liable for late payments to the Contractor.

The following activities must be executed with local labour:

I. General labour
II. Excavation in soft ground.
III. Pipe handling and laying.
IV. Installation of valves and pressure
V. Bedding and blanket material
VI. Backfilling of trenches
VII. Building of manholes
VIII. Repair / Installation of fencing
IX. Final site clearance
X. Hand excavation close to existing services

C3.1.5.19 CLASSES OF EXCAVATION

Estimated quantities of expected soft and hard rock excavations are provided in the Schedule of Quantities, and materials shall only be classified as soft or hard rock material for the purpose of this contract and shall be classified as such by the Engineer on site.

All material encountered in any excavations for any purpose, including restricted excavation, will be classified as follows:

I. Hard rock excavation

Hard rock excavation shall be excavation in material (including boulders exceeding 0.15 cubic metres in individual volume) that cannot be efficiently removed without blasting, wedging, splitting or a mechanical hammer. Construction takes place close to structures, and it is highly likely that mechanical hammers will be required.

II. Intermediate excavation

No provision shall be made for the classification of Intermediate material for the purpose of this contract.

III. Soft excavation

Soft excavation shall be all material not falling into the category of hard rock or intermediate excavation.

C3.1.5.20 QUALITY CONTROL BY THE ENGINEER

Except for the quality control measures that must be implied by the Contractor, the Engineer can arrange and execute his own quality control inspections. Invoices will be forwarded to the Contractor for payment and to claim with a 10 % markup. However, in the case where

the Contractor fails to comply with the required quality control measures during the execution of the works, the Contractor shall be liable for all costs resulting from quality control tests and/or inspections carried out by the Engineer.

C3.1.5.21 HEALTH AND SAFETY PLAN

The contractor, his/her management and/or any of his/her personnel must comply with all the regulations as shown in the Occupational Health and Safety law 85 of 1993 before any access to the site may be granted by the Employer or the Employer's agent. The contractor must provide and demonstrate to the client a suitable, sufficiently documented and coherent site-specific health and safety plan, based on the client's documented health and safety specifications contemplated in regulation 5(1)(b), which plan must be applied from the date of commencement of and for the duration of the construction work which must be reviewed and updated by the principal contractor as work progresses. This health and safety plan must be submitted in writing to the client and/or it's agent for approval.

The contractor must, before the commencement and duration of construction work, have risk assessments performed by a competent person appointed in writing, which risk assessments form part of the health and safety plan to be applied on the site.

The health and safety plan shall include, but not be limited to, the following:

- The safety management structure includes the names of all designated persons, such as the construction supervisor and any other competent persons
- Safety method statements and procedures are to be adopted to ensure compliance with the OHSA. Aspects to be dealt with shall include, but not be limited to:
    - Public vehicular and pedestrian traffic accommodation measures;
    - Control of the movement of construction vehicles;
    - The storage and use of materials;
    - The use of tools, vehicles and plants;
    - Temporary support structures;
    - Dealing with working at height;
    - Environmental conditions and safety requirements in working hazardous materials, including asbestos cement products;
    - Security, access, control and the exclusion of unauthorised persons.
- The provision and use of temporary services;
- Compliance with way-leaves, permissions and permits;
- Safety equipment, devices and protective clothing to be employed;
- Emergency procedures;
- Provision of welfare facilities;
- Induction and training;
- Provision and maintenance of the health and safety file and other documentation;
- Arrangements for monitoring and control to ensure compliance with the safety plan during the execution of the works.

END OF SECTION

Gamagara Local Municipality

UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1

SCOPE OF WORKS

SECTION C3.2: ENGINEERING

C3.2.1 EMPLOYERS DESIGN

The permanent works included in this contract has been designed by the Employer unless otherwise stated. The detail of the works is indicated by information provided by the Employer. The Tenderer may submit alternative offers for designs prepared by himself subject to the conditions specified in Clause 2.12 of Section T1.3 of the Standard Conditions of Tender.

C3.2.2 DRAWINGS

Specification and detail drawings are bound in Volume 2 - Book of Drawings. A drawing list is included in Volume 2.

The Contractor shall ensure that accurate as-built records are kept of all infrastructure installed or relocated during the Contract. The position of pipe bends, manholes, valve chambers and all other underground infrastructure shall be given by either co-ordinates, or stake value and offset. Where necessary, levels shall also be given. A marked-up set of drawings shall also be kept and updated by the Contractor. This information shall be supplied to the Employer's Agent's Representative on a regular basis.

All information in possession of the Contractor, required by the Employer's Agent and/or the Employer's Agent's Representative to complete the as-built/record drawings, must be submitted to the Employer's Agent's Representative before a Certificate of Completion will be issued. The Drawings prepared by the Employer for the permanent Works are issued separately. The Employer reserves the right to issue amended and/or additional drawings during the Contract

END OF SECTION

Gamagara Local Municipality

UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1

SCOPE OF WORKS

C3.3 PROCUREMENT

C3.3.1 Procurement Principles

The Employer decided to adopt the Standard of Uniformity in Construction Procurement published by the Construction Industry Development Board (CIDB) for his procurement process.

The Standard for Uniformity in Construction Procurement establishes 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 the parties to a contract; and
- enable risk, responsibilities and obligations to be clearly identified.

END OF SECTION

Gamagara Local Municipality

UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1

CONSTRUCTION

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END OF SECTION

Gamagara Local Municipality

UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1

SECTION C3.4: CONSTRUCTION

C3.4.1 STANDARD SPECIFICATIONS

The Standard Specifications on which this contract is based are the South African Bureau of Standard's Standardized Specifications for Civil Engineering Construction (SABS 1200). (Note: "SABS has been changed to "SANS"; the SABS 1200 specifications are due to be replaced in the foreseeable future by SANS 2001 amongst other specifications).

Although not bound in nor issued with this Document, the relevant sections of the standard specifications shall form part of this Contract. These documents are available at the Contractor's expense from the SA Bureau of Standards, Private Bag X191, PRETORIA, 0001.

The applicable SANS 1200 Standardised Specification for this Contract shall be the following

A - General

AB - Engineers office

C - Site clearance

DA - Earthworks (Small Works)

DB - Earthworks (Pipe Trenches)

GA - Concrete (small works)

L - Medium pressure pipelines

LB - Bedding (pipes).

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UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1

SECTION C3.4: CONSTRUCTION

C3.4.2 AMENDMENTS TO THE STANDARD SPECIFICATIONS

The following variations and additions to the Standard and Particular Specifications will be applicable to this contract.

The various documents listed in C3.4.1 shall be treated as mutually explanatory. However, should any requirement of Section C3.4.2 or C3.4.3 conflict with any requirement of Standardised Specifications or with any requirements of the Particular specifications, then the requirement of Sections C3.4.2 and C3.4.3 shall prevail.

PSA GENERAL

PSA1 SPECIFICATION DRAWINGS (Clause 2.7)

Specification Drawings may be included in this document as annexures to the Project and Particular Specifications. Where such Specification Drawings depict items and standard structures according to layouts and details differing from those shown in the Standardised Specifications, the layouts and details shown in the annexures to the Project and Particular Specifications shall be adopted.

PSA2 QUALITY (Clause 3.1)

All material used in the Works shall, where such mark has been awarded for a specific type of material, bear the SABS mark. Alternatively, the Contractor shall furnish the Engineer with certificates of compliance of materials, which bear the official mark of the appropriate standard.

PSA2.1 DEFINITIONS

PSA2.1 Definitions

Add the following :

Task	-	a quantified activity or operation.
Daily task	-	a task that is required to be completed within a working day.
Task remuneration	-	remuneration as paid for a completed task or job.
Daily rate	-	the remuneration of a day's work.
Daily wage	-	See daily rate.
Daily task remuneration	-	the remuneration for a completed daily task.
Labour-intensive construction	-	the economically efficient employment of as great a portion of labour as is technically feasible to produce as high a standard of construction as demanded by the specifications and allowed by the funding available, thus the effective substitution of labour for equipment. (Note: This definition is not Contract specific, but applies to the project as a whole. This Contract is a part of such a project.)

PSA3 MATERIALS

PSA3.1 Supply of Materials

The Contractor will be responsible to supply all the materials necessary for the proper execution of the works. He shall also be fully responsible for quality of materials used and/or installed.

PSA4 PLANT (Clause 4.3)

Except where the use of plant is essential in order to meet the specified requirements by the Due Completion Date, the Contractor shall use only hand tools and equipment in the construction of those portion(s) of the Works that are required in terms of the Project Specifications to be constructed using labour intensive construction methods.

PSA5 CONSTRUCTION

PSA5.1 Setting Out of the Works

Where labour-intensive work is specified, the Contractor shall also be responsible for the setting out of daily tasks.

PSA5.2 Accommodation of traffic

The Contractor shall provide and maintain all temporary road signs, etc. that are necessary for the normal safe flow of traffic (vehicles and pedestrians).

PSA5.3 Existing services

All services shall be treated as live until proven otherwise. The Contractor shall not commence work in an area until proper arrangements have been made for supervision of the work by the relevant authority.

The Contractor shall give assistance to service authorities with the location, protection and relocation of services controlled by that authority.

PSA.5.4 Protection of Overhead and Underground Services

Add the following:

Before commencement of any excavations, the Contractor must contact all the authorities concerned, to indicate where services are established.

The Contractor must obtain the necessary drawings from Eskom, Telkom and the Local Authority to expose and safe guard services.

PSA.5.8 Ground and Access to Works

Add the following:

In cases where normal accesses are closed due to construction work, temporary access must be available for the public at all times. No additional payment will be made for this effort. The necessary allowance for compensation must be estimated under an allowed item. Trenches may not be left open for more seven days, and accesses must be provided within twenty-four hours. If the Contractor does not comply with this added specification, a penalty of two hundred per day will be applicable. The Engineer has the authority to let work be done by someone else and to claim the expenditure from the Contractor.

PSA6 TESTING (Clause 7)

(a) All test results obtained by the Contractor in the course of his process control of the Works shall be submitted to the Engineer or his Representative prior to requesting inspection of the relevant portions of the Works. Any request for inspection shall be submitted on the prescribed forms that are appended as annexures to the Specifications.

b) The Contractor shall make suitable arrangements for process control prior to commencement with the Works. Should he intend using site personnel for this purpose he shall ensure that suitably trained and competent personnel take charge of the necessary test work, and that the necessary equipment is at their disposal prior to commencement of the Works. Failure to comply with these requirements shall be just cause for the Engineer to order suspension of the Works without additional remuneration in terms of Clause 39 of the Conditions of Contract, or for him to recommend determination to the Employer in terms of Clause 55 thereof.

c) The Contractor shall deliver to the Engineer, for his consideration, quality assurance programmes (as obtained from all the Contractor's proposed suppliers of pipes, valves and specials) prior to the Contractor's appointment of any suppliers.

PSA7 SITE CORRESPONDENCE

PSA7.1 Instructions by the Engineer

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 Contractor's Representative unless a break in the sequence of numbers is brought to the notice of the Engineer in writing immediately.

PSA7.2 Site Diary

A site diary, which will be supplied by the Engineer, must be filled in on a daily basis and submitted to the Engineer on a monthly basis. No claims will be considered without the site diary's schedule properly completed (on a daily basis) and submitted. A site diary will be kept one per site.

PSA8 SITE MEETINGS

Refer to Section C3.5.1.9

PSA9 PAYMENT (Clause 8.2)

Refer to Section C3.5.1.10

PSA10 REPORTS

The submission of each monthly payment certificate shall be accompanied by a completed Progress Report.

This report is a pre-requisite for the approval of each monthly payment certificate and shall be completed in full to illustrate all work completed the preceding month, as well as work in progress at the time of submission of the report.

Each of these reports must be accompanied with the relevant, completed appurtenant Borehole Schedules (refer to the Annexures). Relevant day work reference must be attached to each Equipping Schedule.

Labour intensive activities must be reported separately.

PSA11 SUMS STATED PROVISIONALLY (Clause 8.5)

PSA11.1 Contingencies

No provisional sum has been included in Schedule 2 for contingencies. No percentage mark-up will be applicable to any payments made using contingency money other than those included in prices for variations determined in terms of Clause 6.4 of the Conditions of Contract.

PSA11.2 Contract Price Adjustment

Contract Price Adjustment (CPA) will be applicable as per the Contract Price Adjustment clause under Contract Data page C1.2-11.

PSA11.3 Materials for Dayworks

A Provisional Sum has been included in Schedule 1 for materials to be used during the execution of dayworks. In addition to the abovementioned amount, provision is made in Schedule 1 for a mark-up on the materials used during the execution of the dayworks by the Contractor. Payment made shall be regarded as full compensation for overheads, charges and profit on the materials that are used when executing dayworks.

PSA11.4 Royalties for Borrow Materials

A Provisional Sum has been included in Schedule 1 for any royalties that may become payable by the Contractor in obtaining suitable borrow materials from sources designated by the Engineer. Payment will be based on the royalties actually and necessarily paid. In addition to the above amounts, provision is made in Schedule 1 for a mark-up on any payments made by the Contractor in this regard. The mark-up shall be regarded as full compensation for overheads, charges and profits as provided for in clause 6.6 of the Conditions of Contract.

PSA12 PRIME COST ITEMS (Clause 8.6)

PSA12.1 Acceptance Control Testing of Earthworks

A Prime Cost Item has been included in Schedule 2 for acceptance control testing of earthworks ordered by the Engineer to be undertaken by a commercial laboratory. Payment will be based on the actual invoicing by the laboratory to the Contractor. In addition to the above-mentioned amount, provision is made in Schedule 2 for a mark-up on any payments made by the Contractor in this regard. The mark-up shall be regarded as full compensation for overheads, charges and profits as provided for in Clause 6.6 of the Conditions of Contract.

PSA12.2 Labour Desk Officers

A prime cost item has been included in Schedule 2 for the compensation of the Labour Desk Officer. Payments will be done to the Labour Desk Officer on instruction of the engineer, in writing. In addition to the abovementioned amount, provision is made in Schedule 2 for a mark-up on the payments made to Labour Desk Officers. This mark-up shall be regarded as a full compensation for overheads, charges and profits as provided for Clause 6.6 of the Conditions of Contract.

PSA12.3 Artisan and Skills Training

A Prime Cost Item has been included in Schedule 2 for payments to be made to specialists for the training of unskilled or semi-skilled persons in industry accredited management and generic skills. Payment to the Contractor will be based on invoices certified by the Engineer and issued by training specialists to the Contractor for work undertaken in terms of this item.

In addition to the above amounts, provision is made in Schedule 2 for a mark-up on any payments made by the Contractor in this regard. The mark-up shall be regarded as full compensation for overheads, charges and profits as provided for in Clause 6.6 of the Conditions of Contract.

PSA12.4 Telephone Calls and Rental

A Prime Cost Item has been included in Schedule 2 for telephone calls and facsimile transmissions as well as rental and maintenance associated with the telephone(s) to be supplied to the Engineer's Representative(s) for the duration of the Contract as specified in section PSAB below. Payment will be based on call and rental costs, but excluding any deposits and installation costs which shall be priced under the preliminary and general items. In addition to the above amount, provision is made in Schedule 2 for a mark-up on any payments made by the Contractor. This mark-up shall be regarded as full compensation for overheads, charges and profits as provided for in Clause 6.6 of the Conditions of Contract.

PSA12.5 Electrical Connection Fees

A prime cost has been included in Schedule 2 for payments to Eskom in respect of electrical connection fees for borehole equipment. In addition to the above-mentioned amount,

provision is made in Schedule 2 for a mark-up on the connection fees paid. This mark-up shall be regarded as full compensation for overheads, changes, administration and profits as provided for in Clause 6.6 of the Conditions of Contract.

PSA12.6 Specialist Contractors

A prime cost has been included in Schedule 2 for payments made to Specialist Contractors, which will be executed specialist work. In addition to the above-mentioned amount provision is made in Schedule 1 for a mark-up on the Specialist Contractors paid. This mark-up shall be regarded as full compensation for overheads, charges, administration and profits as provided for in Clause 6.6 of the Conditions of Contract.

PSA12.7 Management of approved emerging local sub-contractors

A prime cost has been included in Schedule 2 for management of approved emerging local sub-contractors, which will be executed during works. In addition to the above-mentioned amount provision is made in Schedule 1 for a mark-up on amounts paid to the approved emerging local sub-contractors. This mark-up shall be regarded as full compensation for overheads, charges, administration and profits as provided for in Clause 6.6 of the Conditions of Contract

PSA13 ADJUSTMENT OF PRELIMINARY AND GENERAL ITEMS DUE TO RAIN

Should the period for completion be automatically extended due to abnormal weather conditions occurring during execution of the Contract as provided for in the Project Specifications, no adjustment to the total for time-related preliminary and general items will be applicable.

PSA14 ADJUSTMENT OF PRELIMINARY AND GENERAL TIME-RELATED ITEMS

An approved extension of time will qualify the Contractor to receive additional payment for each relevant time related item at a unit rate based on the sum originally tendered for such item, and which shall be fair and reasonable as contemplated in Clause 6.4 of the General Conditions of Contract.

PSA15 ADJUSTMENT OF PRELIMINARY AND GENERAL ITEMS DUE TO INTERRUPTION IN WORK SCHEDULE

Should the period of completion be automatically extended in terms of clause PS5.6 as a result of interruption in the contractors work schedule during execution of the contract, no adjustment to the total for time related preliminary and general items would be applicable. Time related preliminary and general items will be paid only if the Contractor has been established on site during a specific period. Therefore, if the Contractor was not established on site, time related P & G-items will not be paid.

If he was on site for only a limited period during a specific month, time related P&G items are to be paid in full for such a month.

PSAB ENGINEER'S OFFICE

PSAB1 NAME BOARDS (Clause 3.1)

Two name boards confirming to the standard requirements of the South African Association of Consulting Engineers and as shown on Drawing No. B35145C-002-01 must be provided and erected at points to be designated by the Engineer during the duration of the Contract for this purpose.

PSAB2 OFFICE BUILDING (Clause 3.2)

An office building shall be provided per appointed Contractor and maintained for the duration of the Contract. The following variations and additions to the requirements of SANS 1200AB shall apply

a) The office shall have a floor area of at least 32 m^2.

The office to be divided into two equal sections with access between offices.

b) The minimum glazed area shall be 6 m^2.

c) The minimum window opening shall be 4.0 m^2.

d) Ten (10) office chairs and three (3) desks of 1.5 m^2 are required in addition to those furnishings specified in SANS 1200AB.

e) Rack for hanging contract drawings shall be provided.

f) One 15 amp plug point is to be installed within each of the offices.

g) A 0,75kW air conditioner with suitable power supply (reverse cycle/compressor type) is to be installed in each of the offices.

PSAB3 TELEPHONE (Clause 5.4)

Two cellular telephone of an approved type shall be provided for the exclusive use of the Engineer's Representative for the duration of the Contract.

The Contractor shall make all arrangements necessary for the provision of the cell phone, and shall pay all necessary deposits and installation costs that may be applicable. A prime cost item has been allowed in Schedule 1 to cover all call and rental costs that are associated with the provision of this facility for the Engineer's Representative.

PSAB5 SURVEY ASSISTANTS (Clause 5.5)

Two suitably educated and trained survey assistant shall be made available for the sole use of the Engineer's Representative(s) for the duration of the construction.

PSAB6 SURVEY EQUIPMENT

The survey equipment listed hereunder shall be made available for the exclusive use of the Engineer for the duration of the Contract. Equipment shall be insured and maintained for the full duration of the Contract.

(a) Automatic surveyor's level complete with tripod and leather carry

case such as Zeiss N1-2 or equivalent	2 No
(b) 20-second tachometer with optical plum bob complete with tripod and leather carry case such as Sokkisha TM20C or equivalent.	2 No.
(c) Nylon-coated steel surveyor's tape 100m long and 10mm wide	2 No.
(d) 5m long steel tape	2 No.
(e) 5m long three-piece telescopic survey staves (metric double-face) complete with angle bracket level	2 No
(f) 2kg hammer with rubber handle	2 No.
(g) Steel pegs, 300mm long and 12mm dia	200 No.
(h) Measuring wheel	2 No
(i) Tripod holders for ranging rods (heavy duty)	4 No.
(j) Optical square (Sokkisha or Wild), complete with telescopic aluminium rod and bubble	2 No.
(k) 100m long 50 kg strength fish line	2 No.
(l) One meter long spirit level	2 No.
(m) DCP	2 No.
(n) 100m Dip meter (water level meter)	2 No.

(o) A Troxler nuclear system complete with accessories and store in a suitable transit case as supplied by the manufacturer. A detailed description of each unit and principles of operation should be given in the manual for the nuclear instrument. (Troxler Model 341B).

PSAB7 CARPORTS

The Contractor shall provide four carports of at least 30 m^2 each, two at each Engineers Office, which is so constructed as to provide shelter for the vehicles from the rain and the direct rays of the sun. The floor shall consist of crushed aggregate to alleviate dusty and muddy conditions.

PSAB8 DIGITAL CAMERA

The Contractor shall provide, insure and maintain for the full duration of the contract two approved digital cameras complete with data zoom features.

PSAB9 LABORATORY

No laboratory buildings or fittings are required by the Engineer. The Engineer will arrange separately with a commercial laboratory or designate specialists to carry out all

acceptance control testing including cube testing, but excepting for density control tests. See clause PSA12 for detail of the Prime Cost item provided for this purpose. The Contractor shall remain responsible for carrying out the process control testing that is required by the Standardised, Particular and Project Specifications.

The Contractor shall supply the following equipment and maintain same for the duration of the Contract:

(a) Nine concrete cube moulds, 150mm nominal size.

PSC SITE CLEARANCE

PSC1 DISPOSAL OF MATERIAL (Sub-Clauses 3.1 and 8.2.1)

Materials arising from clearing and grubbing shall be disposed of at a site to be arranged by the Contractor, in accordance with the provisions of Clause PSDA 4. Trees and stumps necessarily removed shall not be burnt unless authorised by the Engineer, but shall be cut and stacked at areas designated by the Engineer.

PSC2 AREAS TO BE CLEARED AND GRUBBED (Clause 5.1)

The areas to be cleared and grubbed will be indicated by the Engineer. Should a portion or the whole of the site have been cleared and grubbed by nature or by others prior to the start of construction, then no clearing and grubbing will be ordered or payment made with respect to the applicable portion of the site.

PSC3 PRESERVATION OF TREES AND SHRUBS (Sub-Clause 5.2.3)

The penalty in respect of every individual tree and shrub designated as a tree or shrub to be preserved that is damaged or removed unnecessarily by the Contractor, shall be R5 000. Trees that fall within areas upon which the Works are to be constructed or within areas that the Contractor must occupy for the proper construction of the Works will not be designated for preservation.

PSC4 OVERHAUL (New Sub-Clause)

No overhaul will be payable on the disposal of material arising from clearing and grubbing.

PSDA EARTHWORKS (SMALL WORKS)

PSDA1 FREEHAUL AND OVERHAUL (Clause 5.2.5)

It is the explicit requirement that all Clauses stating "haul over a free-haul distance of 1,0 km" be changed to "including unlimited free-haul distance." No extra payment will be made for any haul distances. The Contractor is advised to familiarise him / her with conditions and to make provision for unlimited haul distance for all spoil, fill or imported etc. material.

PSDA2 BORROW PITS (Clause 5.2.2.2)

Borrow materials shall be obtained from designated borrow pits approved by the Engineer.

PSDA3 DISPOSAL OF SURPLUS MATERIAL

All surplus or unsuitable materials arising from excavation shall be spoiled and spread where indicated by the Engineer. The Engineer shall determine the point of spoil and spreading depending on the nature of the material.

PSDA4 HAUL AND SPOIL ROADS

The contractor shall be responsible for the provision of all haul and spoil roads that he may require for the construction of the works and that the engineer may approve. No additional payment will be made in this regard.

PSDB EARTHWORKS (PIPE TRENCHES)

PSDB3 MATERIAL

PSDB3.1 Method of classifying

The Contractor may use any method he chooses to excavate any class of material, but his chosen method of excavation shall not determine the classification of the excavation. The Engineer or his Representative will decide on the classification of the materials. In the first instance the classification will be based on inspection of the material to be excavated and on the criteria given in PSDB3.2.

PSDB3.2 Classification of excavation

All material encountered in any excavations for any purpose, including restricted excavation will be classified as follows:

a) Hard rock excavation

Hard rock excavation shall be excavation in material (including boulders exceeding 0.15 cubic metres in individual volume) that cannot be efficiently removed without blasting or without wedging and splitting.

b) Soft excavation

Soft excavation shall be all material not falling into the category of hard rock excavation.

PSDB 3.3 Selected Granular Material

Add the following:

"Where appropriate materials for backfilling is available in layers of 150 millimetres or more, the materials will be separated from the other materials for backfilling

PSDB 3.5 Backfilling Material

PSLB 3.5.2 Disposal of Surplus Material

Add the following:

The Engineer will decide which materials are unsuitable for backfilling. The rest of the materials must be disposed at a site as indicated by the engineer.

PSDB 3.7 Selection

Add the following:

The Engineer will decide which materials are unsuitable for backfilling. The rest of the materials must be disposed at a site as indicated by the engineer

PSDB5 CONSTRUCTION

PSDB5.2 Minimum Base Widths

For labour intensive contracts the trench widths for different pipe diameters will be adjusted as follow:

50mm diameter to 100mm diameter:	Trench width: 500mm
160mm diameter to 250mm diameter:	Trench width: 600mm
300mm diameter to 350mm diameter:	Trench width: 800mm

PSDB5.3 Existing services

The Contractor shall bear the full cost of the repairs to any existing services damaged because of the Contractors.

PSDB5.4 Dust

The Contractor is responsible for the control of excessive dusty conditions due to the construction procedures. The Contractor shall also be held responsible for any claims that might arise. The Contractor shall allow for regular watering of areas to control dust.

PSDB5.6 Back Fill

PSDB5.6.4 Disposal of Hard Rock

Add the following:

It is the responsibility of the Contractor level dumped material and to do the next dumping on top of the levelled dumped material. The Contractor will not be allowed to dump waste material on the horizontal surface.

PSDB5.9 Road Traffic Control

Add the following to D5.1.6

a) Sufficient road signs must be erected in such a way the motorists will be warned in time of works, e.g. at the closing of a street sufficient signs to direct traffic must be erected at the preceding intersection.
b) Bypasses and/or road signs shall be provided and/or erected at all locations where the free flow of traffic is obstructed and shall be approved by the Engineer before the commencement of construction. Where main roads are crossed, detours and temporary traffic signs must be provided as shown on the attached drawings.
c) Where a trench crosses a street or any place where a trench crosses the direction of traffic

flow, drums must be placed in the street and not just along the sides of the street with danger tape in between.

d) Danger tape must be put up between drums and tied around the drums.

e) Drums must be filled with stones. The spacing of drums must be in such a way (maximum 5m) that they are visible from all directions.

f) Sufficient safety measures must be utilized for pedestrians

PSDB5.10 Areas subject to traffic loads

All trenches within road reserves and open areas will be considered to be subject to traffic loads, and the backfill material and compaction in these trenches shall comply with the requirements of Subclauses 3.5(b) and 5.7.2.

PSDB5.11 Suitable backfill material

It is likely that some of the material excavated from the trenches will not comply with Subclauses 3.5 and 5.6.2. Suitable material from other sections along the pipe route shall be used to complete the backfilling to these trenches. The unsuitable material shall be removed from site and spoiled at the designated spoil site as indicated by the Engineer.

PSDB7 TESTING

PSDB7.1 Testing and compaction of backfill to trenches and reinstatement of surfaces

The Contractor must furnish the Engineer with compaction tests results to prove that the compaction complies to the prescribed density. No single test result, which is below the specified density, will be accepted.

PSDB8 MEASUREMENT AND PAYMENT

PSDB8.3 Excavation (Sub Clause 8.3.2)

The rates for excavation shall include the cost of battery of deep excavations to comply with the latest OSH Act.

The rates for excavation of trenches shall also cover all costs of density testing to be borne by the Contractor as specified in PSDB7.1 and the provision of suitable backfill material from other excavations where required.

PSGA CONCRETE (SMALL WORKS)

PSGA1 CEMENT (Sub-Clause 3.2.1)

Only the use of Ordinary Portland Cement to SANS 471 will be permitted.

PSGA2 CONCRETE FINISHES (Sub-Clause 4.4.2)

Concrete against which earth will be backfilled shall be classified as rough. All exposed concrete surfaces shall be classified as smooth. Degree of accuracy II shall prevail.

PSGA3 STRENGTH CONCRETE (Sub-Clause 5.4.1.5)

The grade of concrete and nominal size of aggregate shall be as specified on the Drawings. The successful tenderer will be required to submit samples of the coarse and fine aggregate, which he proposes using, to the Engineer's Representative(s) for tests regarding the suitability of such aggregates. The Contractor shall prepare trail mixes. These mixes shall be designed for vibration. All data and reports prepared by the Contractor shall be submitted to the Engineer for information and approval prior to the commencement of concreting operations.

PSGA4 ANCHOR AND THRUST BLOCKS

At tees, bends, terminal valves, end caps, and where otherwise directed, anchor/thrust blocks shall be constructed to dimensions ordered, shown on the Drawings or agreed to by the Engineer. Unless otherwise specified, anchor/thrust blocks and pedestals shall be constructed of prescribed mix 15/37.5 concrete.

The concrete shall be well punned round the pipe and, if in trenches, against the undisturbed faces and bottom of the trench. Backfilling behind or under thrust faces will not be permitted. Excess excavation shall be replaced with the prescribed mix concrete given above for anchor/thrust blocks at the Contractor's expense, unless an item is scheduled to cover payment of over break. Care shall be taken to leave the joints accessible. No anchor/thrust blocks and pedestals shall be concreted until the approval of the Engineer has been obtained.

Anchor and thrust blocks will be measured by volume of concrete; the rate tendered shall include for any form work required constructing the block.

Should the Contractor offer an alternative method of coupling involving flexible joints, he shall design suitable thrust and anchor blocks in order to prevent movement of the pipeline under operating and test conditions. The working and test pressure to be used by the Contractor for the calculation of anchor and thrust blocks shall be in accordance with the design information that is issued together with the tender. The earth bearing pressure to be used for the calculation of anchor and thrust blocks shall be based on field tests. The factor of safety to be used in calculating the above shall be 2.5.

PSGA5 GROUTING TO MACHINE AND STRUCTURAL BED PLATES (Sub-clause 5.5.13)

PSGA5.1 Materials

a) Water. Water for grout shall comply with the requirements given in sub-clause 3.3 of SANS 1200G.

b) Aggregates. Notwithstanding the requirements of Sub-clause 3.4.1 of SANS 1200G, the grading of fine aggregate (sand) and coarse aggregate (stone or pea gravel) shall conform to the gradings given in Tables 1 and 2, respectively, below.

c) Cement. Cement shall be ordinary Portland cement complying with SANS 471.

d) Admixtures. Admixtures shall comply with the requirements of Sub-clause 3.5 of SANS 1200 G, and shall have a proven record of satisfactory performance under conditions encountered in the North West Province.

Proprietary Grouting Materials. Unless otherwise approved by the Engineer, Proprietary Grouting Materials shall be obtained ready mixed in sealed pockets as supplied by the manufacturers.

Table 1 - Sand		Table 2 - Stone or Pea Gravel	
1	2	1	2
Test sieve Nominal aperture size, mm	% Passing (by mass)	Test sieve aperture size, mm	% Passing (by mass)
9.5	100	9.5	100
4.75	95-100	4.74	95-100
1.18	45-65	2.36	0-5
0.3(300)	5-15		
0.15(150)	0-05		

* Portland cement (ordinary, rapid-hardening, and sulphate-resisting).

PSGA5.2 Preparation and Procedures

a) Before a machine or structural bed plate is placed on the concrete the following shall be carried out :

1) All defective concrete, laitance, dirt, oil, grease and loose material shall be removed from the concrete foundation by bush-hammering, chipping, or other means until sound clean concrete is obtained. The surface of the foundation shall be scabbled, but shall not be so rough as to interfere with proper placing of the grout. All foundation bolt sleeves shall be cut out, or cut off flush if the sleeves cannot be removed. The top of the foundation shall be reshaped if necessary.

2) The underside of each steel base, particularly in the bearing areas, shall be cleaned and any burrs and ragged edges removed before the base is placed in its final location.

3) All holding-down bolt sleeves shall be thoroughly cleaned of any materials that may prevent the grout from flowing freely to the bottom of the bolt sockets.

b) The base shall be properly aligned and levelled and shall be maintained in that position during grouting.

c) After the machine or structural bed plate has been placed the following precautions shall be observed:

1) Shimming shall be kept to a minimum. Steel plates shall be used for packing and shall be ground to the required thickness, where necessary.

2) Before grouting is started all loose dirt, oil, grease and other foreign matter on the surface of the foundation, the underside of bed plates, and in the bolt holes shall be removed by means of compressed air or other approved means. The surface of the foundation slab shall be thoroughly saturated with clean water and free water shall be removed from the surface and the bolt holes just before the grout is placed.

3) The grouting shall not be carried out until the alignment of all units to be grouted has been checked and approved by the Engineer.

4) Special care shall be taken with grouting in hot or cold weather to ensure proper setting and gain of strength and, in the case of Proprietary Grouting Materials, by having ice or hot water available, as the case may be, in accordance with the instructions of the manufacturer. Enclosures shall be provided for the grout such that, until it has set, its temperature will be in the range 15-27^{o}C. Shields to protect the grout from the sun and from hot winds shall be provided by the Contractor when so ordered.

PSGA5.3 Form work

Form work for grouting shall comply with the applicable requirements of Sub-clause 5.2 of SANS 1200 G. Forms shall be caulked where necessary. Adequate clearance between forms and bed plates shall be provided to enable the grout to be worked into place.

PSGA5.4 Mixing (All free-flowing grouts except epoxy grouts)

The grout shall be mixed to a homogenous uniform mixture and delivered ready for placing at a temperature between 15°C and 25°C.

The materials and water shall be mixed in a mortar mixer for at least 3 min. or, in the case of small jobs only, shall be thoroughly mixed by hand, the entire mass being turned over enough times to ensure even distribution of its components.

The mixing shall be done as close as possible to the place(s) where the grout is placed. No more grout shall be mixed at any one time than can be placed in a period of 20 min. After the grout has been mixed it shall not be re-tempered by the addition of water.

PSGA5.5 Grouting (All free-flowing grouts except epoxy grouts)

The grout shall be placed quickly and continuously to avoid the undesirable effects of over-working. (These effects are segregation, bleeding and breaking-down of initial set). The method of placement shall be subject to approval. The means of placing the grout shall be such that the grout will completely fill the space to be grouted, will be thoroughly compacted, will be free of air pockets and will have evenly distributed contact over an area in excess of 80 % or, in the case of expanding grout, 95 % of the bearing area of the item to be supported.

Wherever applicable, grout shall be placed from one side only and where this is not practicable, care shall be taken to ensure that any entrapped air is released. After the grout has taken its initial set :

a) the forms shall be removed;

b) excess grout shall be so cut away as to leave a smooth and neatly finished job;

c) except where the grout is intended to provide resistance to side thrust, all edges shall be trimmed at 45°C to the vertical, from the bottom edge of the bed plate; and

d) all excess grout on or about the bed plate shall be removed.

Damage to paint work, if any shall be repaired within 24 hours. Packing plates, shims and other levelling devices shall remain in position.

PSGA5.6 Dry-packed grout (Standard dry sand and cement grout)

Dry-packed grout shall have a minimum compressive strength at 28d of 20MPa.

The quantity of water after placing shall be kept to a minimum consistent with placing conditions, and the cement, sand and, where applicable, pea gravel proportioned by mass shall be as follows:

a) Where the clearance between bed plate and foundation is 25 mm or less : 1 part of Portland cement, and 2 parts of sand;

b) Where the clearance exceeds 25 mm : 1 part of Portland cement, 1 part of sand and 1 part of pea gravel. Dry-packed grout shall be rammed by means of tamping rods against form work placed along three sides of the bed plate.

PSGA5.7 Non-shrink grout with metallic aggregate

The manufacturer instructions shall be observed when non-shrink grout with metallic aggregate is used.

Where the clearance between the bed plate and the foundation is less than 50 mm a sand-based mix shall be used. Where the clearance exceeds 50 mm the Engineer may order a mix with a base of sand plus pea gravel to be used.

PSGA5.8 Expanding grout with powdered aluminium additive

The manufacturer instruction shall be observed when the expanding grout powdered aluminium additive is used.

Where the clearance between the bed plate and the foundation is less than 25 mm, a sand-based mix shall be used. Where the clearance exceeds 25 mm the Engineer may order mix with a base of sand plus pea gravel to be used.

Each batch shall be mixed for at least 6 minutes after the powdered aluminium has been added. Where a ready-mixed grout is used, the powdered aluminium shall be

added at the placing site and the batch mixed as specified. Grout shall be placed within 45 minutes after the addition of the powdered aluminium.

The Contractor shall not use powdered aluminium additive when the ambient temperature is below 5^{o}C.

PSGA5.9 Epoxy grout (epoxy mortar type only)

The manufacturer's instructions shall be observed when an epoxy grout is used.

PSGA5.10 Wood-floated finish (Sub-clause 5.5.10.2)

Where wood floating is specified or scheduled, the surfacAe shall be given a finsh as specified in Sub-clause 5.5.10.1 of SANS 1200 G and after the concrete has hardened sufficiently, it shall be floated to a uniform surface, free of trowel marks. A screeded surface shall be wood-floated, either by hand or machine, only sufficiently to produce a uniform surface free from screed marks.

PSL MEDIUM-(PRESSURE PIPELINES) (SABS 1200 L)

PSL3 MATERIALS

PSL3.1 General

The water pipelines shall be the blue uPVC type, **class 12 (12 bar)** The water rising main pipelines shall be the blue **uPVC type, class 12 (12 bar)** with rubber joints (Z-joints) "No joints may be glued or welded, Proof of SANS certificates must be provided beforehand in which the quality of the pipes is confirmed. Quantities of different types and classes of pipe must be confirmed with the Engineer before final quantities are ordered.

PSL3.3 STEEL-, CAST IRON AND METAL PIPES EN SPECIALS

PSL3.3.1 General

The working pressure for a special shall not be less than the highest working pressure in any adjacent pipe or fitting.

All steel, cast iron and metal parts of pipes and fittings which are installed underground must be wrapped with "Denso inner and outer uPVC tape" or similar approved material which is approved by the Engineer. All steel pipe pieces which are provided with screw-thread must be produced from Stainless Steel Type 316 Grade.

All steel pipes and steel accessories shall be "hot-dip galvanised" as by the standard SABS 763 specifications prescribed.

PSL3.8.3 Flanges and Accessories

Add the following:

Flanges shall comply with SABS 1123 and have a minimum working pressure of 2 500 kPa, except where otherwise indicated. Holes shall be drilled to Table 16 SABS 1123.

Any item of pipework or special or valve, of which the flanges are incorrectly drilled, will be rejected. The reaming of bolt-holes to oversized dimensions to enable a particular item to fit will not be allowed.

PSL3.8.4 Loose Flanges

Add the following:

"Bolts and nuts must be of electroplated steel type and must comply with the applicable requirements of SABS 135."

PSL3.10 Valves

PSL 3.10.1 Isolating valves

Add the following:

"All isolating valves must comply with SABS 664, must be corrosion resistant to sewage water and must be suitable for work pressure of 16 bar depending on where it is being used. Valves must close clockwise, and the direction of open and closed must be indicated on the valve permanently. Valves must be of the nun-rising spindle type and must be provided with a square head, suitable for the use of a turn-key. All valves shall be tested for tightness."

A turn-key must be provided for valves which are installed underground. Valves which are placed above ground must be provided with a standard removable handwheel.

The tenderer must indicate in his tender which type of valves will be used and a copy of the specifications, in which will be indicated that the required pressure can be maintained must be submitted with the tender.

PSL 3.10.4 Air valves

Add the following:

VARIANT or similar approved, air-outlet&intake valves which comply to SABS 664 and are suitable for a working pressure of 16 Bar shall be installed on the uPVC parts of the pipeline. Products of similar quality can be suggested as alternatives. See relevant drawing

PSL4 PLANT

PSL 4.3 TESTING

PSL 4.3.1 Add the following:

The contractor must see to it that all test apparatus must be in a safe working condition. Calibration certificates of the pressure meters must be provided before any tests are accepted. The contractor must make his own arrangements to get water for testing. All water costs for testing purposes must be included in the rate for the installation of the pipes.

PSL5 CONSTRUCTION

PSL5.1.3 Add the following:

Special attention must be provided for sealing of pipes if the wind blows and provision must be made to prevent the intrusion of groundwater into pipes.

PSLB BEDDING (PIPES)

PSLB1 BEDDING (Sub-Clause 3.3)

PSLB1.2 Rigid Pipes

All steel, clay and concrete pipes shall be laid on a class C bedding as shown on Drawing No. B35145C-143-01.

PSLB1.3 Flexible pipes

uPVC, mPVC, and polyethylene pipes will be regarded as being flexible and shall be bedded as per Drawing No. B35145C-143-02.

PSLB2 MATERIAL NOT AVAILABLE FROM TRENCH EXCAVATION (Clause 3.4.2)

Bedding and selected fill materials shall be obtained from trench excavation, other necessary excavations or from borrow pits in accordance with the provisions of Clause PSD3. The engineer reserves the right to designate alternative sources. He also reserves the right to make a ruling whether special efforts must be made to construct specifically a separate bedding for pipes where the in-situ material proved to be of good quality.

PSLB3 CLASS A BEDDING (Sub-Clause 5.2.1)

Concrete to be used in class A bedding to pipes shall be of grade 20/19.

PSLB4 CONCRETE CASING TO PIPES (Sub-Clause 5.4)

Concrete to be used in the casing of pipes shall be of grade 20/19.

PSLB5 TOLERANCE ON COMPACTION OF BEDDING MATERIAL

Degree of accuracy II shall prevail.

END OF SECTION

Gamagara Local Municipality

UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1

SECTION C3.4: CONSTRUCTION

INDEX

END OF SECTION

PB FENCING

PB1 SCOPE

This sub-section includes all work in connection with the erection of shockproof, vermin proof, residential or security fencing as shown on the drawings or as directed by the Engineer. It also includes any work necessary on the lifting and re-erecting of existing fences. The standard of fencing, the positioning of the gates and the quantities shown in the Schedule of Quantities against each item under this section, may be subject to variation and the Contractor shall ascertain from the Employer"s Agent, the exact location of, and specification to which the fencing shall be constructed, before placing any orders for material. The minimum standards of fencing required are indicated on the drawings.

PB2 MATERIALS

PB2.1 Vermin, Shockproof and Residential Fencing

Straining posts and stays, standards, and droppers shall be either of timer or steel sections. All sections shall be to the dimensions and masses indicated on the drawings. Timber sections shall be of creosote impregnated hardwood. Steel sections shall be either galvanised or painted to the specifications indicated on the drawings.
All plain wire, barbed wire, wire netting, diamond mesh and binding wire shall be according to the diameters and specifications indicated on the drawings.

PB2.2 Security Fencing

All posts, standards and droppers for security fencing shall be galvanised steel sections to the dimensions and details indicated on the drawings. Plain and diamond wire and other fencing materials shall all be according to the details indicated on the drawings.
Gates

All gates shall be to the details indicated on the drawings and components shall either be galvanised or painted according to the specifications on the drawings.

PB2.3 Bolts

Bolts shall be galvanised steel bolts of the required length and diameter which shall not be less than 12mm. Eyebolts to gates of 18mm diameter. All the necessary bolts together with nuts and workers, shall be supplied with each post or gate.

PB3 CONSTRUCTION

PB3.1 Clearing of Fence Site

All brush scrub and other obstructions which may interfere with the proper construction of the fences shall be removed and surface irregularities shall be graded so that the fence will conform to the general contour of the ground.
No separate payment will be made for this clearing and full provision for these costs must be made in the tender.

PB3.2 Connections

Existing cross fences shall be connected to the new fences. Straining posts with stays for every direction of strain shall be placed at the junction with existing fences and the wires in both fences properly fastened to the posts.

PB3.3 Placing of Posts

All posts, struts and standards shall be firmly planted into the natural ground, be it soil, gravel or rock to the depths detailed. Gate posts and struts shall be erected at all gates and straining posts and struts shall be erected at all ends and corners or bends in the line of the fence and at all junctions with other fences. Intermediate straining posts and struts, and standards shall be spaced at the intervals indicated on the drawings.
All posts (except struts), standards and droppers shall be placed in a vertical position except in unusual locations where, in the opinion of the Employer"s Agent, it will be more satisfactory to place such member perpendicular to the slope of the ground. All posts, struts, standards and droppers shall be set in holes dug to the specified depth even in rock where blasting might be necessary to obtain the required depth. All gate posts shall be set in concrete and other members shall either be set in concrete or in well compacted backfill as indicated on the drawings. No concreting or backfilling shall be done until all members have been properly aligned.

All posts and struts for security fencing shall be set in concrete as shown on the drawings. Steel members are not buckled or otherwise damaged after being driven in, and provided further that the correct alignment or the driven members is maintained.

PB3.4 Attaching Wire

After all posts, struts and standards have been set firmly and after all concrete has hardened for at least four days the fence wire shall be attached according to the details indicated on the drawings. All wire shall be attached to the sides of the posts and standards furthest from the object being fenced. Wire shall be carefully stretched and strung in true alignment and without sag. Wire shall be attached to each post and standard by one of the following methods:

a) by notching the member and securing the wire by means of binding wire or,

b) by drilling holes through the member and stapling the wire with plain iron staples passing completely through the member, or
c) where iron members are used, by securing the wire by means of binding wire must pass through the hole in the standard.

Droppers shall be placed parallel to the standards at the intervals detailed on the drawings. Droppers shall be fixed to each fence wire with binding wire in such a manner as to prevent any slipping.

PB3.5 Attaching Wire Netting or Diamond Mesh

Wire netting and diamond mesh covering shall be securely fixed to the fence according to the details on the drawings. In addition, the wire netting on vermin proof fencing shall be fixed according to the Employer"s Agent"s instruction by one of the following methods:

a) by packing stones, placed end to end, on both sides of the fence so that no gaps exist beneath the fence, or
b) by folding back the bottom 150mm of wire netting so that it lies flat on the ground, and packing stones end to end on this flap, or
c) by embedding the lower part of the wire netting at least 100mm into the ground and ramming the earth thoroughly to secure the netting.

PB3.6 Installing Gates

Gates shall be installed in the position indicated by the Engineer. The gates shall be erected so as to swing in a horizontal plane at right angles to gate post clear of the ground in all positions.

PB4 FINISHING: TRIMMING AND PAINTING

Where timber posts have been used, the tops of the posts shall be trimmed after the fencing has been erected, such that the top of the completed fence has a pleasing profile. The cuts shall be liberally painted with creosote. An un-galvanised metal components of fencing has been erected, any chipped or damaged paint work shall be touched according to the same paint specifications.

PB5 MEASUREMENT AND PAYMENT

PB5.1 Vermin proof, Shock proof, Residential and Security Fencing

This fencing shall be measured in metres between the centres of gate and end posts along the general slope of the ground. Payment shall include full compensation for the clearing of the line, for the supply, painting and erection of all standards, intermediate straining posts and stays, droppers, plain wire, barbed wire, binding wire and all other components on the drawings but shall specifically exclude corner, end and gate posts and their stays. Payments shall also include for the concreting of posts where specified.

PB5.2 Corner, Bends and Ends

Corners, bends and ends shall be measured by the number and shall include compensation for the supply, painting and erection of all posts and stays required at such ends, corners or bends and shall include for any concreting where so specified.

PB5.3 Gates

Gates shall be measured by the number. A double gate as required for security fencing shall be measured as one number double gate. Payment shall include full compensation for the supply, painting and erection of the gate and ancillary components, as well as for the supply, painting and erection of gate posts and struts and for the concreting of such posts and struts (where required).

PB5.4 Pay Items

1.	Vermin proof Fencing	:	m
2.	Shockproof Fencing	:	m
3.	Residential Fencing	:	m
4.	Security Fencing	:	m
5.	Corners, bends and ends (shall distinguish between the different type of fencing)	:	no
6.	Gates (shall distinguish between the different type of fencing and between the different types and dimensions of gates)	:	no

PC FINISHING AND CLEANING UP

PC1 GENERAL

No section of the work will be regarded as satisfactorily completed until the final cleaning up has been performed.

PC2 SCOPE

All completed work shall be trimmed and all the debris of construction, such as unsuitable or rejected materials and spillage, shall be removed. The site and its environs shall be rehabilitated, where practically possible, by taking the following measures: -

The site of work shall be cleaned of all rubbish, excess materials, falseworks, temporary structural installations and abandoned equipment.
All construction scars resulting from this contract shall be treated to blend with the contour and vegetation of the surroundings.
All trench subsidence shall be made good and surcharged backfill materials shall be removed unless otherwise directed.

PC3 ACCEPTANCE

Three weeks before the anticipated date of completion of any section to be handed over, the Contractor shall formally request a check list of defects from the Engineer.
Within one week the Employer"s Agent will detail in writing the particulars of the work to be done in finishing the Works, and the general standard of aesthetics to be observed in trimming and cleaning.
Before offering the work for acceptance on a completion certificate the Contractor shall satisfy the Employer"s Agent"s site representative that all the work scheduled on the checklist has been attended to.

PC4 PAYMENT

Payment shall be the tendered lump sum and shall become due on the date of signature of the Certificate of Completion.

PD EQUIPPING OF BOREHOLES

PD1 SCOPE

This sub-section includes all work related to the installation of borehole equipment including but not limited to the following:

- Hand pumps
- Windmills
- Diesel driven engines
- Positive displacement pumps
- Submersible pumps and associated electrical work.
- Solar powered pumps (submersible and positive displacement)

The service to be rendered is the provision, installation, erection and commissioning of all the borehole equipment and appurtenant works.

PD2 GENERAL

Depending on borehole test results, the borehole will be equipped upon the Employer"s Agent"s site instruction. The pump set shall comprise one complete borehole pump, including all pipe work to couple to main pipeline, electric or diesel driven, pulleys, driving belts, etc. The complete installation is to be housed in the standard pump house as detailed on drawing No. B35145C-143-09 along with the standard layout of equipment and pipe work to be installed in each pump house.

PD3 REMOVAL OF EXISTING EQUIPMENT FROM BOREHOLES

In cases where the boreholes listed are presently equipped (hand pump, power head, engine and shelter or windmill), all such equipment shall be carefully dismantled by the contractor and stored securely at the Contractors' camp, all to be handed over to the Employer. (Refer to clause PS10.9 of Section C3.4.1).
Where boreholes are sealed, the Contractor shall remove these entirely and demolish the seals. All such debris shall be dumped at spoil sites indicated by the Engineer.
The Contractor will only be permitted to expose the boreholes immediately prior to equipping such boreholes as instructed by the Employer"s Agent and shall at all times exercise great care to prevent the ingress of debris or any foreign material into the borehole.

PD4 DESIGN, MEASUREMENTS AND RECORDS

PD4.1 Prior to the ordering of any materials to be used for the equipping of boreholes, the Employer"s Agent shall issue a selection lists to the Contractor, specifying the equipment to be installed at each borehole.
The contractor shall, before ordering any equipment, verify the specific selection of equipment with the supplier.
The Contractor must proceed with the immediate ordering and/or installation of the specified equipment after reception of these lists.

PD4.2 Prior to equipping of each borehole, the Contractor shall measure and record the diameter of the borehole at natural ground level, the static water level (in metres below ground level), the depth of the casing and the total depth (in metres below ground level). These measurements shall be verified with the Employer"s Agent prior to equipping of such borehole.

PD5 HAND PUMPS

Boreholes to be equipped with hand pumps shall be equipped with Reciprocating type or Positive displacement type hand pumps, or similar approved in writing.

All handpumps shall be manufactured from Brass HCP (Hard Chrome Plated).

PD6 WINDMILLS AND WINDMILL EQUIPMENT

PD6.1 Borehole Cylinders

Unless otherwise specified, all boreholes are drilled to a minimum of 150 mm diameter.

Heavy duty mushroom type borehole cylinders, of which the barrel is of seamless brass (alt. stainless steel) tubing shall be used in all cases. The nominal bore of the cylinder shall be as specified. The cylinder stroke shall be in compliance with the windmill specified. Each borehole cylinder is to be fitted complete with suitable brass strainer, screwed directly into the cylinder. Plungers are to be fitted with neoprene buckets.

PD6.2 Borehole Pump Rods

Galvanised solid mild steel pump rods, diameters as specified, with screwed joints in lengths of 3 metres complete with socket and two lock nuts shall be used.
The pump rods shall be supplied, complete with the necessary approved galvanised pump rod couplings to connect the pump rods to the plunger rod of the cylinder, to the packing box rod and to the mill rod connection. Prior to assembly of pump rods, the screwed ends shall receive one coating of an approved protective pipe threading compound in the form of a layer of paste.
Approved galvanised steel mill rod connections complete with bolts and nuts to the Manufacturer's recommendations shall be used to connect the wood mill rods to the pump rods.

PD6.3 Borehole Rising Mains

Screwed and socketed medium galvanised iron piping to SANS62 shall be used for the borehole rising columns. Internal diameters of the rising columns shall be as specified. Prior to assembly of pipe columns, the screwed ends shall receive one coating of an approved protective pipe-threading compound in the form of a layer of paste. Following assembly, all excess paste shall be wiped off, and the pipe area 300 mm above and below the socketed joint shall be covered with a layer of bitumen-based paint. Stabilisers shall be provided at 12 m spacing on the rising mains.

PD6.4 Tee and Spill Pieces (Standpipe)

At the top of the delivery column a galvanised tee-piece shall be provided to take the discharge pipe. Except in the case of packing box installations, a spill piece (standpipe), having an equal diameter to the rising main, shall be provided to prevent water spilling over the top of the column.

Standpipes shall be used only in cases where the discharge head is less than 5 metres. The standpipe shall be securely braced to the tower posts at the top end of the pipe.

PD6.5 Packing Box / Stand Pipe Gland / Force head

Heavy duty seamless brass tube type packing boxes with positive neoprene sealing buckets and screwed externally to fit the specified borehole rising main or equivalent units, shall be provided in all cases where the discharge head exceeds 5 metres. Packing boxes shall further comply with the maximum specified discharge head of 12 metres.
Packing boxes shall be installed complete with all necessary fittings required for the proper couplings of pump rods and mill rods.

PD6.6 Base Plates

The Contractor shall supply over each borehole one set of cast iron clamps and base plate of a size conforming to the diameter of the borehole rising main, complete with four 250 mm long by 12 mm dia foundation bolts and nuts. The foundation bolts are to be embedded into a Class 15/20 mix concrete footing of 600 mm minimum depth and 600 mm square surface dimensions. The bolts shall be located thus, that each half of the clamp (provided with slotted holes) can be moved back and forward sufficiently when column pipes are being lowered or raised. The base plate halves shall be clamped together using two bolts.

PD6.7 Discharge Pipe Work

Discharge pipe work comprising one horizontal length piping, GMS to SANS 62.450 mm long, two 900 female bends and one vertical length piping 750 long, shall be fitted to the horizontal outlet of the tee piece at the top of the rising column main. Internal diameters of the discharge piping shall be as follows:

Rising column dia mm	Discharge pipe dia mm
40	40
50	50
65	50

In the latter case, a 65 x 50 reducing bush shall be fitted to the rising main tee outlet. All discharge pipe work shall be medium galvanised steel and pipe lengths shall be screwed both ends.

PD6.8 Air Chambers

Air chambers shall provide adequate capacity of air cushion and be fitted with externally fitted release plugs.

PD6.9 Concrete Foundations

Foundations holes shall be excavated to the positions, depths and widths as recommended by the Manufacturers of the particular plant but shall however not have dimensions of less than 1.00 metre in depth and 1.00 m diameter at the bottom of the foundation hole.
Following completion of the excavation of the foundation holes, a layer of about 150 mm thick concrete, class 15/20 mix, shall be placed in the bottom of the holes ensuring that the concrete surface in the different holes are at the same level. Four 600 mm long 20 mm diameter mild steel bars with 100 mm of both ends bent ninety degrees, shall be placed 150 mm from the circumference of the holes, into the concrete layer of each hole. After the concrete has set, the steel anchor posts of the tower shall be carefully placed and positioned into the holes and each hole shall be filled with another layer of 300 mm of concrete. Care shall be taken that the surface of the older concrete is clean before new concrete is placed. The concrete shall completely cover all foundation plates. By using circular shuttering of approximately 250 mm diameter, concrete shall then be poured around each tower post bringing the top of the concrete to ground level where it shall be neatly rounded off. Earth shall then be rammed around the concrete.
The Contractor shall ensure that the tower is perfectly level when erected and if applicable that the borehole is in the centre of the tower posts and with a plumb line or other means that the centre of the tower cap is directly above the borehole.

PD8 BOREHOLE PUMPS

Pumps shall be of the type specified and be self-priming, positive displacement rotary type, vertical spindle borehole pump, suitable for pumping potable water to a concrete reservoir or elevated tanks. Solar powered positive displacement pumps are also to be considered for installation.

I. Column piping shall be standard galvanised medium class water piping. Column stabilisers shall be fitted to at least every fourth column pipe to secure a neat fit against the borehole perimeter. During assembly of pipe columns, the pipe area 300 mm above and below each socket shall be covered with a protective coating of bitumen base paint, following securing of the socketed joint.
II. The inlet of the pump unit shall be fitted with a suitable strainer.
III. The discharge head shall incorporate the pulley housing and shall be mechanically safeguarded against incorrect direction of rotation. The discharge head shall be provided with a cast iron or fabricated steel bed plate fixed to a concrete foundation block of adequate size by means of suitable anchor bolts.

Pump and electrical/diesel driven shall be accurately aligned on an integral steel frame according to installation instructions of the pump manufacturer and shall allow adjustment in any direction on the horizontal plane for both engine and pump. Length of V-belts shall be as recommended by the pump manufacturer. A detachable steel plate guard, painted red, shall cover the entire V-belt drive. Provision to be made for adjustment of the guard to suit occasional V-belt tension adjustments.

After installation of all mechanical and electrical equipment, the supplier must check the alignment of the pumps as well as starting and commissioning of the pump installations. When satisfied, the supplier shall issue a certificate stating that the installation complied with the manufacturer"s specifications.

Centrifugal clutches will be provided where pumps are driven by diesel engines and where instructed by the Engineer. Alternatively drive shafts of the engine and pump shall be connected by a flexible coupling as recommended by the manufacturers of the diesel unit.

IV. A metal identification plate shall be attached to the discharge head with the following information embossed there-on: Make and model no. (pump and discharge head), Serial no. (pump and discharge head, driven rotational speed (rpm), delivery (l/s) and head (kPa).

PD8.1 Positive displacement borehole pump elements

a) Bell-mouth pump bodies are not acceptable.
b) Elements must be fitted with at least one (1) spider bearing.

PD8.2 Complete columns

a) Columns with a diameter less than 65 mm shall be manufactured from medium galvanised tubing according to SANS 62 specification.
b) Columns with a diameter of 65mm or more shall be manufactured from heavy wall tubing with a 4,85 mm minimum wall thickness according to SANS 62 specification.
c) Bell-mouth columns are not acceptable.
d) Columns must include sockets, shafts and bobbin bearings.
e) A sufficient quantity of lubricant, as prescribed by the manufacturer, shall be included. (minimum 500 ml).
f) All threads shall be parallel truncated.
g) Sockets shall be precision machined from seamless heavy wall tubes.
h) Standard galvanised sockets for sizes above 25 mm diameter are not acceptable.

i) Sockets: Outer diameter and length of sockets

Size	Outer diameter	Length
40 mm	54	76
50 mm	70	76
65 mm	89	90
80 mm	100	100
100 mm	126	100

j) All pipes shall be tested in accordance with the applicable SANS specification by the pipe manufacturer.

k) The Manufacturer's name/logo and inspection number shall be stamped on the pipes and sockets.

l) A socket shall be fitted on the one end of the pipe after pipe sealant has been applied. The open thread at the other end shall be protected by means of a thick wall plastic cap. The manufacturer's stamp must be visible.

PD8.3 Drive heads

Light duty drive heads for motor/engine size up to 5,5 kW absorbed power. Heavy duty drive heads for motor/engine size over 5,5 kW. Refer to manufacturer installation instructions. All drive heads shall be supplied complete with discharge base, bearing assembly, pulley, adapter column, top rod, gland packing, gland follower, flanges if required and all fasteners.

PD8.4 MATERIALS

The following items shall be manufactured from the material as indicated against the relevant item.

Strainer	Galvanised mild steel
Stator	Nitrile rubber
Rotor	Alloy steel (EN8 HCP)
Flexible shaft	Stainless steel (EN57)
Spider bearing	Lumenite or Nitrile rubber
Borehole pump Drive shafts	Carbon steel (070M20) (EN 3B)

PD9 SUBMERSIBLE PUMPS

PD9.1 Submersible pumps shall be properly insulated and provided with an adequate lightning protection system. Tenderers are required to state which lightning protection system would be provided.

PD9.2 Submersible positive displacement pumps shall have a single rotating rotor in a resilient rubber stator. The rotor shall be hard chrome plated with a stainless steel pump casing.

PD9.3 Submersible centrifugal pumps shall be suitable for either 220 volt or three phase 380 volts.

PD9.4 Metal identification plates shall be fixed to the outside of the electrical control box. The following information shall be embossed on it : Pump make and model no, Serial no, Rotation speed (rpm), delivery (l/s), head (kPa).

PD10 ANCILLARY PIPEWORK

See Specification Drawing No. B35145C-143-09 for the ancillary pipework to be supplied and installed on the delivery side of each borehole pump. All Sedibeng Water standards must be taken into consideration.

PD11 EQUIPMENT

All equipment should be installed according to the prescribed specifications. Sizes of bases and plinths should be as the Sedibeng standard specifications. Civil work should be constructed as per the applicable specifications.
The holding down bolts of diesel engines shall have a longer thread than required for proper installation, and shall be supplied with two nuts each. One nut shall be used to anchor the engine to the frame, while the second shall be screwed-on and spot-welded to the upper end of the threaded bar.

PD12 ELECTRIC MOTORS

PD12.1 Electric motors shall comply with SANS 0157, Part 1, for quality, and SANS 948, Part 1 (1978) for performance. Insulation of motors shall be class "F" to BS2757.

PD12.2 Motors up to 3 kW shall be fan cooled single phase, 220 Volt, 2-pole, 50 Hz, TEFC induction motor suitable for D.O.L. starting.

PD12.3 Motors between 3 kW and 5 kW shall be fan cooled, aluminium framed, foot mounted, 380 Volt, 3-phase, 50 Hz, TEFC type, squirrel cage induction motors suitable for D.O.L. starting and be suitable for Star Delta starting when the rating exceeds 5 kW.

PD12.4 Pulleys supplied with motors shall be between 102 mm and 259 mm, be 2-grooved B-sectional taper-lock pulleys and be supplied complete with suitable fan belts. The rate tendered for the motors shall be deemed to include for the pulley and fan belts.

PD12.5 Metal identification plates shall be attached to the motors, with the following information em-bossed there-on : Make and model number, serial no, insulation class, frame type, rotation speed (rpm), power output (kW) and current at duty point (A).

PD12.6 Electrical motors shall comply with the minimum standards of Sedibeng Water of which a copy is included into this document (PW).

PE ELECTRICAL AND ELECTRONIC INSTALLATION

PE1 SCOPE

This specification includes the detail on the project to insure the manufacturing, delivery, transport, handling, protection, storage, installation, successful complete the Electrical and Electronic Installation

The general specifications of the works covered by this section shall be defined in the Particular Specifications, Schedule of Quantities and relevant Drawings.

The project specifications shall have preference over the Particular Specification and shall be considered as alterations to the general specifications.

PE2 DETAILS OF CONTRACT

This section includes the design, manufacture, supply, delivery, offloading, storing if necessary, erection, painting, commissioning, testing and maintenance during the Maintenance Period, and final handing-over of all necessary electrical equipment for the electrical works for the water supply in various villages under the Joe Morolong Local Municipality Rural Water Supply Scheme

The electrical contractor shall be a sub-contractor to the principle mechanical contractor.

The work to be undertaken is generally in or near existing townships and inhabited areas. Access to the site is deemed adequate.

PE3 ELECTRICAL PROJECT SPECIFICATIONS

All materials and equipment supplied under this Contract must be new and of the best quality available. All materials must comply with the requirements of the latest editions of the relevant SABS and NRS Specifications.

In addition, all materials and equipment shall bare the SABS mark of approval. Where no mark is available, RCC (Regulatory Conformance Certificates) shall be provided to the Employer"s Agent, indication the materials & equipment"s compliance to relevant local statutory and/or international standards. The SABS 1200 specifications form part of the electrical works.

PE3.1 General

The project specification must be read together with the standard specification, bill of quantities, and the drawings (if applicable).

The work covers the complete supply, delivery, installation, testing, commissioning, and free maintenance during the guarantee period of the installation as detailed in the specifications, bill of quantities and accompanying drawings.

The Contractor shall provide all materials, equipment, labour, and services necessary for the complete and efficient operation of the electrical installations in accordance with the intent of the specification.

The work shall be carried out strictly in accordance with:

- The Occupational Health and Safety Act and Regulations (Act no. 85 of 1993 as amended).
- The SANS code of Practice for Wiring of Premises, SANS 10142-1: 2008 as amended.
- The project -, particular - and standard electrical specifications.
- Any municipal by-laws and regulations.
- The local authority requirements.

PE3.2 Standards, Inspections and Tests

All material/equipment shall bare the SABS mark of approval. Where it is not practical and/or furnished on the material/equipment, full RCC"s (Regulatory Conformance Certificates) will be provided to the engineer. The contractor will note, on the Certificate of Compliance (CoC), the RCC"s and exclude them accordingly from his responsibility. The aforementioned shall apply to any other material/equipment and COC"s, which must be provided under this contract, but will not be directly supplied, installed etc. by the appointed subcontractor e.g. Lighting Protection System material/equipment and COC"s.
As stated previously and further on in this document, all equipment must comply with all relevant standards, specifications and requirements indicated respectively. In addition, there may be materials/equipment not specified in the project specification etc., which may have to be used in order to achieve the required outcome e.g. masts, flood lights etc. Alternatively, there may be certain equipment mentioned in the specification which will not be project specific and may be ignored unless otherwise specified.
Where materials are not specified accordingly, it will evidently be the responsibility of the contractor to furnish the employer"s Agent with the manufacturer"s details, designs, recommendations, instructions etc. of the specific product, for relevant approvals prior to order or installation etc. The aforementioned will be in conjunction with all other relevant clauses pertaining to information provision to the employer"s Agent for approval.

The manufacturer"s details, designs, recommendations, instruction etc. shall complement all statutory regulations & standards. Where the manufacturer"s details, designs, recommendations, instruction etc. are in conflict with the project specifications and requirements, the employer"s Agent shall inform the contractor accordingly as to which requirements to use in order to accomplish project requirements.
Where it is indicated in the Bill of Quantities, or any other part in this document, the information required for approval by the Employer"s Agent, it shall be seen to form part of the specifications and requirements.

The Contractor shall inform the Employer"s Agent of any equipment which is ready for despatch, in which case the Employer"s Agent will arrange for an inspection at the factory of the manufacturer if it is deemed necessary. Such notification of the Employer"s Agent must be 10 days prior to despatch.
Three copies of all equipment test reports, whether these tests have been carried out in the presence of the Employer"s Agent or not, shall immediately after they become available, be submitted to the Engineer.

PE4 DETAILS OF ELECTRICAL WORKS

The electrical subcontractor will be responsible for the supply, delivery, installation, testing, commissioning, and handing over in proper working condition of the complete new electrical and electronic installation, as specified in detail in this document.
Items covered under the electrical specification include as applicable, but is not restricted to the following:

a) Liaison and supply authority supply connection application, arrangements, etc.
b) The manufacture, supply, testing, and inspection at the manufacturer"s premises, installation, connection, testing and commissioning of Motor Control Centres, distribution boards and switchgear.
c) Supply, installation, and connection of all control instrumentation such as level, flow, thermal and pressure transmitters.
d) Supply, installation, and connection of all cable trays, wire ways, conduit, draw and outlet boxes, and sleeves
e) Supply, installation, and connection of all cables, control circuit, wiring and conductors.
f) Supply, installation, and connection of all circuit equipment for small power and lighting installation, i.e. socket outlets, light switches, isolators, etc.
g) Supply, installation, and connection of all luminaires.
h) Connection of electrical power to all mechanical equipment and systems, i.e. Pump, values, pressure and level transmitters to complete the plant, etc.
i) Supply, installation, connection, and testing of an earthing system.
j) Excavations for all cable trenches, compaction, backfill, and making good of existing surfaces.
k) Testing, commissioning, and handing over of the complete electrical installation, in accordance with the requirements of the Electrical Contracting Board of South Africa and the issue of a Certificate of Compliance (COC) for each and every installation.
l) Removal of redundant electrical equipment where necessary.

The successful tenderer shall allow the representative of the Employer"s Agent access to the manufacturer"s works at all reasonable times to inspect the progress of the work and the witness all tests.

PE5 SUPPLY AUTHORITY SUPPLY CONNECTION

The contractor shall submit the supply connection application to the supply authority and liaison with them to complete the connection point.
Each installation will require its own connections point as determine by the size of the pumps. Existing supply points might have to be upgraded.
The contractor shall install a supply a new cable from the supply point to the pump station, if existing cable exist the contractor shall test the cable to insure workability.

PE6 LOW VOLTAGE DISTRIBUTION BOARDS

Distribution Boards shall be installed in the positions indicated on the drawings and shall comply with SANS 1765. Electrical Contractors are advised to order their purposed made distribution boards from a reputable manufacturer, as inferior boards will definitely not be accepted. It shall further be noted that late approval of drawings and distribution boards due to non-compliance with the specification will not relieve the Electrical Contractor from his obligations to complete the installation according to programme. No claims for delays or extension of time in this regard, will be entertained.
Some installations shall be provided with a Local DB- section in the MCC panel.
All DB-Boards shall comply with PMC particular specification, schedule of quantities and drawings.

PE7 CONDUIT AND WIRE WAYS

All conduits and accessories shall bear the SABS mark of approval.
Cables shall be installed on a galvanized welded wire ray, from the MCC to the pump and controls, 300mm AFFL along the wall of the pump station.
The following conduits shall be used:

- Galvanised BOSAL conduit for any surface mounted installation and shall be mounted by means of raised saddles, for outdoor use.
- PVC conduit will only be permitted indoors in roof and ceiling spaces and chased into slabs or chased in walls.

Conduits installed in ceiling or roof spaces shall, where practical, be run parallel and at right angles to roof members and clear spans of metal and plastic conduit shall not exceed 1 500 mm and 900 mm respectively. Conduit installations for confined spaces of less than 900 mm

clearance, or where the space after completion of the work will be inaccessible, shall be such that wiring can be carried out from outside such space as would be the case for a conduit installation cast into concrete.
No draw boxes or inspection tees or bends shall be installed in confined roof spaces and where draw boxes are unavoidable; these shall be installed flush with ceiling.

PE7.1 Chasing and Built In

It is the responsibility of the electrical contractor to ensure that conduits, wall boxes, distribution boards, etc. are correctly positioned and built or chased in as the work progresses.
Conduits shall generally be installed at such a depth that the outside surface of the conduit is at least 12mm below the finished plaster surface. Chasing in face brick will not be allowed.
Conduits shall be cast into concrete slabs wherever possible and no conduits will be installed in floor screeds unless approved by the Engineer. Where conduits are cast into beams these shall be located close to the neutral axis of the beam.

PE7.2 Conduit in Concrete

Conduit shall be installed as close as possible to the neutral axes of concrete beams or slabs. Conduit and outlet boxes shall be securely fixed to shuttering to obviate displacement during the pouring of concrete.
Conduit shall drop to the lower face of concrete and terminate at outlet boxes only at points where such boxes are to be installed. On existing concrete structures, conduit shall be run only in approved positions and depth of chasing of such structures, where unavoidable, shall be carried out after approval has been obtained from the building contractor.
The electrical contractor will be required to liaise closely with the building contractor as regards to the incorporation of conduit runs with structural steel in reinforced concrete slabs. Where required, outlet boxes shall be of the deep type to allow structural steel to pass below conduits at outlet boxes. No elbows or bends of radius less than 120mm shall be installed in concrete slabs.
The electrical contractor shall be present during the casting process, so as to ensure that no damage or displacement occurs to conduit.
Immediately after each section of shuttering has been stripped, the electrical contractor shall by means of steel tape establish whether all conduit boxes are accessible and all conduit runs intact and clear. Any shortcoming detected at this juncture must be immediately rectified in approved manner. No beams or pillars shall be cut to install any conduits.

PE7.3 Conduit Surface mounted

Where surface work is permitted, conduit runs shall be perfectly straight and plumb or level. Galvanised conduits shall be fixed at intervals not exceeding 1 500mm and 900mm respectively. Conduit saddles shall be fixed to roof timber by means of suitable wood screws. Nails will not be permitted.
After completion of surface work, no exposed thread shall show, except where running joints occur. The latter shall only be resorted to where absolutely unavoidable, and must be fitted with a sliced coupling as a locknut.

Saddles for all conduits installed on surface shall be fixed by means of expandable tapered plastic wall plugs and corrosion proofed steel round-headed screws. Wood plugs and plugs in mortar joints between bricks are not acceptable. Where surface conduits are installed in conspicuous areas and on steelwork, spacer bar saddles shall be used.
Fixing onto steelwork shall be by means of drilling, tapping and screwing or where more practical, by means of stainless steel strapping or conduit clamps. Explosive driven devices which will facilitate easy removal of the saddles may be used provided that the type of fixing device has been approved by the Engineer.

PE7.4 Bends and Draw/Wall boxes

Normal bends or elbows will not be allowed except where specially approved. All sets shall have a radius of at least five times the outside diameter of the conduit and conduit showing signs of flattening or cracking shall be rejected.
Draw boxes shall be installed in approved positions so that not more than two bends occur between the one ends of the run and draw box or between boxes. Draw boxes shall be arranged so as to be accessible after the completion of the building and must be provided with cover plates which shall finish neatly and flush with the final surface.
Draw boxes shall, where possible, be located in inconspicuous places allowing for a common cover. Rectangular boxes shall be square with respect to walls.
Flush-mounting wall boxes for socket outlets, switches, isolators, etc. shall be of heavy gauge (minimum 1mm thickness) pressed steel galvanised type, complying with the relevant requirements of SABS 1085. Substantial lugs, drilled and tapped for fixing screws, shall be provided.
Each wall box shall be provided with Knockout conduit entry holes, on all sides and at the back.
Cover plates shall comply with the relevant requirements of SABS 1084 and shall have a thickness and finish as specified in the Detailed Specification. Fixing screws shall be rust proofed by plating to suit the cover plate finish. An assortment of fixing screws will not be acceptable.

The nominal dimensions of flush-mounting wall boxes shall be as follows:

- Single switch units - 50 x 100 x 50mm
- Switched socket outlets (single/double) - 100 x 100 x 50mm
- Draw boxes in ceiling space - 300 x 300 x 150mm
- Round Draw boxes light points

Under no circumstances shall flush-mounting boxes be used in a surface installation. The electrical contractor shall supervise the building-in of wall boxes to ensure correct positioning.

Where a number of flush-mounting wall boxes are to be installed at the same height adjacent to each other or back to back, the electrical contractor shall fit two couplings secured by means of male bushes between each pair of adjacent boxes to ensure that the boxes are uniformly spaced and located at the same level.
Lighting and plug circuit wiring shall always run in separate conduits but may, with the approval of the Employer"s Agent, be run in a common wire ways.
More than one circuit may be run in the conduit provided that the number of conductors drawn into the conduit does not exceed the wiring capacity of the conduit as specified in the Code of Practice.
The electrical contractor shall install hot-dip galvanised draw wire of at least 1.6mm diameter in all unwired conduits.
Mixed loading of circuits shall be in accordance with the requirements of the Code of Practice.
Likewise, each power point shall be wired through a conduit dedicated to that power point only, except where otherwise specified.

PE7.5 Expansion joints

The expansion joints shall be made in a draw box with an over one side terminated and other conduits inserted 30 mm into the draw box to allow for movement. All slab and wall expansion joints shall be crossed at 900with the joint.
Earth continuity shall be maintained where slip joint are installed.

PE7.6 Conduit Accessories

All conduits shall have a minimum diameter of 20mm and unless otherwise specified or approved as such by the Employer"s Agent, all conduit fittings shall be of the same material as that of the conduit used.
Metal conduit shall comply with SABS 162 and shall bear the SABS mark. Except where otherwise stated, all conduits shall be black enamelled. Galvanised conduit shall however e used in all damp locations, and where conduit is exposed to the weather.

All coast metal conduit accessories shall be of the malleable iron inspection type.

Metal conduit shall be screwed and socket or system of plain-end conduit and fittings complying with SABS 1007 may be used. All accessories used on plain-end conduit shall be assembled by means of the special fittings and tools produced for this purpose by the manufacturer.
Draw boxes of rigidly moulded plastic may not be employed. All draw boxes shall be the galvanised pre-punished type.

Plastic conduit shall be assembled by means of the solvent adhesive supplied by the manufacturer to all PVC accessories, his instructions being closely followed.

PE7.7 Wiring Channels

Wiring channels shall be installed in the positions as indicted on the drawings.

All wiring channels to be installed shall be of the O-line or Cabstrut type and fixed in the positions indicated on the drawings, complete with couplings bends end caps and cover lids. The wiring channel shall be pop riveted at each joint or bend by means of at least four suitably sized pop rivets.
The Contractor shall ensure that there are no sharp edges on the inside of the channel that may damage wiring.
Wiring channels shall be installed horizontally and vertically as determined by the route and the Electrical Contractor shall take all measures to ensure a neat installation.
Channel shall not be more than 45% full. Under no circumstances may power and control circuit conductors be installed in the same wiring channel.
All the accessories shall be factory-made pre-manufactured from the same type and make such as; end covers, 900 bends, T-pieces, hangers, brackets, etc., and shall be made to fit neatly and accurately to the Employer"s Agent"s approval. No onside 450 cutting of corners or bends shall be accepted
The following wire channels will be standard:

- P9000 for feeder wire channel circuits.
- P8300 for Lighting and Aircons circuits, with 5Amp socket outlets
- P8000 for other circuits.

PE7.8 General Position of Switches and Sockets

Switch sockets shall be mounted with the centre line 1200mm above finished floor level, unless otherwise specified or indicated on the drawings.
Switches for lights are to be mounted with the centre line 1200mm above the floor, except where otherwise specified or indicated on the drawings.
Unless otherwise approved, the switches controlling lights and installed adjacent to doors are to be placed at the lock side of the door at a distance of 200mm from the door jamb to the centre line of the box, in each case. If the lock side of the door is not shown on the drawing, it must be ascertained before the switch is positioned.
The position of the lighting and socket points and their controlling switches are indicated on the drawings.

PE7.9 Low Voltage Cables

All multi core cables shall comply with the PCA Particular specification.

PE8 BUILDING WIRING

The wiring of any circuit shall only be carried out after the whole of that particular circuit"s conduit installation has been installed and fixed in position. No wires shall be drawn through before the conduit has been thoroughly cleaned of all debris and moisture.

It should also be possible for wires to be drawn or threaded through the completed conduit installation without any undue strain. The terminal ends of the wires shall be of sufficient length to facilitate the connecting of apparatus, fittings, appliances, etc.

Lighting circuits shall be wired with 1.5mm2 and plug circuits with 2.5mm2 conductors, except where otherwise specified.

Not more than four conductor ends plus two earth wires shall appear at any ceiling outlet box except where specifically approved.

All circuit wiring is to be carried out on the loop-in system and no joints in the conduit or boxes will be allowed. Where joints are unavoidable, due to alterations or extensions, these shall only be located at draw boxes and shall only be of the insulated crimping ferrule type. Not more than four 2,5mm2 or three 4mm2 wires together with earth wires where applicable will be allowed in 20mm conduit, except where otherwise specified.

All conductors shall be in colours selected to facilitate identification of the circuit and switch wiring, black being reserved for neutral conductors, and green only for insulated earth conductors. Three phase circuits shall be colour coded to identify phases, blue, red and white.

PE8.1 Termination of Wiring

The end strands of all wires, whether single or looped, which are to be connected to the connection terminals of switches, plugs, holders, ceiling roses or fittings are to be securely connected to the terminals. All terminal screws shall be properly tightened and care shall be exercised not to cause undue damage to the conductor strands. The cutting away of wire strands will NOT be allowed.

Crimping lugs must be used on cable ends for connections to busbars or circuit breakers, except where box terminals are employed.

PE8.2 Inspection of Wiring

To ensure that wiring may be easily withdrawn from any circuit run, the Employer"s Agent may, at his own discretion, direct that wires must be withdrawn; the electrical contractor shall withdraw the wires concerned.

If the wires are withdrawn easily and without showing damage, the costs of the withdrawal and replacement will be borne by the employer; if, however, it is found that it is not possible to withdraw wires without damage, the cost of the withdrawal test, and the cost of rectifying the work shall be borne by the electrical contractor.

PE8.3 Innovative wiring systems and Deviations from the Specification

This specification covers wiring systems of the conventional type in which continuous metal or rigid plastic conduit of circular cross section is used.

No deviation or alteration from the requirements of the specification, schedules or drawings shall be made without first obtaining the written approval of the Engineer.

Should the specification permit or specify the use of innovative wiring systems such as surface mounted wire trucking with removable covers, prewired multicore conduit, (twin and earth or Norse cable) or any other authorised innovative wiring system, such an installation shall comply with SABS 1500 SF - 1983, as amended.

PE8.4 Balancing of Loads

The connection and termination of equipment shall be according to the schematic diagram, but the electrical contractor will be required to balance the load as equally as possible across multiphase supplies.

PE10 POWER INSTALLATION

PE10.1 Switched Socket Outlets

Normal power outlets

The switched socket outlets shall be of the standard round, 3-pin, shuttered type, rated at 16A/250V and shall comply with SABS 169: 1980 and shall bear the SABS mark.

The plastic insulation around each pin-socket shall be annular and be raised to protrude through the cover plate which shall be punched with three separate holes for the pin- socket. Alternatively a single opening may be punched in the cover plate on condition that at least 5mm clearance is provided between the cover plate and the edge of the live and neutral pin sockets. The terminal screws of the live and neutral sockets shall be recessed so that inadvertent contact with the earth conductor will be impossible when the wired socket is pushed back into the wall box during installation.

The socket unit shall be controlled by a 16A/250V single-pole switch operated by a white piano-type lever matching the lighting switches specified. Double switch socket outlets shall each have its own individual switch.

I. Three phase outlets

The three phase outlet socket shall be of the industrial type 5pin wall mounted, different type and size will be as specified, with lid on the female socket, socket to be mounted 1400mm above finishing floor level.

II. UPS power outlets

UPS power outlet shall be the same standard as the switch dedicated socket outlets, but with a flat pin earth for a dedicated circuit with separated earth and with red colour moulding. Contractor shall allow to supply and connection of the correctly specified type of 3-pin plug (red) to the Employers equipment.

PE10.2 Extract fans

Small, single-phase extract fans installed in window panes shall be connected to 5A, 3-pin, socket outlets which shall be installed in the ceiling above the fan or in the wall adjacent to the fan.
Where specified or indicated on the layout drawing, the switched socket outlet(s) feeding the fan(s) shall be connected to the lighting circuit so that the fans are switched on and off by means of the lighting switch for the room concerned.

PE11 LIGHTNING PROTECTION
The complete lightning installation shall comply with SABS Code of Practice 03 and 03A.

All electrical, telephone, data, signal, communication, antenna and other conductors entering a lightning protected building or structure shall be protected against potential surges and a safe current discharge shall be provided for each conductor in the event of a direct or induced lightning strike.

PE11.1 Three Story buildings and Less

The height and roof type and structure of the building determines the type of lightning installation requirements i.e. steel roof, tiled roof, concrete roof or thatched roofs.
The schedule of quantities made provision for lightning down runners and connections to steel roof, cutters and steel ring beam, it tiled roof it would have conductor running along the roof nocks, with forked on the roof nock corners, and down runners.

I. Materials

The installation may be carried out in copper or suitable corrosion resistant aluminium alloy.
The use of copper shall be avoided at ground level to avoid the possibility of theft.
Aluminium shall not be installed in direct contact with soil or any concrete or plaster surface.
Connections between aluminium and copper shall only be by means of cadmium plated or tinned connectors. Jointing of conductors shall be with suitable crimped ferrules.
Connections between copper and galvanised steel shall only be by means of tinned connectors above ground. Steel components shall be hot dipped galvanised to SABS 763.
Steel reinforcing of concrete may be used as down conductors only when specific approval has been obtained from the Civil Engineer.

II. Fixings

Fixing support holders or brackets material shall be of the same material as the conductors.
Conductors shall be fixed at intervals not exceeding 1.5m. The fixing shall be as such to allow for the thermal expansion and contraction of the conductors. Fixing materials shall be durable to resist deterioration because of environmental conditions.

III. Testing Points

Testing points shall consists of a two stud moulder test block with bridge connector plate, for testing, the block terminations shall take a conductor up to a 70mm2 BCEW.
The test point shall be mounted at the connection point between every down conductor and earth electrode cable, mounted 400mm above finished ground level.
A test certificate shall be submitted with the following test results:

- Earth resistance of every earth electrode, to be below <50Ω
- Continuity of down conductor system by measuring from one down conductor to the other down conductors with all down conductors disconnected.
- Certificate of Compliances as specified by SANS.

PE12 MOTOR CONTROL CENTRE

The MCC shall comply with PMC Particular specification, schedule of quantities and drawing.
The MCC for the new Pump station shall comprise of a surface mounted panel with doors, powered coated "Electric orange", complete with all equipment specified.
Supply and installation of motor control centres as specified, with the following:

- A suitably rated isolating isolator (pad lockable in off position)
- A set of "STOP/START/RESET" push buttons for local manual control.
- Emergency stop mounted on the outside of panel or close to the motor with movable parts.
- Adjustable thermal overload trip relays in each phase.
- Protection against under/over voltage and single phasing, independent of the settings of the overload trip relay.
- Flow switch with timer delay and control relay, on the delivery side of the pumps
- An ammeter in one of the phases for all motors rated above 1kW. Associated current transformers for non-direct reading ammeters.
- A running hour meter
- A voltmeter with selector switch, to measure between phases
- A selector switch to facilitate the selection of either manual control or automatic control where applicable
- A set of 5 LED type indicator lights as follows
  - Yellow - 'Supply on'
  - Green - 'Motor Running"
  - Amber - 'Motor Tripped'
  - Blue – „Motor start delay"
  - Red - "Emergency stop engaged"
- Surge arrestors for each phase and neutral
- A power factor correction capacitor unit for motors of 5 kW and more
- A thermistor relay for motors of 15kW or more
- A Start delay timer for motors of 1.5kW and higher

I. Type One: Control by means of 24hr. timer

A mains operated 24hr anti-cycle timing device to operate starts/stop as per schedule

II. Type Two : Control by means of pressure

A mains operated 24hr anti-cycle timing device to limit starts per hour;

Different types of starters are provided for and have to be priced accordingly:

a) A direct on line air break contactor type starter (230/400V motors to 9kW)

Each of these units shall comprise amongst other the following components:

- A Mains 1 or 3 phase Contactor correctly rated;
- A Mains operated timing device to limit the starts per hour; and
- All necessary relays.

b) Star/Delta Starters (400V motors above 9kWatt)

These starters shall be of the automatic star/delta type and each starter shall be contained in its own separate compartment on the relevant motor control board.

Each of these units shall comprise amongst others provided for direct-on-line starters the following components as:

- A Mains 3 phase Contactor correctly rated;
- A Star Contactor correctly rated;
- A Delta Contactor correctly rated;
- A Star to Delta timer of the clockwork or electromagnetic type;
- A Mains operated timing device to limit the starts per hour;
- A Three phase Power Factor Correction Capacitor unit for motors of 5kW or more; and
- All necessary relays.

c) Variable Speed Drives (where specified)

These variable speed drives shall each be contained in its own separate panel, manufactured and equipped to the satisfaction of the variable speed drive manufacturer to suit their own requirements with regard to ventilation of the variable speed drive. Small drives below 1kW can be combined into one panel but sufficient ventilation by means of extractor fans must always be allowed for

The variable speed drive panel shall be equipped with ventilation fans and air filters. The ventilation fan shall be interlocked with the relevant motor and shall only be in operation when the motor is running. Failure of the ventilation fan shall stop the motor and a visible indication of the cause of the failure shall be provided on the panel.

The frequency converter shall make use of flux vector control without encoder or tacho generator feedback and shall incorporate direct torque control technology so that the overall effectiveness of the drive shall only be limited by the performance of the motor.
Semi-conductor switching shall be determined by the values of flux and torque and shall not have a predetermined pattern as in conventional pulse width modulation flux vector drives.
Each of these drives shall comprise amongst others the following components:

- A main isolator/circuit breaker that shall be interlocked with the door of the panel to prevent opening of the door with the switch closed and to prevent closing of the switch with the door open;
- Three ultra-rapid fuses rigidly connected to the load side of the above-mentioned mains isolator and the rating of which shall comply with the manufacturer"s specifications for the drive;
- A direct torque control frequency converter;
- A door mounted control panel complete with cable connections (also for small drives);
- A set of START and STOP push buttons for manual control of small drives;
- One dial type potentiometer for manual speed control;
- A manual/off/auto selector switch for manual control of small drives;
- Thermistor relay for motors of 15kW or more;
- A external EMC line filter;
- All equipment necessary for remote emergency stop device;
- All bus system interface equipment necessary for remote speed control via a monitoring and control SCADA system as well as PLC control;
- All equipment necessary for remote motor status and speed monitoring; and
- LED type red "Emergency stop engaged" indicator light.

A 3CR12 steel gland plate must be provided at least 250mm above floor level for cable connections.
The control panel shall be the user interface for monitoring, adjusting parameters and controlling the drive operation. It shall be possible to:

- Enter start-up data into the drive;
- Control the drive with start, stop and reference signals;
- Display actual values of motor performance; and
- Display information on at least the five most recent faults.

The drive shall satisfy the following technical requirements:

- The static speed control error shall not exceed ± 0,5% of motor nominal speed;
- Fundamental power factor shall be at least 0,97 at nominal load;
- Efficiency shall be at least 98% at nominal power level;

- The drive shall operate satisfactorily under all ambient temperature conditions between -5□C and + 40□C at an altitude of 1260m above sea level and humidity up to saturation point;
- The drive shall provide output protection for motor overload, over current, short circuit at start, earth fault, missing motor phase and over frequency;
- The drive shall satisfy the following minimum harmonic voltage limits: Total harmonic distortion of 6%, odd harmonic distortion of 4% and even harmonic distortion of 2%. The Contractor shall measure these harmonic distortion parameters after commissioning of the system and if the equipment fails to comply with this requirement, the Contractor will have to rectify the same to the satisfaction of the Engineer;
- The drive shall be equipped with an AC choke for harmonic current reduction and shall be placed on the AC side of the rectifier bridge in order to protect the rectifier semiconductors against power line transients;
- Torque step rise time shall typically be less than 5ms; and
- Stringent precautions must be taken in the design of the protection equipment to assure adequate lightning and surge protection.

a) Electronic Soft Starters (where specified)

The soft starter shall be installed in the relevant motor starter panel but sufficient ventilation by means of extractor fans must always be allowed for and shall be interlocked with the relevant motor and shall only be in operation when the motor is running. A bypass contactor for motor running conditions is a requirement and shall either form part of the soft starter or shall be a separate unit.

The soft starter shall have soft start and stop programmable capabilities with torque and current control. The normal motor protection facilities such as over/under- current, start limit, long start time, electronic overload, phase loss and phase sequence and load loss shall be available.

At least a 2 line 16 character LCD display unit with control function keys shall form part of the soft starter and shall preferably be separate motor starter front panel mountable. The LCD unit shall display all statistical data and trip conditions and shall allow functional key changes to programmable parameters.

The full motor protection capabilities shall be maintained when motor is operating in bypass contactor mode.

The soft Starter shall satisfy the following technical and diagnostics requirements:

- Overload;
- Ground fault;
- Line fault;
- Power loss;
- Voltage imbalance / Under / Over;
- Phase rotation;

- Over temperature;
- Excessive starts per hour; and
- RS 485, MODBUS, PROFIBUS communication shall be possible.

The soft Starter shall satisfy the following metering requirements:

- Three-phase currents;
- Three-phase voltages;
- Power in kW;
- Power usage in kW/hr.;
- Motor thermal;
- Power factor of the running motor;
- Capacity usage; and
- Elapsed time of motor operation.

b) Mains surge arrestors

The surge arrestors shall be Type 2 and voltage compatible to the relevant installation and shall be able to withstand a lightning impulse current wave form 8/20μs at a maximum discharge current of 40kA.

c) Earthing

The contractor shall supply and install all bonding of steel works and MCC earth comprising of a 1.5m earth road connected by a 16mm2 BCEW to the MCC earth strut. An earth résistance test certificate shall be provided to ensure the earth is below 10ohms.
The MCC shall be in accordance with the drawings, specifications and Sedibeng standards.

PE13 MOTOR control PHILOSOPHY

PE13.1General

The new installation shall intergrade with the existing installation providing more supply to existing water systems, at different villages. The control of the new system shall be via 24hr rotation timer to pre-set time schedules, or per pressure control valve is required.

PE13.2 Control Philosophy

Type One: Control by means of 24hr. timer
An 24hr anti-cycle timing device, shall control the operational time of the pump, to the prescribed schedule and held of the bore hole.

Type Two : Control by means of pressure

Pressure switches shall be installed at each pump. These pressure switches will be installed in conjunction with the necessary relay units and adjustable timers to prevent unnecessary stop/start operations.

The operating will rely on the closing off of a reliable level control valve which will prevent any return flow back into the supply main. The closing action of this valve would result in a positive increase in a pump discharge pressure, which will initiate the stopping cycle of the borehole pump"s electrical motor.

PH TANKS AND TANKSTANDS

PH1 APPLICABLE STANDARDS

The latest issues of the following standards form part of this specification:

- SANS 136: ISO metric precision hexagon-head bolts and screws and hexagon nuts (coarse thread medium fit series);
- SANS 0162: The structural use of steel;
- BS 4360: Weldable structural steel;
- SANS 62: Steel pipes and pipe fittings up to 150mm nominal bore suitable for screwing SANS 135: ISO metric black bolts, screws and nuts;
- SANS 455: Covered electrodes for the manual are welding of mild steel and medium high tensile steel;
- SANS 763: Hot-dipped (galvanised) zinc coatings (other than on continuously zinc-coated sheet and wire);
- SANS 1123: Steel pipe flanges;
- SANS 0104: Hand and guard rails (Safety aspects);
- Safety Legislation No. 13A(6)(a) and 13A(6)(b)(i).

PH2 SCOPE

This specification covers the requirements for tanks (with or without covers) intended for the storage of liquids and constructed of bolted square pressed steel plate sections and of depth not exceeding 4880mm.

PH3 REQUIREMENTS

PH3.1 Materials

PH3.1.1 Covers: Sheeting used for covers shall be of steel having a nominal thickness of at least 2,5mm or of ISCOR Z600 closed profile pre-galvanised steel sheet of thickness of at least 0,8mm
(subject to normal milling tolerances).

PH3.1.2 Electrodes: The electrodes shall be of a quality at least equal to that of electrodes complying with SANS 455, and the deposited metal shall have a tensile strength and an elongation of at least equal to the appropriate minimum specified for the parent plate.

PH3.1.3 Plates, stags, cleats and pads: Plates, stags, cleats and pads shall be of mild steel, complying with the relevant requirements of BS4360.

PH3.1.4 Jointing Compound: The jointing compound shall be non-toxic , shall not leach out, shall be insoluble in the liquid to be stored (and in the case of tanks for potable water, shall not impart any off-flavour or off odour to the water), and shall provide an effective seal between the plate flanges under conditions of temperature specified. (The contractor should obtain from the Supplier a statement of the optimum period that should be allowed for the jointing compound to mature before the tank is put into commission).

PH3.2 Size

The nominal size of a tank, based on dimensions each of which is a multiple of 1220mm, 1200mm or 1000mm, as relevant and subject to a maximum depth of 4880mm.

PH3.3 Components

PH3.3.1 Plates

a) Size

The nominal overall size of plates (after flanging) shall be 1220mm x 1220mm, 1200mm x 1200mm, or 1000mm x 1000mm, appropriate to the size of the tank specified.

b) Thickness

In the case of tanks of stored liquids of nominal density not exceeding 1000kg/m2, the nominal thickness of the plates shall conform to the appropriate value(s) given in Table 1.

Table 1: Plate Thickness

Depth of Tank (mm)	**Plates**	**Plate Thickness (mm) min**
1000 – 1220	Bottom; sides; ends	3
2000 – 2440	Bottom; sides; ends	3
3000 – 3660	Bottom; first tiers of sides and ends Second and top tiers of sides and ends	4,5 3,0
4000 - 4880	Bottom, first tier of sides and ends Second tier of sides and ends Third end top tiers of sides and ends	6,0 4,5 3,0

Strengthening

The plates shall be strengthened by suitable embossment (i.e. a pattern pressed into the plates) or by the welding of suitable ribs to the plates.

Flanges

The plates shall have flanges of width of at least 44mm and of the following form and arrangement:

- A combined double flange at angles of 45 degrees and 90 degrees to the plane of the plate, pressed on each side of the plate.

A single flange at an angle of 90 degrees to the plane of the plate, pressed on two, three or four sides (depending on the position of the plate in the tank) and with flanged corners welded.
The flanges shall have bold holes of diameter such as to provide a bolt clearance of 1,5mm evenly spaced at a pitch of 75 plus minus 1,5mm.

PH3.3.2 Connections
Connections shall be one of the following types:

Flanged bolted type connections complying with the relevant requirements of SANS 1123 for flanges for nominal pressures of 600 kPa;
Screwed type connections complying with the relevant requirements of SANS62.

PH3.3.3 Covers
When so specified, tanks shall be supplied complete with covers. Each cover shall be so fitted as to prevent the ingress of water and any foreign matter into the tank.

Each cover shall have a clear opening of diameter or smallest dimension, as relevant of at least 450mm, and shall be so constructed that it can be fitted with a lock.

Unless otherwise specified, each tank that is provided with a cover shall be equipped with a vent fitted with a cowl. The vent shall be so screened as to prevent the entry of rodents, other small animals and mosquitoes.

PH3.3.4 Access ladders and safety platforms
Access ladders and safety platforms shall be provided as follows and the design and construction of the rails shall be such as to comply with the relevant requirements for safety in SANS 0104.

External ladders and platforms; Each tank shall be supplied with an external access ladder and safety platform. It shall comply with the relevant clauses of the Occupational Health and Safety Act and possess a safety cage from 2,5m above ground level and landing stages at 9m intervals.

Internal Access Ladders: Each tank of depth exceeding 1220mm shall be provided with an internal access ladder. In the case of a tank that is not provided with a cover, the ladder shall be located as specified and in the case of a tank that is supplied with a cover, the holder shall be located below the manhole.

PH3.4 Construction

PH3.4.1 Design Strength: The design strength of the tank and of all members (stags, cleats, bolts, cover- frame members, etc.) shall comply with the relevant requirements of SANS 0162 and shall include allowances as relevant for the following:

- Exposure of the tank to corrosive conditions
- Eccentric loading
- Fatigue stresses caused by turbulence of the stored liquid.

PH3.4.2 Flanging: Tanks shall be constructed of externally flanged plates, unless otherwise agreed upon.

PH3.4.3 Attachment of connections: Connections shall be supplied in the positions specified and shall be welded to the tank. Flanged bolted connections shall be as follows:

- Where the size of the connection and the specified location are such that the connection can be welded to a plate that is free from embossment, single-stooled flanges shall be provided for connections that are to be made in one side of the plate only and double- stooled flanges for connections that are to be made on both sides of the plate, as specified.
-

PH3.4.4 Staying: When necessary, the sides and ends of the tank shall be supported by stays. Each end of each stay shall be bolted to a cleat. Cleats shall be bolted or welded to the plates.

The connections of stays shall be arranged in one or more of the following ways, as necessary:

- Sides to bottom
- Ends to bottom
- Sides to sides
- Sides to ends

PH3.4.5 Welding: All welds shall be acceptable fusion welds. The weld metal, the heat-affected zone and the surrounding parent shall be free of cracks. Weld faces shall be free of porosity, cavities and trapped slag, shall show now pronounced humps or craters and shall merge smoothly into the adjacent surfaces of the parent plate without overlap or excessive undercut. The throat thickness of fillet welds shall be at least 4,5mm. In the case of corner welds, the leg length shall be equal to the plate thickness.

PH3.5 Workmanship

The workmanship of all components shall be such that they are free from defects that are detrimental to the ease of assembly or the performance of the tank in service, or both.

PH3.6 Finish

Unless a different type of protective coating is specified, all components shall be protected from corrosion by hot-dip galvanising that complies with the relevant requirements of SANS 763.

PH4 FOUNDATIONS AND STANDS

PH4.1 Design, Drawings and Quantities

The Contractors must submit the design and workshop drawings for the steel tank and stand to the Employer"s Agent for approval prior to commencement of the work.

The foundations for the tank and stand will be designed by the Employer"s Agent, while the design for the stand shall be designed by the supplier and checked by the Engineer.
The cost for the design of the steel tank and stand must be included in the tender sum and rates.

PH4.2 Lighting Protection

The stand shall be earthed using a suitable approved copper connector between the bottom of the tank leg an on-earth spike.

PH5 DISINFECTION OF THE TANK

On completion of construction, but before commencement of testing, the reservoir shall be disinfected as follows:

a) The reservoir shall be flushed with clean water until all sediment and other foreign matters have been removed.

b) Potable water treated with sodium hypochlorite or calcium hypochlorite or chlorine gas shall be introduced into the reservoir. On completion of filling with chlorinated water, the chlorine concentration in water sampled at any point shall not be less than 3 mg/l free available chlorine.

After 24 hours retention of chlorinated water in the reservoir, samples drawn at any point shall contain not less than 0,5 mg/l free residual chlorine. Where necessary, additional chlorine shall be injected to maintain chlorine residuals.

PH6 TESTING OF TANK

The complete tank shall be watertight and the work will not be certified until the tank has been proven by testing to be watertight.

Upon completion of the erection and when so agreed by the Employer"s Agent, the tank shall be filled by gradual admission of water until level reaches the overflow level. The tank shall be allowed to remain filled for 24 hours upon which a visible inspection will be done on the tank. If at any time during the test, visible leaks appear, the test will be discontinued and remedial work done. Upon completion of the remedial work, the 24 hours test will restart. The tank will be deemed watertight if no leaks are present at the end of test and so noted by the Engineer.

PH7 MEASUREMENT AND PAYMENT

PH7.1 Galvanised Stand

The Contractor shall tender a sum under schedule 6 in the schedule of rates to allow for the complete stand and all charges and profit.

PH7.2 Galvanised Pressed Steel Tank

The Contractor shall tender a sum under Schedule 6 in the Schedule of Rates for the tank to allow for all charges and profit.

PXB ELECTRICAL MATERIAL AND EQUIPMENT

PXB 1 GENERAL REQUIREMENTS FOR THE SUPPLY AND INSTALLATION OF ELECTRICAL MATERIALS AND EQUIPMENT

PXB 1.1 Standards

All material and equipment supplied and/or installed under this Contract shall be new and of good quality and shall comply with the requirements laid down in the latest editions of the relevant SABS, BS or IEC Specifications and their amendments (if any) and the requirements of this specification. In the event of items bearing the SABS mark being available in respect of the materials and equipment required, only items bearing this mark will be acceptable.

The workmanship and finish of work shall be of a high standard throughout and to the satisfaction of the Engineer.

Similar equipment supplied under this contract must be identical in all respects and it shall be possible to interchange any of the same equipment under this contract. All auxiliary equipment must also be identical, including items such as contactors, fuses, motors, fans, method of wiring, numbering of wires, relays, indications lamps, instruments and other parts.

PXB 1.2 Compliance with Laws and Regulations

The work shall be carried out strictly in accordance with and all material and equipment supplied shall comply with the following laws and regulations where applicable:

a) The latest edition of the "Code of Practice for the Wiring of Premises", SANS 10142, as amended;
b) the machinery and Occupational Safety Act (Act No 6 of 1983) as amended;
c) the "Electrical Supply By-laws and Regulations" of the Supply Authority;
d) the local Fire-Office Regulations;
e) the Post Office Regulations:
f) "The Code of Practice for the Installations and Maintenance of Electrical Equipment used in Explosive Atmospheres" (SABS 086).

The Contractor shall be responsible for serving all notices and paying all fees due in terms of the above laws and regulations.

PXB 1.3 Radio and TV Interferences

All equipment installed under this Contract shall comply with the Government Notice No. R.2246 and any other applicable rules and regulations in respect of radio and TV interferences. Any equipment found producing interference subsequent to commissioning, shall be suppressed or replaced to the satisfaction of the Employer"s Agent without any additional cost.

PXB 1.4 Site Conditions

See paragraph PS 2.1

The electricity supply system will be a 400/230V, 50 Hz, three phase, four wire system with solidly earthed neutral and all material and equipment supplied and installed under this contract shall be rated, designed and manufactured for satisfactory operation on this system.

It must be noted that severe voltage surges and/or spikes may be experienced on the electricity supply system due to lightning or switching operations and where necessary the Contractor shall provide the necessary protective devices against such surges and spikes for the equipment supplied and installed by him with special reference to electronic devices. The following arresters shall be provided:

Lightning Arresters Transducers/Transmitters:

Where transmitters require a separate power supply in-line suppression shall be provided. Signal cables shall be protected as specified in the following paragraph.

Signal Cables for Transducers/Transmitters:

All signal lines entering or leaving the transmitter station cabinet shall be protected from induced or direct surges.

The coaxial lines to the ultrasonic transducers need only be protected by small gas arresters. These inputs require protection from high voltage level surges only as they normally carry pulse signals of peak voltage greater than 200V. In this case, low capacitance gas arresters are recommended, having a 5 kA capability (8/20 µs waveshape), a DC breakdown voltage of 450V or higher, and an impulse breakdown voltage of less than 1 000V at 1 kV/µs rate of voltage rise. The arrester shall be equivalent to the SIEMENS type or equivalent approved by Engineer.

12V or 24V Pulse, and 20 mA Loop Circuits:

12V or 24V pulse and 20 mA loop lines shall have a graded type of protection against both common mode (both lines with respect to earth) and differential mode (between lines) surges.
All lines associated with a specific transmitter unit shall have their protective modules housed in a single box with a common earth connection from this box to the earth busbar.
A device equivalent to the Semicron type 840001 shall be supplied and installed or equivalent approved by Engineer.

LV Switchgear:

Lightning arresters shall be provided for each phase in all boards, connected to each phase of the incoming cables.
Lightning arresters shall be solidly earthed directly onto the main earth bar. All connections to and from lightning arresters shall be as short and straight as possible.
Surge arresters shall be the Dehnventil type or equivalent approved by the Engineer.

PXB 1.5 Fixing and Support Materials

All fixing and support materials for outdoor use in connection with the installation of electrical material and equipment such as cable sleeve pipes, conduit, saddles, clamps, brackets, bolts, nuts, washers and screws shall be grade 304 stainless steel.

PXB 2ELECTRIC CABLES, CABLE TERMINATING GLANDS AND EARTHWIRES

Low voltage cables shall be for service in a 400/230 V 3 phase 50 Hz system and shall be PVC insulated, PVC sheathed, steel wire armoured, PVC covered, 600/1000 volt grade, complying with the requirements of SABS 1507. The cores shall be stranded copper.
Cables and earth conductors for a specific application shall be selected strictly in accordance with the requirements laid down in SANS 10142 in respect of current rating and voltage drop. Where practicable the earth continuity conductors shall form an integral part of the cable.

Each cable connection shall be terminated at each end by means of a suitably sized adjustable chromium plated, brass terminating gland complete with armour clamp and neoprene shroud. Cable terminating glands for outdoor use shall be provided with waterproofing inner seals as well as waterproofing seals on nipples.

Cable armouring shall be earthed at each end but may not be used as earth continuity conductor.

Each current and earth conductor shall be terminated at each end by means of a suitably sized bolted lug crimped onto the conductor. The lugs shall be bolted onto the relevant bus bars, earth bars or earthing terminals.

Cables and earth conductors shall be installed along the routes indicated on the drawings.

Control wiring/cables shall be of a minimum thickness of 1,5 mm square. The cores shall consist of at least three strands of copper conductors unless otherwise specified. The core of each pair of conductors of multicore cables shall be twisted. Screened cables shall be provided for all signal cables e.g. cables for flow meters. No joint will be allowed in any run of cable or earth conductor.

The Contractor shall be responsible for the excavation, bedding back-filling, consolidating and making good of all cable trenches along the routes indicated on the drawings, with the exception of those sections of the cable routes where it is specifically indicated on the accompanying drawings that open cable ducts will be provided by others. Ducts inside new buildings will be provided by others.

The cable trenches for the electrical cables under the electrical contract will be provided by that responsible contractor.

NOTE: Tenderers shall acquaint themselves fully with the nature and formation of the ground in which the cables are to be laid, before submitting a tender. No subsequent claim for extras due to lack of knowledge in this respect will be entertained by the Client.

Cable trenches for LV power, street and area lighting cables shall be deep enough to facilitate the laying of these cables at a depth of 750 mm below final ground level. The floors of all cable trenches shall be smooth and free from boulders and sharp rock projections.

Each cable shall be laid in a bedding of river sand of sifted soil 75 mm over and 75 mm below the cable - clayish soil will not be accepted as bedding.

No cable trench shall be back-filled before the cable(s) in the trench has been inspected and approved by the Engineer.

Backfilling of cable trenches shall be done in stages not exceeding 150 mm with thorough consolidations at each stage to prevent subsequent subsidence.

Marking Tape

Yellow PVC marking tape, 150 mm wide, with the wording "Buried Electrical Cable - Caution" in both English and Afrikaans, printed in red or Black, shall be laid approximately 300 mm below ground level above the cables.

Cable Markers

a) Cable markers shall consist of 150 mm x 100 mm x 500 mm high concrete blocks with 50mm high letters cast in the concrete and marked "HV or LV Cable". The concrete block must not protrude more than 150 mm above the finished pavement level.

b) Cable markers are to be installed at each end, each cable through joint position at each change of cable direction and at 100 metre intervals along the high voltage cable route.

Cables to be installed on walls and structures shall be properly supported and firmly fixed at suitable regular intervals to prevent it from sagging under its own weight or snaking.

All exposed cable runs shall be installed neatly horizontally and vertically and all exposed vertical cable runs between ground level and 2 m above ground level shall be installed in cable sleeve pipes or conduits. These pipes or conduits shall extend to at least 300 mm below ground level. Intervals between fixing points for sleeves and conduits shall not exceed 1 m.

Only plugging materials of an approved type may be used for fixing to brick walls and concrete - wood will not be acceptable. Plugging in joints of brick walls will not be acceptable.

PXB 3 CABLE LADDERS

Cable ladders and cable trays shall be of the heavy-duty type, equal and similar to 0-Line.

Cable ladders shall be hot dipped galvanized or as specified on the drawings the, height of the sides shall be 76 mm with the width to suit the number and size of cables to be installed.

The cable ladders shall be secured on suitable lengths of Unistrut channel, which shall be suspended from the roof slab by means of suitable lengths 8 mm dia threaded hot, dipped galvanized steel rods.

The threaded rods shall be secured to the roof slab with suitable sized hot dipped galvanized steel rawl bolts and shall be secured to the channel sections by means of two hot dipped galvanized nuts and washers.

Cable ladders and trays against walls shall be secured to channel sections by means of two hot dipped galvanized nuts and washers, which in turn are fixed against the wall by means of suitable sized hot dipped galvanized steel rawl bolts

Where cable ladders must be installed over clear floor areas it shall be supported on galvanised stands which are provided with a foot plate of ample size which can be boltedto the floor by means of suitable sized hot dipped galvanized steel rawl bolts. The cable ladders shall be secured to the stands by means of two hot dipped galvanized nuts and washers.Cable straps suitable for the specific cable shall be employed to secure the cable to the tray.

PXB 4 ELECTRICAL DISTRIBUTION AND MOTOR CONTROL BOARDS

PXB 4.1 Type and Construction

All electrical distribution boards and motor control boards shall be of the outdoor, weatherproof, surface mounting type with IP 65 insect proofed enclosure and consisting of a hinged door(s), a removable front panel and chassis all constructed of a least 2 mm thick 3CR12 steel plate, powder-coated in electrical orange paint. Sufficient provision shall be made for heat dissipation and ventilation of the board.

These boards shall comply with the requirements of SABS 1180 : Part I where applicable.Doors shall be rigid and shall be secured in position by means of robust grade 304 stainless steel hinges. No single door shall be wider than 600 mm.

The doors shall each be provided with at least two "square key" panel locks - one at the top and one at the bottom of the lock side of the door.

The chassis shall be rigid and facilities shall be provided on the chassis for mounting all the relevant equipment. No equipment shall be mounted on the rear panels of boards.

The panel shall be rigid and readily removable without necessitating the disturbance of any of the equipment on the board. Panels shall be mounted in such a way that all equipment are flush behind the panel with only operating handles, instrument faces and indicator lights and push buttons projecting through neat machine punched slots and

holes in the panel. All panels shall be provided with chromium plated brass handles to facilitate removal and shall be secured in position by means of knurled captive thumb screws.

Each board shall be provided with a suitably rated main isolator mechanically interlocked with the removable front panel in such a way that it will be impossible to remove the front panel without switching off the main isolator.

It shall be possible to adjust adjustable control equipment e.g. time switches without having to remove the front panel.

All screws, studs, bolts, nuts and washers used for these boards shall be rustproofed. The use of self-tapping screws will not be permissible.

- A suitable galvanised gland plate of 3 mm thickness shall be provided for termination of cables.
- Front connected boards shall make due allowance for access to the terminations without any physical difficulties.

PXB 4.2 Busbars for Switchboards and Motor Control Boards

The board shall be provided with one set of four solid, copper busbars in the top section and extending over the entire length of the board. Provision shall be made at the end of each busbar for future extensions.

Busbars shall comply with the requirements of SABS 784, BSS 1433 and the relevant clauses of BSS 159.

Busbars shall be mounted on substantial insulators at suitable intervals to prevent undue damage resulting under short circuit conditions. Substantial porcelain, epoxy or other approved busbars insulators shall be used. The busbars shall be arranged horizontally with the longer sides of the cross-sections in the vertical plane and one above the other, in the horizontal plane.

Busbars shall be clearly and indelibly marked Red, Yellow and Blue for the three phases and Black for Neutral.

Connections to busbars shall be effected by means of Cable lugs and suitably sized cadmium-plated, high tensile steel bolts and nuts with cadmium-plated cup washers or lock washers.

A solid copper earthbar shall be provided along the bottom back side of the entire length of the board.

The earthbar shall be drilled and provided with the required number of 6 mm dia. and 10 mm dia. cadmium-plated, high tensile steel bolts and nuts, complete with

cadmium-plated washers and cup washers or lock washers, for making the earth connections. The earthing positions shall be evenly spaced along the entire length of each busbar.

Neutral bars associated with a set of moulded case circuit breakers shall be provided.

PXB 4.3 Internal Wiring for Switchboards and Motor Control Boards

The internal wiring of the boards shall consist of coloured PVC insulated conductors of adequate copper cross-section but minimum of 1,5 mm square, which shall be neatly installed horizontally and vertically and grouped and laced where possible by means of cable ties. PVC trunking with slotted sides shall be used for wiring. (String will not be acceptable). Numbered ferrules of an approved type, shall be provided on each end of each wire, to facilitate the tracing of circuits in accordance with the manufacturers wiring diagram. Wiring shall be fitted with lugs before terminating onto equipment on terminals. Wiring for external circuits shall be terminated on suitably sized DIN rail mounted "Klippon RSF I" or equal terminal blocks at the bottom.

PXB 4.4 Labelling of Switchboards and Motor Control Boards

A screwed on engraved label of the black on white "trafolite" type shall be provided below each item of equipment on the front panel of each board as well as on the chassis in close proximity to the relevant equipment to identify such equipment in both official languages in 6 mm high lettering.

Each board shall further be provided with a screwed on reverse engraved yellow perspex nameplate with black 20 mm high lettering to identify the board in both official languages on the outside of the door at the top thereof.

All safety warning notices shall be in both the official languages and the lettering shall be red on a white background.

PXB 4.5 Equipment for Distribution Boards and Motor Control Boards

Each distribution board or motor control board shall be provided with all the necessary equipment to ensure proper functioning of the plant controlled by it. A main isolator as specified above and a busbar connected voltmeter with 7 position selector switch to

measure busbar voltage on all three phases and switch the voltmeter of in the remaining position.

The equipment shall comply with the specifications below where applicable.

PXB 4.5.1 A direct-on-line air break contactor type starter shall be provided for each motor. This starter shall be complete with the following:

a) A suitably rated isolating isolator (pad lockable in off position).

b) Adjustable thermal overload trip relays in each phase. The overload relay shall have suitable inverse time current characteristics to match the motor thermal damage curve. Hand reset contacts shall be provided.

c) Protection against under voltage and single phasing - the operation of which shall be independent of the settings of the overload trip relay.

d) HRC back-up protection fuses.

e) An ammeter in one of the phases for all motors rated above 1 kW as well as a running hour meter. Associated current transformers for non direct reading ammeters.

f) A selector switch to facilitate the selection of either local manual control or remote automatic control where applicable.

g) A set of normally open and a set of normally closed potential free auxiliary contacts on the starter contactor wired for remote indication of "Running", "Available" and "Tripped" conditions.

h) A set of "STOP" and "START" push buttons for local manual control.

i) A set of "GREEN", "AMBER" AND "RED" indicator lights for local indication of motor "Available", "Tripped" and "Running" conditions respectively.

PXB 4.5.2 Distribution- and Control Board Components

a) Isolators

All isolators shall be of the "Load-breaking" and "fault making" type and shall comply with the requirements of BS 5419-1977 and SABS 152 where applicable. The fault level of the isolators shall be equivalent to or higher than the fault level at the associated busbar or incoming cable.

b) Fuse switch units

All fuse switch units shall be of the "load-breaking" and "fault making" type complying with BS 3185 where applicable and fitted with HRC cartridge fused links to BSS 88.

- Fuse switch units shall be of the double air-break, quick make type and shall have a spring mechanism smoothly driven by springs on both sides of the mechanisms.
- The fixed contacts shall be shrouded.
- The hand operated lever shall be mechanically interlocked with the door and shall be padlockable in the off position.

c) Moulded case circuit breaker

All moulded case circuit breakers shall comply with the requirements of SABS specification No. 156-1977 and shall be equal and similar to Heinemann manufacture with a rupturing capacity of at least 5 kA or for the fault level for the distribution board.

These circuit breakers shall be fitted with copper terminal collector bars where more than one cable tail has to be terminated on the same terminal.

d) Airbreak contactors

All contactors shall be of the totally enclosed three pole, double air break per pole, automatic magnetic type complying with the requirements of SABS 1092 and/or IEC 158-1 for Class AC 3 contactors of Intermittent Duty Class 0,3. the contactors shall be rated for at least 130% of the associated load current.

All contactors shall be provided with arc extinguisher and readily replaceable silver or silver-alloy contacts rated for at 2-million "on" and "off" switching operations at rated current.

Each contactor shall be capable of carrying and making and breaking at a recovery voltage of not less than 90% of the system voltage.

Each contactor shall be provided with a closing coil suitable for continuous operation and at least 15 closing operations per hour.

At least two normally open and two normally close auxiliary contacts shall be fitted.

The contactor may not hum or chatter in service and the contacts may not bounce on closing.

All contactors shall preferably be equal and similar to Telemecanique manufacture.

e) Current transformers

All current transformers shall be of the air insulated type complying in all respects with the requirements laid down in BS 3938 : 1973 and/or IEC 185.

The Contractor shall carefully select the ratio, burden and accuracy class to suit its specific application in accordance with the recommendations and requirements of BS 3938 and/or IEC 185.

The following classes of current transformers shall be used:

Description	**Class**
1. General Protection(over-current/thermal overload)	10P15
2. Differential Protection	X
3. kVA, kW, kWh meters and ammeters	0,5

f) Indicating instruments

All indicating instruments shall comply with the requirements laid down in BS 89: Part I: 1970 for instruments of a 2,5 Accuracy Class. All indicating instruments shall have 96 mm square dials.

The maximum demand ammeters shall be of the 6-amp combined maximum demand registering and instantaneous indicating type having MISC movement and thermal demand indication with an integrating time lag of 15 minutes. The ammeter scales shall be direct reading with a full- scale deflection corresponding to 120% of the rated primary current of the relevant current transformer. Each ammeter shall be clearly and indelibly marked to indicate the colour of the phase to which it is connected.

The ammeters for motor starters shall be instantaneous indicating meters with MISC movement and direct reading scales. The meters shall be able to withstand over-currents resulting under starting conditions and the full load current of the relevant motor shall be clearly marked in red on the face of the meter.

Voltmeters shall be of the direct reading moving iron suppressed zero type.

The running hour meters shall have cyclometer dials indicating up to 5 digits and two decimals.

g) Selector switch

A rotary type instrument selector switch shall be mounted in such a way that only the selector knob and indicator plate are on the panel, and the switch itself is behind the panel.

The selector knob shall consist of substantial material, and shall have an arrow engraved on it, indicating the switch position.

The switch shall have a positively driven switching mechanism.

The indicator plate shall have the positions for the three phases and "OFF" engraved on it in 5 mm high lettering.

h) Indicator lights

All indicator lights shall be equal and similar to Cuttler Hammer Igranic Cat. No. T401 list No. 051/91053 with neon lamps and glass lenses of the specified colours.

Multiple LED type indicators will also be considered if brightness can be proved in daylight.

a) Auxiliary relays shall be adequately rated for their respective duties and shall be silent in operation. All switching relays shall be fitted with robust silver or silver-alloy self-cleaning contacts which shall not bounce or chatter on closing and which shall be designed and manufactured to limit arcing, welding and pitting to an absolute minimum.

b) Earth leakage relays for low voltage distribution boards shall comply with the requirements of SABS 767 and shall have a sensitivity of 30 mA.

PXB 4.5.3 Information to be submitted with tenders in respect of distribution boards and motor control boards

The following information shall be submitted with each tender in respect of all boards offered:

a) Full technical details and descriptive literature regarding all equipment and instruments offered; and

b) Three paper prints of an outline drawing of each board indicating the main overall dimensions and general layout of the boards.

PXB 4.5.4 Information to be submitted by the successful tenderer in respect of all boards

The successful tenderer shall submit three paper prints of each of the following drawings, in respect of each of the boards to the employer"s Agent for approval prior to manufacture:

I. Outline and general arrangement drawings, showing main overall dimensions and construction details:

II. A wiring diagram; and

III. A schematic line diagram.

Plastic transparent prints of the following drawings shall be supplied by the successful tenderer in respect of each of the final layouts of the boards:

a) Outline and general arrangement drawings of each board;

b) A wiring diagram of each board;

c) A schematic line diagram of each board;

d) A paper print of the schematic line diagram for that specific distribution board, shall be framed and installed behind perspex on the inside of the door of each of the switch boards; and

e) A paper print of the schematic line diagrams for each LV starter panel shall be installed behind perspex on the inside of the door of each starter panel.

PXB 4.5.5 Testing for distribution/motor control boards at the manufacturer's works

Each distribution/motor control board shall be subjected to the following tests in the manufacturer's works after manufacture:

a) A thorough inspection shall be carried out to ensure compliance with the specification and approved drawings and wiring diagrams and to ascertain that all connections are properly made.

b) A high voltage test on all primary connections to check the insulation between phases mutually and between each phase and earth.

c) The polarities and ratios of all potential and current transformers shall be checked.

d) Primary and secondary injection tests shall be carried out on all switching, protection, metering interlocking and indication circuits.

The manufacturer shall submit three copies of test certificates giving details of conditions and results of tests carried out to the Engineer.

PXB 4.5.6 Testing and commissioning of distribution/motor control boards after installation on site

After installation on site but prior to commissioning the following inspections and tests shall be performed on each distribution/motor control board:

a) Check all components to ensure that they are free from dust and protective packing material;

b) Check the operation of all components liable to damage in transit such as meters and protection relays;

c) The insulation of all primary circuits between phases mutually and between each phase and earth shall be measured;

d) All fuse links shall be checked for electrical continuity; and

e) All control supplies shall be checked.

All adjustable protection devices shall then be set and the boards commissioned all in consultation with and to the instruction of the Engineer.

PXB 5 EXTERNAL CONTROL AND SENSING UNITS ASSOCIATED WITH ELECTRICAL DISTRIBUTION BOARDS AND CONTROL BOARDS

PXB 5.1 Material and Equipment

PXB 5.1.1 Emergency Stop Push Button Stations (Only where motor starters are provided under this contract)

Each of these units shall consist of a totally enclosed outdoor weatherproof type heavy duty "push and turn to lock" stop push button station with a cable gland entry at the bottom to accommodate a 3 core, 1,5 mm.sq. LV PVC SWA cable. The unit shall have an IP 55 insect proofed enclosure.

This push button station shall be mounted on an approved rigid 1 meter high grade 304 stainless steel pedestal designed to be bolted to a concrete slab or against the structure at a height of 1,0 m above ground level where practicable.

PXB 5.1.2 Level Switches

All level switches shall be equal and similar to the Flygt ENH 10 and shall be supplied complete with integral cable connections of sufficient length to eliminate joints in water or moist surroundings.

PXB 5.1.3 Level Sensors

Level sensors shall be of the ultrasonic type with a minimum environmental rating of IP 65. They shall be capable of operating without degradation of performance in direct sunlight and highly corrosive conditions (organic acids from sewerage work).

PXB 5.1.4 Flow and Pressure Switches

a) Flow Switches

Flow switches shall be of the paddle type equal and similar the McDonnel flow switch with adjustable paddles to suit the relevant pipe diameters.

b) Pressure Switches

Details of tendered equipment must be submitted with the tender.

PXB 5.2 Installation and Commissioning

PXB 5.2.1 Emergency Stop Push Button Stations (Only where motor starters are provided under this contract)

An emergency stop-push button station as specified shall be installed at the coupling between each motor and its associated driven equipment and shall be connected to the relevant starter panel via 1,5 mm.sq. x 3 core PVC SWA PVC cable to stop the motor.

Where a mounting pedestal is used the pedestal shall be securely bolted to the concrete slab by means of foundation bolts grouted into the concrete and care shall be taken to ensure that it is installed plumb.

PXB 5.2.2 Float Switches

Each float switch shall be suspended from a grade 304 stainless steel hook bolt in such a position that it will be readily accessible for adjustment and cleaning purpose, that it will be able to float freely without the possibility of obstruction of any sort and that it will not be influenced by turbulence in the liquid.

At least 2 m slack shall be provided in the cable connection to each float to facilitate future lowering thereof. This slack shall be neatly coiled and bound at the point of suspension.

PXB 5.2.3 Level Sensors

The transmitter section of each of these units shall be installed in the associated distribution or control board.

The positions in which these sensors are to be installed shall be determined in consultation with the employer"s Agent on site and shall be such as to ensure accessibility for maintenance and adjustment and to avoid the effects of turbulence in the liquid.

PXB 5.2.4 Flow and Pressure Switches

Shall be installed as and where required and shall be connected to the relevant starter panels by means of the necessary multicore PVC SWA PVC cables for the operational functions required.

PXB 5.2.5 Electric Actuators for Continuous Valve and Sluice Gate Control

Electric actuators for valve and sluice gate control shall be equal or similar to the Rotork Syncropak complete with "Millipot" stabilised current position transmitter providing a 4-20 mA signal for remote position indication and "Folomatic Control Unit" suitable for remote control by means of a 4-20 mA signal.

NB: Gears of synthetic materials will not be acceptable in these units.

PXB 5.2.6 Electric Actuators for Open/Closed and Three-way Plug Valve Control

Such actuators shall be equal or similar to Rotork Syncropak units which shall provide for remote control by internally sourced 24V DC signals and for remote monitoring by means of voltage free contracts.

PWB SETTING OUT

PWB1 GENERAL

This Particular Specification describes the requirements for setting out of the Works. No separate payment will be made for work described in this section.

PWB2 FIELD WORK

(a) All survey shall be based on the appropriate Lo system of the national triangulation.

(b) All points to be set out by the Contractor shall be located in the X, Y and Z directions according to land-survey methods generally accepted in the Republic of South Africa so as to ensure that the required degree of accuracy is achieved.

(c) The Contractor shall identify and list the beacons that he used as traverse terminals, or for the fixing of points by trigonometrical survey methods.

PWB3 SURVEY RECORDS AND CALCULATIONS

(a) All records shall be neat, orderly, fully annotated and cross-referenced, adequately checked and shall include the following:

- general report,
- all field placings and checks,
- final co-ordinate list and differences between polars,
- levels and check levels, and
- a summarised list of final X, Y and Z values on all pegs.

(b) Plans, field books and all calculations shall bear the field surveyor's and the Contractor's signatures, be fully dated and numbered sequentially.

(c) Only originals shall be submitted.

(d) The calculations are required to follow basically the principles in common use in the Republic of South Africa, as described in the Annexures to the Survey Regulations framed under the Land-Survey Act of 1927 (as amended).

PWB4 SURVEY BEACONS

Beacons that have been or will be erected by the Engineer are shown on the Drawings, generally at inflexion point and 400m maximum spacing. Additional survey beacons shall

be provided by the Contractor at intermediate points in order to provide line of sight at all points and for the proper construction of the Works.

PWB5 REFERENCE PEGS

(a) Reference pegs have been placed approximately every 400m and at all inflexion points. Two references have been placed per point to be referenced.

(b) The Contractor shall protect these references, and place further references as may be necessary to secure the position of the pipeline at all times. All reference peg positions shall be determined by means of a double polar or by traverse.

(c) Reference pegs placed by the Contractor shall at least consist of a steel peg (Y10 or Y12) cast into a concrete block of 300mm diameter and 200mm depth. The Contractor shall note that the value of the survey depends largely on the permanence of its reference points. The Contractor shall apply suitable additional measures in unstable soils to assure the permanence of points.

(d) Reference pegs shall be numbered consecutively with a 10mm stamp on an aluminium tag cast into the concrete, in accordance with the node numbering sequence indicated on the Drawings.

(e) The allowable error is 0,02m in the XY plane.

END OF SECTION

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C3.5 MANAGEMENT

C3.5.1 Management of the Works

C3.5.1.1 Construction Project

Refer to Section C3.4.1 (B1204)

C3.5.1.2 Drawings, Operation and Maintenance Manuals

Refer to Section C3.4.1 (PS6.)

C3.5.1.3 Site Administration

Acceptance control, record keeping and payment certificates shall be done in accordance with the Employer's Agent's standard system except if the Employer's Agentapproves that the Contractor's standard system may be used.

C3.5.1.4 Daily Site Diary

The daily site diary shall be kept up to date by the Contractor's Site Agent and will be signed on a daily basis by the Employer's Agent's Representative.

C3.5.1.5 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 Employer's Agent, on a monthly basis, a detailed summary of construction plant kept on the Site, full particulars given for each day of the month. Distinction shall be made between plant in working order and plant out-of-order. Such inventory shall be submitted by the first day of the month following the month to be reported.

C3.5.1.6 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 Employer's Agent, on a monthly basis, a detailed summary of supervisory staff, labour employed (own and local labour) by category, and sub-contractors (both local and imported) for each day of the month. Such return shall be submitted by the first day of the month following the month to be reported.

C3.5.1.7 Rainfall Records

Rainfall records for the period of construction shall be taken on Site and recorded in the daily site diary. The Contractor shall provide and install all the necessary equipment for accurately measuring the rainfall. The Contractor shall also provide, erect and maintain a security fence plus gate, padlock and keys at each measuring station, all at his own cost. The Employer's Agent 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 Employer's Agent's Representative. Access to the measuring gauge(s) shall at all times be under the Employer's Agent's control.

C3.5.1.8 Site Instructions

Site instructions by the Employer's Agent, addressed to the Contractor at his office on the Site, will be numbered consecutively and will be deemed to have been received by the Contractor's Representative unless a break in the sequence of numbers is brought to the notice of the Employer's Agent in writing immediately.

C3.5.1.9 Site Meetings

The Contractor and his authorised representative shall attend all meetings held on the Site with the Employer and the professional team at dates and times to be determined by the Employer's Agent. Such meetings 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 raise. It is not the intention to discuss day-to-day technical matters at such meetings.

C3.5.1.10 Payment Certificates

Monthly Progress Payment Certificates shall be submitted to the Employer's Agent'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 and reconciliation of all quantities, rates, extensions and additions in the certificate. Each progress payment certificate shall include work executed or reasonably expected to be executed up to the 30th day of the specific month.

Upon agreement by the Employer's Agent's Representative the certificate shall be submitted by the Contractor in a neat typed form in accordance with the prescribed format, and with the correct spelling, to the Employer's Agent by not later than the 20th of each month (or on the first working day thereafter), together with four additional copies, for certification.

Where dayworks have been instructed by the Employer's Agent, the Contractor shall submit the returns to the Employer's Agent for signature and approval within twenty-four (24) hours of the end of the working day on which the work was executed. Daywork returns shall be submitted on forms following a standard format for this purpose. Failure to comply with the terms of this clause ill result in non-payment for such dayworks.

The tax invoice will be submitted with each certificate dated appropriately for the period certified. All costs for the preparation and submission of progress certificates shall be borne by the Contractor.

C3.5.1.11 Workmanship and Quality Control

Refer to Section C3.4.1 (PS4)

C.3.5.1.12 Features requiring Special Attention

Refer to Section C3.4.1 (PS3.)

END OF SECTION

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OCCUPATIONAL HEALTH AND SAFETY

1 INTERPRETATIONS

Occupational Health and Safety Act, Act 85 of 1993 shall apply to this Contract. The Construction Regulations promulgated on 7 February 2014 and incorporated into the said Act by Government Notice R. 10113, published in Government Gazette 37305 apply to any person involved in construction work. These regulations are hereinafter referred to as "the Construction Regulations" and the said Act as "the Act".

Construction work is defined as:

"Any work in connection with: -

a) the erection, maintenance, alteration, renovation, repair, demolition or dismantling of or addition to a building or any similar structure;
b) the installation, erection, dismantling of or maintenance of a fixed plant where such work includes the risk of a person falling;
c) the construction, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runway, sewer or water reticulation system or any similar civil engineering structure; or
d) the moving of earth, clearing of land, the making of an excavation, piling, or any similar type of work".

2 GENERAL

The Contractor shall ensure that all employees and visitors are informed, instructed and trained regarding safety conditions on site.

2.1 Proof of induction training to all workers shall be filed in the Health and Safety file on site. All employees shall sign the relevant induction training forms.

The Contractor shall ensure that all professionals entering the site are informed, instructed and trained regarding safety conditions on site. Proof of Professional site safety induction shall be signed by professionals and filed in the Health and Safety file on site.

The Contractor shall ensure that all visitors are informed, instructed and trained regarding safety conditions on site. Visitors have to sign the visitors register before entering the site. Hardhats shall be issued to visitors. No visitor shall enter the site without the appropriate safety shoes.

2.2 Should the Contractor at any stage in execution of the Works -

a) fail to implement or maintain his health and safety plan;

e) execute construction work which is not in accordance with his health and safety plan; oract in any way which may pose a threat to the health and safety of persons, the Employerwill stop the Contractor AT HIS/HER OWN COSTS from executing construction work.

2.3 The Contractor shall provide proof of this registration and good standing with the Compensation Fund or with a licensed compensation insurer when submitting a tender. Tenders without this will be regarded as non-responsive.

2.4 The Contractor shall, in submitting his tender, demonstrate that he has made provision for the cost of compliance with the specified health and safety requirements, the Act and the Construction Regulations.

2.5 The Contractor shall consistently demonstrate his competence and adequacy of resources to perform the duties imposed on the Contractor in terms of this Specification, the Act and the Construction Regulations.

3 INDEMNITY OF EMPLOYER AND HIS AGENTS

a) The annexures to this Contract Document contain a "Mandatory Form of Authority and Agreement in terms of Section 37(2) of the Occupational Health and Safety Act, No. 85 of 1993" which agreement shall be entered into and duly signed by both the Employer and Contractor prior to commencement with work.

A copy of the signed agreement shall be included in the Contractor's health and safety plan.

b) Any acceptance, approval, check, certificate, consent, examination, inspection, instruction, notice, observation, proposal, request, test or similar act by either the Employer, any of his agents or the Engineer (including absence of disapproval) shall not relieve the Contractor from any responsibility he has under the Contract, the Act and the Construction Regulations, including responsibility for errors, omissions, discrepancies and non-compliances.

c) A Section 37(2) agreement shall be entered into and duly signed by both the Principal Contractor and Sub Contractor prior to commencement with work by Sub Contractor.

A copy of the signed agreement shall be included in the Principal's Contractor's health and safety plan.

d) Any acceptance, approval, check, certificate, consent, examination, inspection, instruction, notice, observation, proposal, request, test or similar act by either the Employer, any of his agents or the Engineer (including absence of disapproval) shall not relieve the Sub Contractor from any responsibility he has under the Contract, the Act and the Construction Regulations, including responsibility for errors, omissions, discrepancies and non-compliances.

4 SCOPE

4.1 The specification as set out in this Portion is known as the Health and Safety Specification for the Construction work to be carried out by the Principal Contractor as per regulations of the Construction Regulations February 2014.

Information herein addressed might affect the Health and Safety of employee's or persons carrying out the construction work as per this tender document.

The Contractor shall ensure that it is fully conversant with the requirements of this Specification.
This Specification is not intended to supersede the Act nor the Construction Regulations. Those sections of the Act and the Construction Regulations, which apply to the scope of work to be performed by the Contractor in terms of this Contract, continue to be a legal requirement of the Contractor.

The principal Contractor will be appointed in writing to be in overall control of the Construction site.

4.2 A Health and Safety Plan must be submitted by the Principal Contractor to the Employer's Health and Safety Agent containing all the relevant documentation as required by this specification and terms of the provisions of this Specification, the Act and the Construction Regulations.

A Health and Safety Plan must also be submitted by the Sub Contractor to the Principal Contractor containing all the relevant documentation as required by this specification and terms of the provisions of this Specification, the Act and the Construction Regulations

The H&S plan shall be submitted before commencement of any work on site

5 HEALTH AND SAFETY FILE

The following documentation shall be in the Health and Safety File of the Principal Contractor and Sub Contractors:

A1 Copy of the Occupational Health and Safety Act No 85 of 1993 including the Construction Regulations – February 2014

A2 Proof of registration with Compensation Commissioner (Principal Contractor)

A3 Copy of Notification of Construction work to the Department of Labour

A4 Agreement in terms of section 37(2) of the Occupational Health and Safety Act, No. 85 of 1993. To be signed by employer and Principal contractor in presence of witnesses

A7 Health and safety plan describing all activities as mentioned elsewhere.

A8 Company Safety Policy – To be signed by the Chief Executive Officer of the Company.

A9 Organogram indicating site specific organizational structure with reference to requirements of the construction regulations.

A10 Letters of Appointment

The following appointments are required for the project. Deviations will only be allowed with the approval of the Agent. Appointment of an employee for more than one responsibility will be allowed and shall be approved by the Agent.

Basic Appointments

- Appointment of Principal Contractor by Employer
- Appointment of Contractors (Sub Contractors) by Principal Contractor (where applicable)
- Appointment of Construction Work Supervisor (full time employee on site)
- Appointment of Assistant Construction Work Supervisor (full time employee on site if required)

Appointments of full-time employees on site

- Appointment of a SHE Representative (Competent employee to control/monitor all H&S activities)
- Appointment of an Accident and Incident Investigator

A12 Evacuation plan

A13 The contents of all Training Material used on sited – e.g.
Accredited and non-accredited training
Toolbox talks
And all training records signed by workers

A14 Risk Assessments - All Risk Assessments done before and during the Construction period

A15 Registers as required

A16 Safe Work Procedures and material safety data sheets

A17 Fall protection plan

A18 Incident recording forms

A19 Medical records

A20 Minutes of safety meetings

Emergency telephone numbers to be displayed on the back of the file

6 NOTIFICATION OF CONSTRUCTION WORK – REG 3 OF THE CONSTRUCTION REGULATION – FEBRUARY 2014

The Employer will appoint the Contractor in writing for execution of the Works. The Contractor shall accept its appointment under the terms and Conditions of Contract. The Contractor shall sign and agree to those terms and conditions and shall, before commencing work, notify the Department of Labour of the intended construction work in terms of Regulation 3 of the Construction Regulations. The Contractor shall submit the notification in writing prior to commencement with work. The annexures to this Contract Document contain a "Mandatory notification of construction work in terms of regulation 3 of the construction regulations (2014) of the Occupational Health and Safety Act no 85 of 1993" which shall be filled in by the contractor and forwarded to the Department of Labour. A copy of this notification shall be included in the Contractors Health and Safety file.

The Principal Contractor must notify the Provincial Director of:

- Construction work on a form similar to Annexure B in the Construction Regulation 2014 of the Occupational Health and Safety Act and Regulations.
- A copy of the notification form must be available on site for inspection by an Inspector.

No notification is required from the Sub Contractors.

7 CONTRACTOR'S SHE REPRESENTATIVE

Before commencing work, the Principal Contractor shall designate a competent Safety, Health and Environmental representative (SHE Rep) who shall be acceptable to the Agent, to represent and act for the Contractor and Sub Contractors.

It should be noted that the Principal Contractor is held responsible for the activities of the Sub Contractors.
Failure of Health and Safety measures by the Sub Contractor will revert directly back to the Principal Contractor.
The Contractor shall inform the Agent in writing of the name and address of the Contractor's SHE Rep and of any subsequent changes in the name and address of the SHE Rep, together with the scope and limitations of the SHE Rep's authority to act for the Contractor. The Contractor's SHE Rep shall make available to the Employer an all-hours telephone number at which the SHE Rep can be contacted at any time in the event of an emergency involving any of the Contractor's employees, or other persons at the Works.

8 CLOTHING

All employees of the Contractor shall wear suitable protective clothing when working in proximity of machinery, power tools, hazardous materials or chemicals.
Proposed Personal Protective Equipment required on this project:

	TYPE	WHEN TO WEAR
1.	Hard Hats	Always
2.	400mm Shoulder Length PVC Gloves	Working with cement
3.	Plastic Trousers	Working with cement
4.	Safety Goggles	Grinding, Cutting Cement
5.	Gumboots	Working in water
6.	Welding helmet	Welding
7.	Gas welding safety goggles	Gas Welding
8.	Safety shoes	Offloading and positioning of materials
9.	Dust Masks	Grinding
10.	Ear Muff	Grinding
11.	Leather apron	Welding/ gas welding

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

The Employer and the Contractor hereby agree, in terms of the Provisions of Sections 37(2), 9 and 8(2) of the Occupational Health and Safety, Act No. 85 of 1993, hereinafter referred to as 'the Act', that the Contractor as an employer in its own right and in its capacity as Contractor for the execution of the works, shall have certain obligations and that the following arrangements shall apply between them to ensure compliance by the Contractor with the provisions of the Act, namely:-

i) The Contractor undertakes to acquaint the appropriate officials and the employees of the Contractor with all relevant provisions of the Act, and the regulations promulgated in terms of the Act, and

ii) The Contractor undertakes that all relevant duties, obligations and prohibitions imposed in terms of the Act and regulations will be fully complied with, and

iii) The Contractor hereby accepts sole liability for such due compliance with the relevant duties, obligations and prohibitions imposed by the Act and regulations and expressly absolves the Employer and the Employer's Consulting Engineers from being obliged to comply with any of the aforesaid duties, obligations and prohibitions.

iv) The Contractor shall be obliged to report forthwith to the Employer any investigation, complaint, or criminal charge which may arise as a consequence of the provisions of the Act and regulations pursuant to work performed on behalf of the Employer, and shall, on written demand, provide full details in writing of such investigation, complaint or criminal charge.

SIGNED at ..... on this ..... day of

..... 20.....

For and on behalf of the Contractor:

_____ Print Name: _____

AS WITNESSES:

1. _____ 2. _____

Print Name: _____ Print Name: _____

For and on behalf of the Employer:

_____ Print Name:_____

AS WITNESSES:

1. _____ 2. _____

Print Name:_____ Print Name: _____

MANDATORY NOTIFICATION OF CONSTRUCTION WORK
IN TERMS OF REGULATION 3 OF THE CONSTRUCTION REGULATIONS (2014)
OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, NO. 85 OF 1993

This document is to be forwarded by the Contractor to the Office of the Department of Labour prior to commencement of the Works. The Contractor shall ensure that all Sub-Contractors accountable to him forward similar documents to the mentioned Authority prior to commencement with the Works.

A. Particulars of Contractor

Name: .....

Postal Address : .....

Compensation Fund Registration No. .....

B. Particulars of Contractor's MD/ CEO/Managing Member of cc

Name: .....

ID No. .....

Postal Address: .....

Tel No. ..... Cell phone No. .....

C. Particulars of Contractor's designated Construction Safety Officer appointed in terms of Clause 6(1) as the Construction Supervisor, with the duty of supervising health and safety at the Works:

Name: .....

ID No. .....

Postal Address: .....

Tel No. ..... Cell phone No. .....

D. Particulars of Contractor's sub-ordinate supervisors at the Works, appointed in terms of Clause 6 (2):

Name	ID No.	Postal Address	Tel No.	Cell phone no.

E. Physical address of the Works (Construction Site)

.....

.....

Co-ordinates (if available) Latitude (S) .....

Longitude (E) .....

F. Nature of the construction work:

.....

.....

G. Expected commencement date:

H. Expected completion date:

I. Estimated maximum number of persons on the construction site.

J. Planned number of Sub-Contractors on the construction site accountable to Principal Contractor:

.....

Name(s) of Sub-Contractors.

.....

.....

.....

K. Particulars of Employer (client)

Name:

Postal Address: .....

.....

Name of Employer's designated Representative / Agent.

.....

Tel No. ..... Cell phone No. .....

L. Particulars of Design Engineer

Name:

Postal Address: .....

Tel No. ..... Cell phone No. .....

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

INFORMATION TO BE SUPPLIED BY THE TENDERER

This following form shall be completed by the Tenderer.

A Particulars of WCF

Compensation Fund Registration No. .....

Expiring Date .....

B. Particulars of Contractor's designated Construction Safety Officer appointed in terms of Clause 6(1) as the Construction Supervisor, with the duty of supervising health and safety atthe Works:

Name: .....

ID No. .....

Postal Address: .....

Tel No. ..... Cell phone No. .....

C Particulars of Contractor's Health and Safety Representatives:

Name:.....Qualifications.....

Name:.....Qualifications.....

Name:.....Qualifications.....

D Particulars of First Aider

Name: .....

ID No. .....

Valid First Aid Certificate: Yes.....
No.....

E Particulars of Fire Fighter

Name: .....

ID No. .....

Valid Fire Training Certificate: Yes.....
No.....

F Training Records of Construction Vehicle Operators

Name:.....Qualifications.....

Name:.....Qualifications.....

Name:.....Qualifications.....

G. Incident Statistics:

Incidents during last 12 months	Date	Degree of Injury	Production days lost	Costs involved.
1				
2				
3				
4				
5				
6				
7				

END OF SECTION

Gamagara Local Municipality

UPGRADING OF DIBENG BULK WATER INFRASTRUCTURE PHASE 1

SITE INFORMATION

INDEX

END OF SECTION

C4.1 SPECIFIC REQUIREMENTS IN TERMS OF OHSA AND CONSTRUCTION REGULATIONS

Inter alia the risk assessment to be done by the Contractor, specific requirements and areas that must be addressed is provided hereunder as the risk identification provided by the Employer and summarised hereunder:

Specific requirements and areas that must be addressed with the risk assessments and work procedures are summarised hereunder:

Public safety

- Pedestrian and vehicle movement along the entire section of works
- Public awareness, especially of the works to be executed under single lane traffic accommodation, safety precautions and specifically advance warning areas. Advance warning areas to be assisted with advance variable message signs and warning signals as per specification.
- Plant in operation and/or under holding conditions immediately next to trafficked lanes (refer to specifications).
- Speeding during construction and control measures (assisted with speed message sign).
- Level differences during rehabilitation stages with adequate signs and safety precautionary measures. (Refer to restrictive conditions and same day work allowances)
- Communication on site.
- Constant traffic monitoring by site safety officers and daily inspection of signage required with auditable records.

Stockpile areas

- Safety measures to ensure usability of hazardous conditions exist to road users and special measures to ensure night-time visibility.
- Environmental matters, control and spillages, e.g. pre-coating fluid, bituminous products, diesel, etc.

Plant, equipment and personnel

- Night time visibility and low day time visibility.
- Serviceability of equipment in transport of leakages, i.e. oil, diesel, bitumen, spills.
- Flagmen, traffic control and labour force.

Safety Risk

- Construction personnel and plant.

Finishing

- Loose aggregate during excavation and seal operations

END OF SECTION