



TENDER COVER PAGE

YOU ARE HEREBY INVITED TO BID FOR THE REQUIREMENTS OF JOHANNESBURG WATER

BID NUMBER: JW14302R

CLOSING DATE: 24 JANUARY 2025

CLOSING TIME: 10:30 AM

DESCRIPTION: CONSTRUCTION OF 20ML REINFORCED CONCRETE CARLSWALD RESERVOIR

CIDB REQUIREMENTS: TENDERERS SHOULD HAVE A CIDB CONTRACTOR GRADING DESIGNATION OF 8CE OR HIGHER

| | | | |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------------------------------------------------------------------|
| BRIEFING SESSION | COMPULSORY: YES | | |
| BRIEFING DETAILS | <p>DATE AND TIME: 02 DECEMBER 2024 AT 10:00 AM</p> <p>ADDRESS: JOHANNESBURG WATER (JW) MIDRAND DEPOT, 6TH ROAD, CARLSWALD, MIDRAND CO-ORDINATES: 25°58'52.14"S, 28° 7'7.68" E (-25.981151°, 28.118801°).</p> <p>TENDERS RECEIVED FROM NON-ATTENDED BIDDERS OF A COMPULSORY BRIEFING SESSION WILL BE DISQUALIFIED</p> | | |
| TENDER SUBMISSION DETAILS | <p>BID DOCUMENTS MUST BE DEPOSITED IN THE TENDER BOX SITUATED ON GROUND FLOOR AT JOHANNESBURG WATER</p> <p>ADDRESS: TURBINE HALL, 65 NTEMI PILISO STREET, NEWTOWN, JOHANNESBURG, 2001</p> <p>PLEASE ALLOW SUFFICIENT TIME TO ACCESS JOHANNESBURG WATER OFFICES IN TURBINE HALL AND DEPOSIT YOUR TENDER DOCUMENT IN THE JOHANNESBURG WATER TENDER BOX SITUATED AT RECEPTION BEFORE TENDER CLOSING TIME.</p> <p>TIMES: THE BUILDING WILL OPEN 7 DAYS A WEEK FROM 06:00 UNTIL 18:00</p> | | |
| BIDDER INFORMATION | | | |
| NAME OF BIDDER | | | |
| POSTAL ADDRESS | | | |
| PHYSICAL ADDRESS | | | |
| TELEPHONE NUMBER | | | |
| CELLPHONE NUMBER | | | |
| E-MAIL ADDRESS | | | |
| VAT REGISTRATION NUMBER | | | |
| TAX COMPLIANCE STATUS | TCS PIN | | MAAA No |
| OTHER STATUS | COIDA Registration No | | CRS(CIDB) No |
| EMPLOYER INFORMATION | | | |
| DEPARTMENT | CAPEX | DEPARTMENT | SCM |
| CONTACT PERSON | SIJABULISO TSHUMA | CONTACT PERSON | GCINA NDELA |
| TELEPHONE NUMBER | 011 688 1570 | TELEPHONE NUMBER | 011 688 1796 |
| E-MAIL ADDRESS | Sijabuliso.tshuma@jwater.co.za | E-MAIL ADDRESS | Gcina.ndela@jwater.co.za |

| | | | |
|------------------|--|--------------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



NOTE: DOCUMENTS DOWNLOADED FROM THE ETENDER PORTAL ARE AT NO COST BUT MUST COMPLY WITH SUBMISSION REQUIREMENTS.

WITHOUT LIMITATION, JOHANNESBURG WATER TAKES NO RESPONSIBILITY FOR ANY DELAYS IN ANY COURIER OR POSTAL SYSTEM OR ANY LOGISTICAL DELAYS WITHIN THE PREMISES OF JOHANNESBURG WATER. JOHANNESBURG WATER LIKewise TAKES NO RESPONSIBILITY FOR OFFERS DELIVERED TO A LOCATION OTHER THAN THE TENDER BOX AS PER THE TENDER SUBMISSION DETAILS STATED IN THE TENDER. PROOF OF POSTING OR OF COURIER DELIVERY WILL NOT BE TAKEN BY JOHANNESBURG WATER AS PROOF OF DELIVERY. TENDER SUBMISSION DOCUMENTS MUST BE IN THE BOX BEFORE TENDER CLOSURE.

THE TENDERER IS ENCOURAGED TO SIGN THE TENDER SUBMISSION REGISTER WHEN SUBMITTING THEIR TENDERS.

PLEASE ENSURE YOU SUBMIT 1 x ORIGINAL TENDER HARD DOCUMENT (IF PRACTICAL, ALSO PROVIDE AN ELECTRONIC COPY IN A MEMORY STICK/USB TO ENSURE INFORMATION IS NOT MISSED WHEN TENDERS ARE BEING EVALUATED BY THE BID EVALUATION COMMITTEE).

Any required documents not submitted in the tender box at the deadline will be considered late.

The tenderer accepts that Johannesburg Water will not take responsibility for the misplacement or premature opening of the tender if the outer package is not sealed and marked as stated.

NB: NO BIDS WILL BE CONSIDERED FROM PERSONS IN THE SERVICE OF THE STATE.

NAME OF CONTACT PERSON:

SIGNATURE OF BIDDER:

CAPACITY UNDER WHICH THIS BID IS SIGNED:

DATE:

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



TENDER NOTICE AND INVITATION TO TENDER



1. TENDER NOTICE AND INVITATION TO TENDER

Johannesburg Water (SOC) Ltd invites the tenderer for the following:

CONTRACT NO: JW14302R CONSTRUCTION OF 20 ML REINFORCED CONCRETE CARLSWALD RESERVOIR

The tender document will be available in the form of a download from the Johannesburg Water website (www.johannesburgwater.co.za/supply_chain/tenders) starting from **20 NOVEMBER 2024**.

The Employer is **Johannesburg Water (SOC) Ltd**

All tenders and supporting documents must be sealed and placed in the Tender box on the ground floor of Johannesburg Water by no later than **10:30 am on 24 JANUARY 2025**

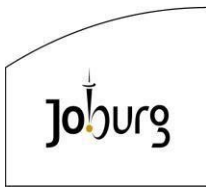
The address is as follows:

**TURBINE HALL,
65 NTEMI PILISO STREET,
NEWTOWN,
JOHANNESBURG,
2001**

The Employer is not obliged to accept the lowest or any tender and reserve the right to appoint:

- a) in whole or in part.
- b) to more than one tenderer.
- c) to the highest points scoring bidder.
- d) to the lowest acceptable tender or highest acceptable tender in terms of the pointscoring system.
- e) to a bidder not scoring the highest points (based on objective grounds in terms of section 2 (1) (f) of the PPPFA) (where applicable).
- f) not to consider any bid with justifiable reasons.

A valid and binding contract with the successful tender/s will be concluded once the Employer has been awarded the contract. The Employer will issue an appointment letter to the successful tenderer.



Contract: JW14302R
CONSTRUCTION OF 20 ML REINFORCED CONCRETE CARLSWALD
RESERVOIR



Volume 1 Tender and Contract
Section T1 Tender and Contract

Johannesburg Water SOC Ltd



CONTRACT NO: JW14302R

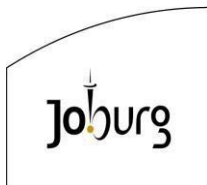
**CONSTRUCTION OF 20 ML
REINFORCED CONCRETE
CARLSWALD RESERVOIR**

**VOLUME 1
TENDER AND CONTRACT**

Prepared by
PMU
PO Box 61542
Marshalltown
2107

V1.0
November 2024

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



**Contract No JW14302R
CONSTRUCTION OF 20 ML REINFORCED CONCRETE CARLSWALD RESERVOIR**

**Volume 1 Tender and Contract
Section T1 Tender and Contract**



The Tenderer is to indicate in the "Submitted (Yes/No)" column in the below table that they have completed the required section of the tender document. Completion of this checklist will assist the Tenderer in ensuring that they have attended to all the required items for submission with this tender. Additionally, it is an absolute requirement that Tenderers comply with National Treasury's CSD registration as well as SARS tax compliance requirements for contract award – refer to T2.2.2.

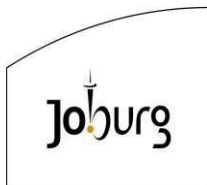
The below will form part of the tender document, the Tenderers are therefore encouraged to submit the returnable and or documentation with their tender offer to avoid elimination, especially with regards to what is stated in the "Required for Tender Evaluation" column or not obtaining points for Specific Goals. Tenderers are encouraged to ensure that their Tax status remains Tax Compliant on CSD throughout the process to avoid delaying the process or being eliminated at the award stage. For infrastructure related projects. The tenderer must have an active CIDB Status with the requested GIDB requirement by evaluation stage of this tender to avoid disqualification.

All documentation listed in the Checklist below shall form part of the Contract.

Table 1

| Ref | Description of Returnable/s or Documentation that will form Part of Contract and must therefore to be Completed and/or Submitted by the Tenderer | Required for Tender Evaluation | Required for Tender Award | Required After Tender Award | Submitted (Yes/No) |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------------------------|-----------------------------|--------------------|
| | Tender Cover: | | | | |
| | Name of Tender | • | | | |
| | Contact Person | • | | | |
| | Telephone Number | • | | | |
| | Central Supplier Database Registration | • | | | |
| | CIDB Registration Number | • | | | |
| | COIDA Registration Number | | | • | |
| | Tax SARS PIN No. | | • | | |
| | MAAA No. for Tax Compliant Status | | • | | |
| | Bank Details Form | | • | | |
| | Mandatory Documents at Particular Stage: | | | | |
| | CIBD grading 8CE or higher or Proof of registration with the minimum required CIDB grading for the tender and Active Status | • | | | |
| | Mandatory Tender Briefing Meeting | • | | | |
| | Complete and sign the Schedule of Rates and Summary. | • | | | |
| | Complete and sign the Form of Offer. | • | | | |
| | Administrative Documentation: | | | | |
| | MBD 1 - Invitation to Bid - Completed and signed | • | • | | |
| T2.2.4 | MBD 4 - Declaration of interest - Completed and signed | • | • | | |
| | MBD 5 - Declaration for procurement above R10 Million (all applicable taxes included) Completed and signed. | • | • | | |
| | MBD 6.1 - Preference Points Schedule – Specific Goals and Price Points - Completed and signed. | • | | | |
| T2.1 | Signed Certificate of Authority to Sign | • | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



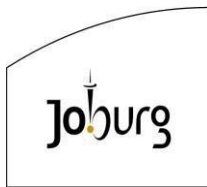
Contract No JW14302R
CONSTRUCTION OF 20 ML REINFORCED CONCRETE CARLSWALD RESERVOIR

Volume 1 Tender and Contract
Section T1 Tender and Contract



| Ref | Description of Returnable/s or Documentation that will form Part of Contract and must therefore to be Completed and/or Submitted by the Tenderer | Required for Tender Evaluation | Required for Tender Award | Required After Tender Award | Submitted (Yes/No) |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------------------------|-----------------------------|--------------------|
| | Acknowledgement of Project Tender Drawings | • | | | |
| | Acknowledgement of SHE Specification & Annexures | • | | | |
| T2.2.4 | MBD 8 - Bidder's past supply chain management practices – Completed and signed. | • | • | | |
| T2.2.4 | MBD 9 - Certificate of Independent Bid Determination – Completed and signed. | • | • | | |
| | Municipal Rates and Taxes for the Tenderer - Current municipal rates for the entity not older than 90 days (if leasing/renting, submitted proof such as lease agreement where premises are rented), OR Confirmation that suitable arrangements are in place for arrear municipal obligations with your local municipality. | • | • | | |
| | Municipal Rates and Taxes - Current municipal rates for the directors of the entity not older than 90 days (if leasing/renting, submitted proof such as lease agreement where premises are rented), OR Confirmation that suitable arrangements are in place for arrear municipal obligations with your local municipality. | • | • | | |
| | 3-year financial statements (audited where applicable) | | • | | |
| | Any qualifications. If "Yes", reference to such qualification/s must be indicated on a cover letter. Please be aware that alterations on the tender document may result in your tender being eliminated as the qualification may impede on the ability to evaluate like with like. | • | | | |
| 4. | Functionality Documentation: | | | | |
| | Documentary Evidence for Criteria 1 - (Contactable References) | • | | | |
| | Documentary Evidence for Criteria 2 – (Contactable References) | • | | | |
| | Documentary Evidence for Criteria 3 – (Contactable References) | • | | | |
| | Documentary Evidence for Criteria 4 – (CVs & Qualifications) | • | | | |
| | Documentary Evidence for Criteria 5 – | • | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



**Contract No JW14302R
CONSTRUCTION OF 20 ML REINFORCED CONCRETE CARLSWALD RESERVOIR**

**Volume 1 Tender and Contract
Section T1 Tender and Contract**



| Ref | Description of Returnable/s or Documentation that will form Part of Contract and must therefore to be Completed and/or Submitted by the Tenderer | Required for Tender Evaluation | Required for Tender Award | Required After Tender Award | Submitted (Yes/No) |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------------------------|-----------------------------|--------------------|
| | (CVs & Qualifications) | | | | |
| | Documentary Evidence for Criteria 6 – (CVs & Qualifications) | • | | | |
| | Documentary Evidence for Criteria 7 – (Site Specific Method Statement) | • | | | |
| 5. | Specific Goals: | | | | |
| | Business owned by 51% or more-Black Youth. <ul style="list-style-type: none"> Valid BBEE Certificate issued by SANAS accredited verification agency or Affidavit sworn under oath. | • | | | |
| | Businesses located within the boundaries of COJ municipality. <ul style="list-style-type: none"> Proof of municipal account / valid lease agreement, letter from the Ward Council confirming the business address. | • | | | |
| 7. | Pricing Schedule: | | | | |
| | Pricing Schedule completed in accordance with the award strategy | • | | | |
| | Alterations authenticated – Refer to Conditions of Tender | • | | | |
| | Bill of Quantities | • | | | |
| 8. | Terms and Conditions: | | | | |
| | General Conditions of Contract | • | | | |
| | Special Conditions | • | | | |
| 9. | Other Documents | | | | |
| | Form of Acceptance do not complete Form of Acceptance | | | • | |
| | Public Liability Insurance | | | • | |
| | Valid Registration with Compensation for Occupation Injuries and Diseases Act | | | • | |
| | Performance Guarantee – where applicable for industrial related services | | | • | |

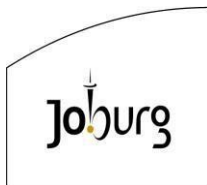
Tenderers will be notified of such missing and incomplete documents and will be offered a period of 3 days to complete or submit those pages i.e., Municipal Bidding Documents (MBD), authority to sign and other documents that require completion and signatures that do not have a bearing on functionality, price and preference points for specific goals.

Tenders that are received contrary to the above requirements will be disqualified after three (3) days period has lapsed.

If locality is a specific goal in MBD6.1 – the requested documentation may not be used to allocate points for specific goals.

Signature: _____ Date: _____

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



**Contract No JW14302R
CONSTRUCTION OF 20 ML REINFORCED CONCRETE CARLSWALD RESERVOIR**

**Volume 1 Tender and Contract
Section T1 Tender and Contract**

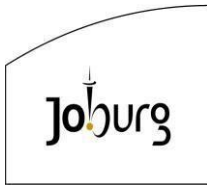


CONTENTS OF TENDER DOCUMENT:

| Volumes | Contents | |
|----------------|--------------------------------------------|--------------------------------------------------------------------------------|
| Number | Number | Heading |
| Volume 1 | Part 1: Tender Procedures | |
| | T1.1 | Tender Data |
| | Part 2: Returnable Documents | |
| | T2.1 | List of Returnable Documents |
| | T2.2 | Returnable Schedules |
| | Part 1: Agreement and Contract Data | |
| | C1.1 | Form of Offer and Acceptance |
| | C1.2 | Contract Data |
| | C1.3 | Forms of Securities |
| | Part 2: Pricing Data | |
| | C2.1 | Pricing Instructions |
| | C2.2 | Bill of Quantities |
| Volume 2 | Part 3: Scope of Work | |
| | C3.1 | Scope of Work |
| | C3.2 | Particular JW Specifications |
| | Part 4: Site Information | |
| | C4 | Site Information |
| Volume 3 | | Occupational Health and Safety Specification and Environmental Management Plan |
| Volume 4 | | Tender Drawings |

Only Volume 1 and Volume 2 must be returned.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Johannesburg Water (SOC) Ltd



CONTRACT NO. JW14302R

**CONSTRUCTION OF 20 ML REINFORCED
CONCRETE CARLSWALD RESERVOIR**

VOLUME 1

TENDERING PROCEDURES

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |

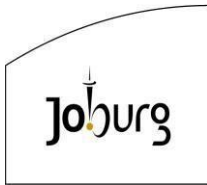
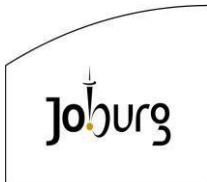


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| T1.1.2 Tender Data..... | 3 |

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|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



T1.1 TENDER DATA

T1.1.1 Conditions of Tender

The conditions of tender are the Standard Conditions of Tender as contained in Annex C of the CIDB Standard for Uniformity in Construction Procurement (August 2019). (See www.cidb.org.za).

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

T1.1.2 Tender Data

The clause numbers in the Tender Data refer to the corresponding clause numbers in the Conditions of Tender.

The additional Conditions of Tender are:

| Clause number | Tender Data |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| C.1.1 | The Employer is, Johannesburg Water (SOC) Limited |
| | <p style="text-align: center;">The tender documents issued by the Employer comprise:</p> <p style="text-align: center;">Volume 1</p> <p style="text-align: center;">Tender Part 1: Tendering Procedures T1.1 Tender Notice and Invitation to Tender T1.2 Tender Data</p> <p style="text-align: center;">Tender Part 2: Returnable Documents T2.1 List of Returnable Documents T2.2 List of Additional Returnable Documents T2.3 Returnable Schedules, including the Enterprise Declaration Affidavit which may be bound in a separate volume.</p> <p style="text-align: center;">Contract Part 1: Agreement and Contract Data C1.1 Form of Offer and Acceptance C1.2 Contract Data C1.3 Forms of Securities</p> <p style="text-align: center;">Contract Part 2: Pricing Data C2.1 Pricing Instructions C2.2 Schedule of Rates</p> <p style="text-align: center;">Volume 2</p> <p style="text-align: center;">Contract Part 3: Scope of Work C3.1 Scope of Work</p> |
| C.1.2 | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Contract: JW14302R

CONSTRUCTION OF 20 ML REINFORCED CONCRETE CARLSWALD RESERVOIR

Volume 1 Tender and Contract
Section T1 Tendering Procedures



| Clause number | Tender Data |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <p>C3.2 Particular JW Specifications</p> <p>Contract Part 4: Site Information</p> <p>C4 Site Information</p> <p>Volume 3</p> <p>Occupational Health, Safety and Environmental Specification and Environmental Management Plan</p> <p>Volume 4</p> <p>Tender Drawings</p> |
| C.1.4 | <p>The Employer's representative is: The Employer's representative is: Contact Person: Sijabuliso Tshuma Telephone: 011 688 1570 E-mail address: sijabuliso.tshuma@jwater.co.za</p> <p>The SCM representative is Contact Person: Nthabiseng More Telephone: 011 688 1512 E-mail address: nthabiseng.more@jwater.co.za</p> |
| C.2.1 | <p>Eligibility criteria and requirements</p> <p>CIDB registration and grading:</p> <p>1) Only tenderers who are registered with the CIDB and were capable of being so prior to the evaluation of submissions, in a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered for an 8CE class of construction work, are eligible to submit tenders. Tenders must have an Active status at the required CIDB grading at time of tender evaluation for the bidder to meet the eligibility criteria and requirement.</p> <p>2) Joint ventures are eligible to submit tenders provided that:</p> <ol style="list-style-type: none"> Every member of the joint venture is registered with the CIDB; and The combined contractor grading designation calculated in accordance with the CIDB Regulations is equal to or higher than a contractor grading designation determined in accordance with the sum tendered for an 8CE class of construction work. <p>Failure to meet to Eligibility criteria and requirements will result in disqualification.</p> |
| C.2.7 | <p>Tenderers should forward their contact details to the contact persons as stated on the Tender Cover Page and Invitation to Tender so that they will be sent any communication pertaining to this tender.</p> |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Contract: JW14302R

CONSTRUCTION OF 20 ML REINFORCED CONCRETE CARLSWALD RESERVOIR

Volume 1 Tender and Contract
Section T1 Tendering Procedures



| Clause number | Tender Data |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| C.2.8 | <p>Replace the contents of the clause with the following:</p> <p>“Request clarification of the tender documents, if necessary, by notifying the Employer’s Officials indicated on the Tender Notice and Invitation to Tender in writing at least seven (7) working days before the closing time stated in the foregoing notice.</p> |
| C.2.9 | <p>Add the following to the clause:</p> <p>“Accept that the submission of a Tender shall be construed as an acknowledgement by the Tenderer that they are satisfied with the insurance cover, the Employer will affect under the contract.”</p> |
| C.2.10.5 | <p>Add the following to the clause:</p> <p>“If no offer is made for an item, a line must be drawn through the space in pen.</p> <p>All prices and details must be legible/readable to ensure the tender will be considered for adjudication.”</p> |
| C.2.11 | <p>The evaluation on price alteration will be conducted as follows:</p> <p>Where the tender award strategy is to evaluate and award per item or category, the following must apply:</p> <ul style="list-style-type: none">• If there is an alteration in the rate but no alteration on the total for the item or category, the bidder will not be disqualified.• If there is an alteration on the total for the item/s without authentication, bidders will only be disqualified for alteration per item or category. <p>Where the tender award strategy is to evaluate and award total bid offer, the following must apply:</p> <ul style="list-style-type: none">• If there is an alteration on the rate, total for the line item, sub-total/ sum brought/carried forward for the section but no alteration on the total bid offer, the bidder will not be disqualified.• If there is an alteration on the total bid offer on “Form of Offer” then the amount in words must be considered or vice-versa.• If there is an unauthenticated alteration on the total bid offer and the amount in words is not authenticated, the bidders will be disqualified for the entire tender. <p>Where the tender pricing schedule or bill of quantities is requesting rates/price from bidder/s without providing a total, the following will apply:</p> <ul style="list-style-type: none">• (i) If there is an unauthenticated alteration on the unit rate/price the bidder must be disqualified. <p>Please note: Corrections may not be made using correction fluid, correction tape or the like.</p> |

| | | | |
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Contract: JW14302R

CONSTRUCTION OF 20 ML REINFORCED CONCRETE CARLSWALD RESERVOIR

Volume 1 Tender and Contract
Section T1 Tendering Procedures



| Clause number | Tender Data |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| C.2.12.1 | Replace Contents Alternative offers will not be permitted. |
| C.2.12.2 | Failure to complete and sign the form of offer in full will result in the elimination of the tender. |
| C.2.13.3 | Each tender offer shall be submitted as an original. Tenderers are also requested to submit a soft copy in a USB (Tenderers who do not submit a soft copy will not be disqualified) |
| C.3.9 | <p>Replace Existing Clause</p> <p>Arithmetic Errors</p> <p>Construction related tenders</p> <p>JW undertakes to check the highest scoring bid for arithmetical errors and correcting them as follows:</p> <p>JW shall check for arithmetic errors using the following sequence:</p> <ul style="list-style-type: none">(i) Check the amount in words against the amount in figures on the <i>Form of Offer</i>,(ii) Check the Form of Offer against the Summary Schedule Total,(iii) Check the Section Sub-Totals per section against the Summary Total for summation errors,(iv) Check the Section Sub-Totals in the Summary Schedule against Section Sub-Totals in the Bill of Quantities.(v) Check the Section Sub-Totals against the Item Totals for summation errors.(vi) Check the Item Totals against the product of the Item Rate and the Quantity Provided. <p>If a bill of quantities or price schedule applies JW will request the bidder to correct the arithmetic errors as follows:</p> <ul style="list-style-type: none">(i) In respect of the Form of Offer, where there is a discrepancy between the amounts in figures and the amount in words, the amount in words shall govern. The Tenderer must be requested to adjust the amount in figures to correspond with the amount in words. <p>JW will notify the Tenderer of all errors or omissions that are identified in the tender offer and either request the Tenderer to confirm the offer as tendered or JW will accept the corrected total of prices. Where the Tenderer elects to confirm the tender offer as tendered, correct the errors as follows:</p> <ul style="list-style-type: none">(i) If bills of quantities or pricing schedules apply and there is an error in the line-item total resulting from the product of the unit rate and the quantity, the line-item total shall govern, and the rate shall be corrected. Where there is an obviously gross misplacement of the decimal point in the unit rate, the line-item total as quoted shall govern, and the unit rate shall be corrected. |

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| Witness: | | Witness: | |



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Volume 1 Tender and Contract
Section T1 Tendering Procedures



| Clause number | Tender Data | | |
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| | <p>(ii) Where there is an error in the total of the prices either as a result of other corrections required by this checking process or in the tenderer's addition of prices, the total of the prices shall govern, and the tenderer will be requested to revise selected item prices (and their rates if bills of quantities apply) to achieve the tendered total of the prices.</p> <p>Clarification session(s) shall be held with Tenderer where there are pricing discrepancies, errors are highlighted and identified corrections are explained.</p> <p>Tenderer is afforded an opportunity to provide clarification, accept or reject identified corrections in writing.</p> <p>(i) In the event that the Tenderer accepts identified corrections, JW will proceed with evaluation.</p> <p>(ii) In the event that the Tenderer rejects the identified correction(s), JW must review the Tenderer's motivation and risks associated with the proposed change.</p> <p>This is not an opportunity for Tenderers to change the bid offer. A bidder that does not agree to the above will be disqualified.</p> <p>Risk related to the Arithmetic Corrections shall be assessed. Where risks are identified, Tenderers shall provide JW with any other material or information that has a bearing on the tender offer, the Tenderer's commercial position (including joint venture agreements), quotations preferencing arrangements or samples of materials considered necessary by JW for the purpose of a full and fair risk assessment.</p> <p>Should the Tenderer not provide the material, or a satisfactory reason as to why it cannot be provided, by the time for submission stated in the JW request or fails to attend any meeting in which it has been formally invited to clarify any issue, the tender offer will be regarded as non-responsive.</p> | | |
| C.2.13.5 | <p>The Employer's address for delivery of tender offers and identification details to be shown on the Tenderer's offer package are:</p> <p>Location of tender box: Ground Floor Entrance</p> <p>Physical address: Johannesburg Water (SOC) Ltd Turbine Hall 65 Ntemi Piliso Street Newtown Johannesburg 2001</p> <p>Identification details: Tender reference number, Title of Tender and the closing date and time of the tender, <i>as well as the Tenderer's name, their Authorised Representative's name, postal address</i></p> | | |
| | | | |
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



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| | <i>and telephonic contact numbers.</i> |
| C.2.13.6 & C.3.5 | A two-envelope procedure will not be followed. |
| C.2.15.1 | The closing time for submission of tender offers is as stated in the Tender Notice and Invitation to Tender. |
| C.2.16 | The tender offer validity period is 120 days. |
| C.2.16.1 | Add the following to the clause: "If the tender validity expires on a Saturday, Sunday or public holiday, the Tender Offer shall remain valid and open for acceptance until the closure of business on the following working day." |
| C.2.19 | The Tenderer must provide access during working hours to his premises for inspections on request. |
| C.2.23 | <p>The Tenderer is required to submit with his tender:</p> <ol style="list-style-type: none">1) Valid SARS Compliance status Pin for Tenders issued by the South African Revenue Services.2) Proof of CSD registration i.e. MA xxxxxxxx number3) A Certificate of Contractor Registration issued by the CIDB.4) Where the tendered amount inclusive of VAT exceeds R 10 million:<ol style="list-style-type: none">i. Audited annual financial statement for 3 years, or for the period since establishment if established during the last 3 years, if required by law to prepare annual financial statements for auditing.ii. If the bidder is not required by law to prepare financial statements, then the bidder is required to submit their unaudited financial statements prepared by an independent accounting professional.5) Proof that the Tenderer and directors of the Tenderer are not in arrears for more than 90 days with municipal rates and taxes and municipal service charges, The latest municipal account is to be attached, or a signed copy of the valid lease agreement if the Tenderer or director of the Tenderer is currently leasing premises and not responsible for paying municipal accounts.<ol style="list-style-type: none">i. Should the municipal statement that was submitted with the tender document before tender closing date and time be in arrears for more than 90 days at time of award, the tenderer will be requested to submit the latest municipal statement which shows that the Tenderer is not in arrears for more than 90 days. If the statement at that time is in arrears for more than 90 days, the Tenderer must submit before the stipulated deadline, the written proof of an approved arrangement with the municipality. |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



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| | <ul style="list-style-type: none"> ii. The proof may be a copy of the agreement or an updated municipal statement which reflects the arrangement. iii. Should this tender be considered for award of the contract, based on proof of submission and should proof of such submission be found to be invalid, erroneous or inaccurate, the tenderer will no longer be considered for the award of the contract. iv. Statement must not be older than 90 days from the closing date of this tender. Attach latest municipal account statement behind this page. v. In cases where the director of the tenderer resides with their spouse, parent, partner or sibling the owner of the property that confirm where the director of the tenderer resides must submit an affidavit stating such and explaining the relationship. This would happen in the case where the submitted municipal statement or lease agreement is not in the name of the director of the tenderer. Point (i) will be applicable. vi. In cases where the business address of the tenderer is also the official residence of the director of the tenderer, the director of the tenderer must submit an affidavit stating such. Proof that the municipal statement is not in arrears for more than 90 days or a valid lease agreement must be submitted. Point (i) will be applicable. <p>6) Particulars of any contracts awarded to the tenderer by an organ of state during the past five years, including particulars of any material non-compliance or dispute concerning the execution of such contract.</p> <p>7) A statement indicating whether any portion of the goods or services are expected to be sourced from outside the Republic, and, if so, what portion and whether any portion of payment from the municipality or municipal entity is expected to be transferred out of the Republic.</p> <p>8) Where a Tenderer satisfies CIDB contractor grading designation requirements through joint venture formation, such Tenderers must submit the Certificates of Contractor Registration in respect of each partner.</p> |
| C.2.24 | <p>Add the following new clause:</p> <p>Canvassing and obtaining of additional information by Tenderers</p> <p>Accept that:</p> <ul style="list-style-type: none"> 1. No Tenderer shall make any attempt either directly or indirectly to canvass any of the Employers officials or the Employer's agent in respect of his tender, after the opening of the tenders but prior to the Employer arriving at a decision thereon. 2. No Tenderer shall make any attempt to obtain particulars of any relevant information, other than that disclosed at the opening of tenders. |
| C.2.25 | <p>Add the following new clause:</p> <p>Prohibitions on awards to persons in service of the state</p> <p>Accept that the Employer is prohibited to award a tender to a person -</p> <ul style="list-style-type: none"> a) Who is in the service of the state; or |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



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| | <p>b) If that person is not a natural person, of which any director, manager, principal shareholder or stakeholder is a person in the service of the state; or</p> <p>c) A person who is an advisor or consultant contracted with the municipality or municipal entity.</p> <p>“In the service of the state” means to be -</p> <p>i) a member of:-</p> <ul style="list-style-type: none"> any municipal council; any provincial legislature; or the National Assembly or the National Council of Provinces; the board of directors of any municipal entity; <p>ii) an official of any municipality or municipal entity;</p> <p>iii) an employee of any national or provincial department;</p> <p>iv) provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No.1 of 1999);</p> <p>v) a member of the accounting authority of any national or provincial public entity; or</p> <p>vi) an employee of Parliament or a provincial legislature.”</p> <p>To give effect to the above, the questionnaire for the declaration of interests in the tender of persons in service of state in Section T2.1 must be completed.</p> |
| C.2.26 | <p>Add the following new clause:</p> <p>Awards to close family members of persons in the service of the state</p> <p>“Accept that the notes to the Employer’s annual financial statements must disclose particulars of any award of more than R 2 000 to a person who is a spouse, child or parent of a person in the service of the state (defined in clause C.2.25), or has been in the service of the state in the previous twelve months, including:</p> <p>a) The name of that person;</p> <p>b) The capacity in which that person is in the service of the state; and</p> <p>c) The amount of the award.</p> <p>To give effect to the above, the questionnaire for the declaration of interests in the tender of persons in service of state in part T2 – Returnable Documents must be completed in full and signed.</p> |
| C.2.27 | <p>Add the following new clause:</p> <p>Tax Compliance</p> <p>In the case of a Joint Venture/Consortium the tax Compliance status Pin must be submitted for each member of the Joint Venture/Consortium.”</p> |
| C.2.28 | <p>Add the following new clause:</p> |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



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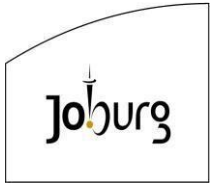
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| Clause number | Tender Data |
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| | <ul style="list-style-type: none">Tenderers will be notified of such missing and incomplete documents and will be offered a period of three (3) days to complete or submit those pages i.e., Municipal Bidding Documents (MBD) and other documents that require completion and signatures that do not have a bearing on functionality, specific goals and price.Tenders that are received contrary to the above requirements will be disqualified after three (3) days period has lapsed.In cases where locality is a specific goal and the Tenderer did not submit the required documentation, the Tenderer upon submitting the municipal statement, lease agreement or letter from ward councilor confirming business address as per above, may not be eligible for points under specific goals if such documentation was not submitted with the tender document. |
| C.3.2 | <p>Replace the contents of the clause with the following:</p> <p>If necessary, issue addenda that may amend or amplify the tender documents to each tenderer during the period from the date that tender documents are available until seven (7) days before the tender closing time stated in the Tender Data. If, as a result a tenderer applies for an extension to the closing time stated in the Tender Data, the Employer may grant such extension and, shall then notify all tenderers who collected tender documents.</p> |
| C.3.4.2 | <p>Tenders will be opened in public soon after closing time and recording of received documents but not later than 11:00 at the tender office located at Turbine Hall, 65 Ntemi Piliso, Newtown, 2001, Ground Floor. Tenderers' names and total prices, where practical will be, read out.</p> |
| C.3.11 | <p>Replace Contents with Returnable Schedule MBD 6.1 for evaluation criteria</p> |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

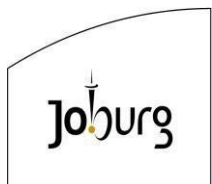


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| Clause number | Tender Data | | | |
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| C.1.1 | <u>Mandatory Requirements</u> | | | |
| | Description | | Complied | |
| | | | Yes | No |
| | 1 | Attended the compulsory briefing meeting | | |
| | 2 | Completed and signed Form of Offer | | |
| 3 | CIBD grading 8CE or higher | | | |
| <p>Tenderers who FAIL to meet the mandatory criteria or requirements of the tender will result in disqualification.</p> | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

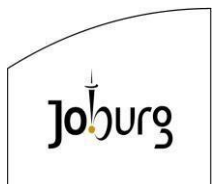


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| Clause number | Tender Data | | | |
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| | <u>Administrative Requirements</u> | | | |
| | Description | | | Complied |
| | Reference | Description | Requirement | Yes No |
| | Certificate of Authority | Certificate of Authority or Board Resolution granting authority to sign. | Completed and signed certificate of authority to sign or signed board resolution | |
| | MBD 1 | Invitation to Bid Form | Complete and submit complete and signed MBD 1 Form. | |
| | CSD | Central Supplier Database Registration | Provide proof of CSD registration. | |
| | MBD 4 | Declaration of Interest | Complete and submit complete and signed MBD 4 Form. | |
| | MBD 5 | Declaration of Procurement Above R10m (All Applicable Taxes Included) | Complete and submit signed MBD 5 Form. | |
| | T2.3 | Acknowledgement of SHE Specification & Annexures | Complete and submit signed T2.3.1 Form. | |
| | T2.3 | Acknowledgement of Project Tender Drawings | Complete and submit signed T2.3.2 Form. | |
| | T2.3 | Acknowledgement of JW Specifications | Complete and submit signed T2.3.3 Form. | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

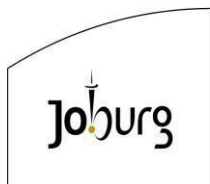


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| | MBD 6.1 | Preference Points Claim in Terms of The Preferential Procurement Regulations 2022 | Complete and submit complete and signed MBD 6.1 Form. | | |
| | MBD 8 | Declaration of Bidder's Past Supply Chain Management Practices | Complete and submit complete and signed MBD 8 Form. | | |
| | MBD 9. | Certificate of Independent Bid Determination | Complete and submit complete and signed MBD 9 Form. | | |
| | Annexure – Proof of Specific Goals | Valid BBBEE Certificate or certified copy thereof or a valid sworn affidavit | Submit applicable documentation with the tender submission | | |
| | Annexure | Municipal statement of account for Director/s (not older than three [03] months from the closing date of tender or a valid lease agreement at time of tender closure). | Submit applicable documentation with the tender submission | | |
| | Annexure | Municipal statement of account for Company (not older than three [03] months from the closing date of tender or a valid lease agreement at time of tender closure). | Submit applicable documentation with the tender submission | | |
| | Annexure | Joint Venture Consortium or equivalent Agreement signed by all parties. | Submit applicable documentation with the tender submission | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

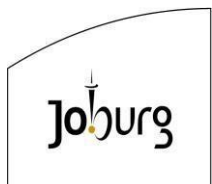


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| Clause number | Tender Data | | | | | | |
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| | <u>Functionality Requirements</u> | | | | | | |
| | CRITERIA NO | CRITERIA | EVIDENCE | SUB-CRITERIA/CLAUSE | | MAX SCORE | SCORE |
| | 1 | Tenderers experience with respect to the construction of Reinforced Concrete Reservoirs with Dome Shaped Roofs of 20ML capacity or more. | Supporting documents required include Reference Letters as per T2.1.7 (or on client letterhead with all required information) and Final Completion / Approval Certificates. Note: <i>This reference letter must be completed by the referee/previous client of the tenderer and included in the tender submission. Alternatively, the Clients letterhead may be used provided it complies with the functional requirements. A separate form must be completed for each reference as a requirement in the evaluation criteria. The information provided will be verified and if found to be false or misrepresented, punitive measures will be instituted against the respective party including blacklisting in participating in any future government tenders.</i> | NUMBER OF REINFORCED CONCRETE DOME SHAPED RESERVOIRS OF 20ML OR MORE COMPLETED | Tenderer has not completed any project. | 20 | 0 |
| | | | | | Tenderer has completed 1-2 projects. | | 14 |
| | | | | | Tenderer has completed more than 2 projects. | | 20 |
| | | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

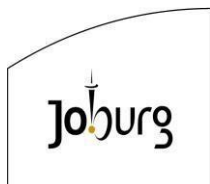


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| Clause number | Tender Data | | | | | | |
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| | CRITERIA NO | CRITERIA | EVIDENCE | SUB-CRITERIA/CLAUSE | | MAX SCORE | SCORE |
| | 2 | Tenderers experience with respect to the construction of Reinforced Concrete Reservoirs of 20ML capacity or more. | <p>Supporting Documents Required include Reference Letters as per T2.1.7 (Or on Client Letterhead with all required Information) and Final Completion / Approval Certificates. (Qualifying projects submitted in (1) above will be counted in this section).</p> <p><i>Note: This reference letter must be completed by the referee/previous client of the tenderer and included in the tender submission. Alternatively, the Clients letterhead may be used provided it complies with the functional requirements. A separate form must be completed for each reference as a requirement in the evaluation criteria. The information provided will be verified and if found to be false or misrepresented, punitive measures will be instituted against the respective party including blacklisting in participating in any future government tenders.</i></p> | NUMBER OF REINFORCED CONCRETE RESERVOIRS OF 20ML OR MORE COMPLETED | 0 Completed Projects | 20 | 0 |
| | | | | | 1 - 2 Completed Projects | | 14 |
| | | | | | More than Two (2) Completed Projects | | 20 |
| | | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

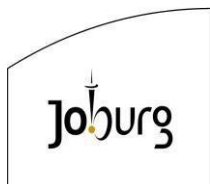


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| Clause number | Tender Data | | | | | | |
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| | CRITERIA NO | CRITERIA | EVIDENCE | SUB-CRITERIA/CLAUSE | | MAX SCORE | SCORE |
| | 3 | Tenderers experience with respect to the construction of Steel Water Pipe Projects of diameter 450mm or more, with a pipe length of 150m or more and inclusive of cathodic protection. | Supporting documents required include reference letters as per T2.1.7 (or on client letterhead with all required information) and Final Completion / Approval certificates. <i>Note: This reference letter must be completed by the referee/previous client of the tenderer and included in the tender submission. Alternatively, the Clients letterhead may be used provided it complies with the functional requirements. A separate form must be completed for each reference as a requirement in the evaluation criteria. The information provided will be verified and if found to be false or misrepresented, punitive measures will be instituted against the respective party including blacklisting in participating in any future government tenders.</i> | NUMBER OF COMPLETED STEEL WATER PIPE PROJECTS OF DIAMETER 450MM OR MORE, WITH A PIPE LENGTH OF 150M OR MORE AND INCLUSIVE OF CATHODIC PROTECTION | 0 - 1 Completed Projects | 10 | 0 |
| | | | | | 2 - 3 Completed Projects | | 7 |
| | | | | | More than 3 Completed Projects | | 10 |
| | | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

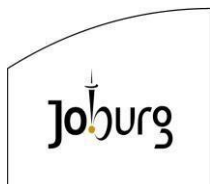


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| Clause number | Tender Data | | | | | | |
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| | NO # | CRITERIA | EVIDENCE | SUB-CRITERIA/CLAUSE | | MAX SCORE | SCORE |
| | 4 | Post Qualification Experience of Contract Manager Only Contract Managers with qualifications of Bachelors’ Degree (Civil Engineering /Quantity Surveying / Construction Management) equivalent or higher. and Registration (Pr. Eng. / Pr. Tech Eng) or PrCPM / PrCM/PrQS will obtain a score for experience of a Contract Manager. | Tender must Provide CV of Contract Manager in the format given on T2.1.9 Note: <i>Tenderers may provide their own CVs but information provided should contain all information in T2.1.9</i> Note: <i>Certified Copies of qualifications and a certified valid registration certificate to accompany the CV. The information provided will be verified and if found to be false or misrepresented, punitive measures will be instituted against the respective party including blacklisting in participating in any future government tenders.</i> | NUMBER OF PROJECTS INVOLVING REINFORCED CONCRETE RESERVOIR CONSTRUCTION AND BULK STEEL WATER PIPE PROJECTS COMPLETED AS CONTRACT MANAGER | 0 - 2 Completed Projects | 10 | 0 |
| | | | | | 3 - 4 Completed Projects | | 7 |
| | | | | | More than 4 Completed Projects | | 10 |
| | | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

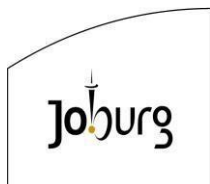


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| Clause number | Tender Data | | | | | | |
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| | NO # | CRITERIA | EVIDENCE | SUB-CRITERIA/CLAUSE | | MAX SCORE | SCORE |
| | 5 | <p>Post Qualification Experience of Construction Manager</p> <p>Only Construction Managers/Site Agents with qualifications of National Diploma (Civil/ Structural) Engineering or more and</p> <p>Registered as a Candidate Professional in the Built Environment or higher will be considered</p> | <p>Tender must Provide CV of Site Manager in the format given on T2.1.9</p> <p>Note: <i>Tenderers may provide their own CVs but the information provided should contain all information in T2.1.9</i></p> <p>Note: <i>Certified Copies of qualifications and a certified valid registration certificate to accompany the CV. The information provided will be verified and if found to be false or misrepresented, punitive measures will be instituted against the respective party including blacklisting in participating in any future government tenders</i></p> | <p>NUMBER OF PROJECTS INVOLVING REINFORCED CONCRETE RESERVOIRS OF 10ML OR MORE COMPLETED AS CONSTRUCTION MANAGER/SITE AGENT</p> | 0 Completed Projects | 20 | 0 |
| | | | | | 1 - 2 Completed Projects | | 10 |
| | | | | | 3 - 4 Completed Projects | | 14 |
| | | | | | More than 4 Completed Projects | | 20 |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

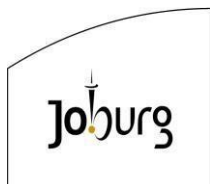


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| Clause number | Tender Data | | | | | | |
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| | NO # | CRITERIA | EVIDENCE | SUB-CRITERIA/CLAUSE | | MAX SCORE | SCORE |
| | 6 | Post Qualification Experience of Safety Officer Only Safety Officers with qualifications of National Diploma (Safety Management)/ (Environmental Health/Science/ Management), SAMTRAC/ SHEOMTRAC/ SHEMTRAC/ MESHTRAC /NEBOSH/Safety Officers Course (NQF5) or more, and Registered with SACPCMP in the “Construction Health and Safety” Sector will be considered | Tender must Provide CV of Safety Officer in the format given on T2.1.9 All Civil Related projects will be considered <i>Note: Certified Copies of qualifications and a certified valid registration certificate to accompany the CV. The information provided will be verified and if found to be false or misrepresented, punitive measures will be instituted against the respective party including blacklisting in participating in any future government tenders</i> | | 0 Completed Projects | 10 | 0 |
| | | | | | 1 - 2 Completed Projects | | 7 |
| | | | | | More than 2 Completed Projects | | 10 |
| | | | | | | | |

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| Witness: | | Witness: | |

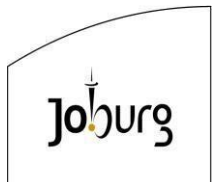


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| Clause number | Tender Data | | | | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-----------|-------|
| | CRITERIA NO # | CRITERIA | EVIDENCE | SUB-CRITERIA/CLAUSE | | MAX SCORE | SCORE |
| | 7 | Site Specific Method Statement (Reference to be made to PS.1 under Scope of Works) | Tenderer must provide a Site Specific Method Statement as per template given in Section T2 Returnable Documents (T2.1.10) that addresses the following key sections: 1. Approach Statement and Introduction (Maximum 1 page) which illustrates an understanding of the scope. 2. Quality Control Plan (Maximum 4 pages) including all necessary standards to be used, resources available and procedures to ensure quality 3. Safety Control (Maximum 3 pages) with respect to working at heights and confined spaces. 4. Project Programme/schedule (On MS Projects or any other Gantt chart as Annexure) outlining critical path, aligned to the scope of works, aligned to the contractual timelines, and including all contractual dates. | All four of the required sections are covered by the Method Statement in line with the guidelines and are specific to Reinforced Concrete Carlswald Reservoir and Associated Pipelines | Method Statement not submitted | 10 | 0 |
| 1 - 2 of the required sections are covered by the Method Statement in line with the guidelines and are specific to Reinforced Concrete Carlswald Reservoir and Associated Pipelines | | | | | 5 | | |
| At least three of the required sections are covered by the Method Statement in line with the guidelines and are specific to Reinforced Concrete Carlswald Reservoir and Associated Pipelines | | | | | 7 | | |

| | | | |
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

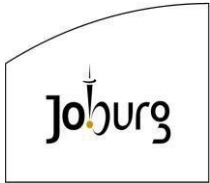


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Volume 1 Tender and Contract
Section T1 Tendering Procedures



| Clause number | Tender Data | | | | | | |
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| | | | <div>The compilation of sections 1 to 4 of the Site Specific Method Statement must be inclusive of the following components</div> <div><div>- construction of 20ML Reinforced Concrete Reservoir.</div><div>- construction of chambers in the reservoir complex.</div><div>- installation of all associated pipework, including inlet, outlet and bypass,</div><div>- solar system and telemetry</div></div> | | <div>All four of the required sections are covered by the Method Statement in line with the guidelines and are specific to</div> <div><div>Reinforced Concrete</div><div>Carlswald Reservoir</div><div>and Associated Pipelines</div></div> | | 10 |
| | | | | MINIMUM QUALIFYING SCORE | | 70 | |
| | | | | TOTAL | | 100 | |
| <div><div>NOTE 1:</div> Where applicable, foreign qualifications MUST be accompanied by a SAQA verification certificate. Failure to submit SAQA verification certificate will lead to that qualification not being considered for allocation of points for that criterion.</div> <div><div>NOTE 2:</div> When an uncertified copy of professional registration is submitted and the requirement was to submit a certified copy, JW will verify the validity of the registration on the issuing bodies or institution’s website. If the verification is confirmed on the website, the bidder meets the criteria. This will only be applicable for the recommended bidders.</div> <div><div>NOTE 3:</div> The time of registration of Contract Manager, Site Manager and Safety Officer will not impact post qualification number of projects.</div> <div><div>NOTE 4:</div> The information provided by bidders will be verified and if found to be false, punitive measures will be affected.</div> <div><div>ECSA:</div> Engineering Council of South Africa</div> <div><div>SACPCMP:</div> South African Council for the Project and Construction Management Professions</div> <div><div>SAMTRAC:</div> Safety Management Training Course</div> <div><div>NEBOSH:</div> National Examination Board in Occupational Safety and Health</div> <div><div>SHEOMTRAC:</div> Safety Health Environmental Occupational Management Training Course</div> | | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

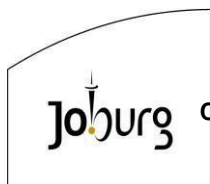


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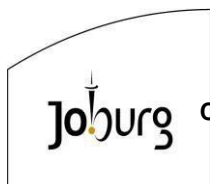
| Clause number | Tender Data |
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| | SHEMTRAC: Safety Health Environmental Management Training Course MESHTRAC: Management Environmental Safety Health Training Course |

| | | | |
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



| Clause Number | Tender Data | | | | | | | | | | | | |
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| | <p>4. STAGE FOR PRICE AND PREFERENCE POINTS EVALUATION:</p> <p>4.1. Pricing</p> <p>The following aspects will be considered in the financial offer:</p> <ol style="list-style-type: none">Costing for all items as described in the Pricing Schedule and applicable Strategies Review of financial offer and discrepancies between total and calculations.Identify any parameters that may have a bearing on the financial offer, e.g., contract period, price escalations or adjustments required and life cycle costs.The 90/10 preference point system will be applicable in this tender. Whereby 90 points will be allocated to price and 10 points will be allocated to the set specific goals per category as outlined on the pricing schedule. The bidder scoring the highest in terms of price and specific goal will be recommended for that specific category. <p>4.2. Award and Allocation Strategy:</p> <table><tr><td>AWARD STRATEGY</td><td>The tender will be awarded to the highest scoring bidder in terms of price and Specific Goals</td></tr><tr><td>ALLOCATION STRATEGY</td><td>The tender will be allocated to the highest scoring bidder in terms of price and Specific Goals</td></tr></table> <p>4.3. The maximum preference points for this bid are allocated as follows:</p> <table><tr><th></th><th>POINTS</th></tr><tr><td>PRICE</td><td>90</td></tr><tr><td>SPECIFIC GOALS</td><td>10</td></tr><tr><td>Total points for Price and SPECIFIC GOALS</td><td>100</td></tr></table> | AWARD STRATEGY | The tender will be awarded to the highest scoring bidder in terms of price and Specific Goals | ALLOCATION STRATEGY | The tender will be allocated to the highest scoring bidder in terms of price and Specific Goals | | POINTS | PRICE | 90 | SPECIFIC GOALS | 10 | Total points for Price and SPECIFIC GOALS | 100 |
| AWARD STRATEGY | The tender will be awarded to the highest scoring bidder in terms of price and Specific Goals | | | | | | | | | | | | |
| ALLOCATION STRATEGY | The tender will be allocated to the highest scoring bidder in terms of price and Specific Goals | | | | | | | | | | | | |
| | POINTS | | | | | | | | | | | | |
| PRICE | 90 | | | | | | | | | | | | |
| SPECIFIC GOALS | 10 | | | | | | | | | | | | |
| Total points for Price and SPECIFIC GOALS | 100 | | | | | | | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Contract: JW14302R

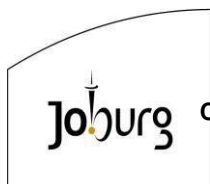
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| Clause Number | Tender Data |
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| | <p>SPECIFIC GOALS</p> <p>In terms of Regulation 4(2); 5(2); 6(2) and 7(2) of the Preferential Procurement Regulations 2022, preference points must be awarded for specific goals stated in the tender. For the purposes of this tender the tenderer will be allocated points based on the goals stated in table 1 below as may be supported by proof/ documentation stated in the conditions of this tender.</p> <p>Specific goals may include contracting with persons, or categories of persons, historically disadvantaged by unfair discrimination on the basis of race, gender or disability.</p> <p>Race:</p> <ol style="list-style-type: none"> I. Ownership by black people II. Black Designated Group: <ul style="list-style-type: none"> Ownership by black people that are unemployed Ownership by black people who are youth Ownership by black people living in rural or underdeveloped areas or townships Ownership by black people with disabilities Ownership by black people who are military veterans Cooperative owned by black people <p>Gender:</p> <ol style="list-style-type: none"> III. Persons, or categories of persons, historically disadvantaged by unfair discrimination on the basis of gender are women. Ownership by persons that are classified as female or women according to the Department of Home Affairs of South African. <p>Disability:</p> <ol style="list-style-type: none"> IV. Persons, or categories of persons, historically disadvantaged by unfair discrimination on the basis of disability are disabled persons. <p>Reconstruction and Development Programme (RDP) objectives as published in Government Gazette No. 16085 dated 23 November 1994 i.e.,</p> <p>Local Manufacture:</p> <ol style="list-style-type: none"> I. Promotion of procurement of locally manufactured goods in South Africa to promote job creation in light of the high unemployment rate in South Africa which has a greater impact previously disadvantaged individuals and black youth. |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Contract: JW14302R

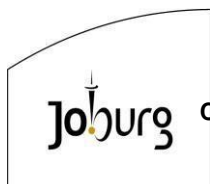
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| Clause Number | Tender Data |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <p>Locality:</p> <p>I. Promotion of procurement from local business in the geographical areas that JW operate in. This is also directed at creating employment in the areas JW operate in. The BSC may allocate points as follows:</p> <ul style="list-style-type: none"> Promotion of enterprises located in the Gauteng Province Promotion of enterprises located in a specific region within COJ (the 7 regions. A to G) Promotion of enterprises located in the City of Johannesburg municipality Promotion of enterprises located rural or underdeveloped areas or townships. <p>QSE</p> <p>I. Promotion of procurement from QSE's that are black owned.</p> <p>EME:</p> <p>I. Promotion of procurement from EME's that are black own.</p> <p>SUB-CONTRACTING:</p> <p>Promotion of a company previously owned by a Historically Disadvantaged Individuals (HDI).</p> <p>Consider sub-contract only in cases where there are no company which can meet any of the specific goals. Check if the portion of the work cannot be subcontracted in terms of specific goals.</p> <p>One goal may be chosen, or a combination of goals may be decided upon including a sub-goal i.e., owned by black people that are disabled etc.,</p> <p>JOINT VENTURE, CONSORTIUM OR EQUIVALENT:</p> <p>For Joint Venture Agreements, Consortiums or equivalent, the agreement must show percentages of ownership and work to be completed by each party. This agreement must form part of the tender submission.</p> <p>To determine the Joint Venture, Consortium or equivalent score for specific goals, JW will look at the consolidated BBBEE certificate to determine the points for specific goals that will be awarded to the tenderer. If a consolidated BBBEE certificate is not submitted, the parties to the joint venture, consortium or equivalent must submit their individual BBBEE certificates issued by a SANAS accredited verification agency or the documents listed below on 4.6 and the joint venture, consortium or equivalent agreement in order for JW to determine the proportional points for specific goals.</p> <p>Documentation to be provided:</p> <ul style="list-style-type: none"> JV, Consortium, or equivalent agreement Consolidated BBBEE certificate issued by an SANAS accredited verification agency. Certificate must be valid |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



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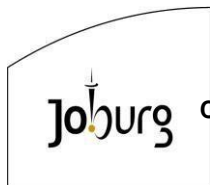
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Volume 1 Tender and Contract
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| Clause Number | Tender Data | |
|---------------------------------------------------------------------------------------|------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Table 1: | |
| | | |
| | Business located within the boundaries of COJ Municipality | 6 |
| | Business owned by 51% or more- Black Youth | 4 |
| | Total | 10 |
| 4.4. The following verification documents must be submitted with the tender document: | | |
| | SPECIFIC GOALS – ANY ONE OR A COMBINATION OF ANY | MEANS OF VERIFICATION THAT MAY BE SELECTED OR A COMBINATION THEREOF |
| | Business located within the boundaries of COJ Municipality | • Proof of municipal account / valid lease agreement, letter from the Ward Council confirming the business address. |
| | Business owned by 51% or more- Black Youth | Valid BBBEE Certificate issued by SANAS accredited verification agency or DTI/CIPC BBBEE Certificate for Exempted Micro Enterprises or Affidavit sworn under oath, OR • CIPC registration document showing percentage of ownership and share certificate where applicable |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Contract: JW14302R

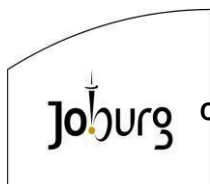
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| | <p>4.5. The following are the requirements for the Sworn Affidavit in terms of the BBBEE Sector Codes of Good Practice:</p> | | |
| | Affidavit Prescribed Formats | Category | Financial Threshold |
| | Generic Enterprises | | |
| | | BO QSE | Between R10m and R50m |
| | | BO EME | Less than R10m |
| | Sector Specific Enterprises | | |
| | | BO QSE | Between R10m and R50m |
| | | BO EME | Less than R10m |
| | Construction Sector Code | | |
| | | EME Contractor | Less than R3m |
| | | BO EME BEP | Less than R1.8m |
| | Financial Sector Code | | |
| | | BO QSE | Between R10m and R50m |
| | | BO EME | Less than R10m |
| | Information Communication Technology Sector Code (ICT) | | |
| | | BO QSE | Between R10m and R50m |
| | | BO EME | Less than R10m |
| | Marketing, Advertising & Communication Sector Code (MAC) | | |
| | > Public Relations | BO QSE | Between R5m and R10m |
| | > Marketing, Advertising & Communications | BO EME | Less than R5m |
| | Property Sector Code | | |
| | > Service-based | BO QSE | Between R5m and R10m |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Contract: JW14302R

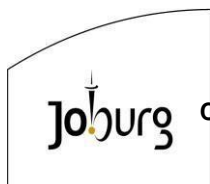
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| | | EME | Less than R5m |
| | > Agency-based | BO QSE | Between R2.5m and R35m |
| | > Asset-based | EME | Less than R2.5m |
| | | BO QSE | Between R80m and R400m |
| | Tourism Sector Code | | |
| | | BO QSE | Between R5m and R45m |
| | | BO EME | Less than R5m |
| | Specialised Enterprises | | |
| | | BO QSE | Between R10m and R50m |
| | | BO EME | Less than R10m |
| <p>4.6. Requirements for a valid BBBEE Certificate</p> <p>a) Copy of a certified valid BBBEE certificate (Only Valid BBBEE certificate must be accredited by SANAS) or valid Sworn Affidavit issued by the DTIC or the CIPC or in a similar format complying with commissioner of oath Act.</p> <p>b) Bidders who do NOT qualify as EME's and QSE's as outlined in 5.5, must submit B-BBEE verification certificates that are issued by an Agency accredited by SANAS.</p> <p>c) Bidders who fail to submit a certified copy of their valid B-BBEE certificate or valid sworn affidavit or valid DTI / CIPC B-BBEE certificate will score zero points for specific goals.</p> <p>Valid Sworn Affidavits or certified copies of B-BBEE Certificate must comply with the requirements outlined in the Justices of the Peace and Commissioners of Oaths Act, no 16 of 1963 and its Regulations promulgated in Government Notice GNR 1258 of 21 July 1972 Justices of the Peace and Commissioners of Oaths Act, No. 16 of 1963. i.e.</p> <p>(i) The deponent shall sign the declaration in the presence of the commissioner of oaths (COA).</p> <p>(ii) Below the deponent's signature the COA shall certify that the deponent has acknowledged that he knows and understands the contents of the declaration and the COA shall state the manner, place, and date of taking the declaration.</p> <p>(iii) The COA shall sign the declaration and print his full name and business address below his signature; and state his designation and the area for which he holds his appointment, or the office held by him if he holds his appointment ex officio.</p> <p>(iv) Copy of certified copies will not be accepted.</p> | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Contract: JW14302R

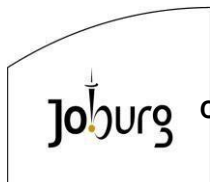
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| Clause Number | Tender Data |
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| | <p>N.B. A tenderer failing to submit proof of specific goals claimed as per 5.2 to 5.6 will not be disqualified but will be allocated zero points for specific goals and will be allocated points for pricing.</p> <p>ADJUDICATION USING A POINT SYSTEM</p> <ul style="list-style-type: none"> (a) The bidder obtaining the highest number of total points will be awarded the contract. (b) Preference points shall be calculated after prices have been brought to a comparative basis taking into account all factors of non-firm prices and all unconditional discounts;. (c) Points scored must be rounded off to the nearest 2 decimal places. (d) In the event that two or more bids have scored equal total points, the successful bid must be the one scoring the highest number of points for specific goals. (e) However, when functionality is part of the evaluation process and two or more bids have scored equal points including equal preference points for specific goals, the successful bid must be the one scoring the highest score for functionality. (f) Should two or more bids be equal in all respects, the award shall be decided by the drawing of lots. <p>POINTS AWARDED FOR PRICE</p> <p>THE 90/10 PREFERENCE POINT SYSTEMS</p> <p>A maximum of 90 points is allocated for price on the following basis:</p> <p>90/10</p> $P_s = 90 \left(1 - \frac{P_t - P_{\min}}{P_{\min}} \right)$ <p>Where</p> <p>P_s = Points scored for comparative price of bid under consideration</p> <p>P_t = Comparative price of bid under consideration</p> <p>P_{min} = Comparative price of lowest acceptable bid</p> |
| | <p>Add to the existing clause:</p> <p>Tender offers will only be accepted if:</p> |

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Contract: JW14302R

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| | <ul style="list-style-type: none"> a) the tenderer submits a valid SARS tax Compliance status Pin for tenders issued by the South African Revenue Services or has made arrangements to meet outstanding tax obligations; b) Proof of CSD registration ie MA xxxxx number; c) the tenderer submits a letter of intent from an approved insurer undertaking to provide the Performance Guarantee to the format included in this procurement document d) the tenderer is registered with the Construction Industry Development Board in an appropriate contractor grading designation; e) the tenderer or any of its directors/shareholders is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004 as a person prohibited from doing business with the public sector; f) the tenderer has not: <ul style="list-style-type: none"> i) abused the Employer's Supply Chain Management System; or ii) failed to perform on any previous contract and has been given a written notice to this effect; g) the tenderer has completed the Compulsory Enterprise Questionnaire and there are no conflicts of interest which may impact on the tenderer's ability to perform the contract in the best interests of the Employer or potentially compromise the tender process and persons in the employ of the state are permitted to submit tenders or participate in the contract; h) the tenderer is registered and in good standing with the compensation fund or with a licensed compensation insurer; i) the Employer is reasonably satisfied that the tenderer has in terms of the Construction Regulations, 2014, issued in terms of the Occupational Health and Safety Act, 1993, the necessary competencies and resources to carry out the work safely; and j) the tenderer: <ul style="list-style-type: none"> i) has sufficiently substantiated his experience in this type work; ii) has the required and experienced key personnel; and iii) Owns the primary equipment to effectively and efficiently execute the work. |
| C.3.17 | The number of paper copies of the signed contract to be provided by the Employer is one. |
| | There are no additional conditions of tender. |

--- END OF PART ---

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |

Johannesburg Water (SOC) Ltd



CONTRACT JW14302R

**CONSTRUCTION OF 20ML REINFORCED CONCRETE CARLSWALD
 RESERVOIR**

VOLUME 1

PART 1: AGREEMENT AND CONTRACT DATA

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |

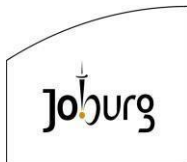
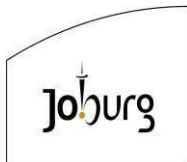


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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



C1.1 FORM OF OFFER (ACCEPTANCE & AGREEMENT)

C1.1.1 Form of Offer

The Contractor is to complete and sign the Form of Offer.

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

JW 14302R: Construction of 20ML Carlswald Reservoir.

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

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

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

Rand (in words); _____ R _____ (in figures),

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

Signature(s)

Name(s)

Capacity

For the Contractor

(Name and address of
organisation)

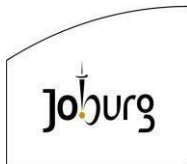
**Name and signature
of witness**

(Name)

(Signature)

Date

| | | | |
|------------------|--|--------------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



C1.1.2 Form of Acceptance

The Employer is to complete and sign the form of acceptance

By signing this part of the Form of Offer and Acceptance, the Employer identified below accepts the Contractor's Offer. In consideration thereof, the Employer shall pay the Contractor the amount due in accordance with the Conditions of Contract identified in the Contract Data. Acceptance of the Contractor's Offer shall form an agreement between the Employer and the Contractor 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 Volume 1:

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

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

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

The Contractor shall within twenty-eight **(28) days** 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 Contact Data) to arrange the delivery of any bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the Conditions of Contract identified in the Contract Data at, or just after, the date of this Agreement comes into effect. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this Agreement.

Notwithstanding anything contained herein, this Agreement comes into effect on the date when the Contractor receives one fully completed copy of this document, including the Schedule of Deviations (if any). Unless the Contractor (now the Contractor) within five days after 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 binding contract between the parties.

Name(s)

Capacity

For the Employer

Johannesburg Water SOC (Ltd), Turbine Hall, 65 Ntemi Piliso Street, Newtown.

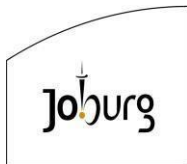
(Name and address of organisation)

Name and signature of witness

(Name)

(Signature)

| | | | |
|------------------|--|--------------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Date _____

C1.1.3 Schedule of Deviations

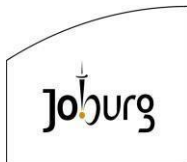
Notes:

1. The extent of deviations from the tender documents issued by the employer prior to the tender closing date is limited to those permitted in terms of the Conditions of Tender;
2. A Contractor'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; and
4. Any change or addition to the tender documents arising from the above arrangements and recorded here shall also be incorporated into the final draft of the Contract.

| | | |
|---|----------------|--|
| 1 | Subject | |
| | Details | |
| 2 | Subject | |
| | Details | |
| 3 | Subject | |
| | Details | |
| 4 | Subject | |
| | Details | |
| 5 | Subject | |
| | Details | |
| 6 | Subject | |
| | Details | |
| 7 | Subject | |
| | Details | |
| 8 | Subject | |
| | Details | |

By the duly authorised representatives signing this Schedule of Deviations, the Employer and the Contractor agree to and accept the foregoing Schedule of deviations as the only deviations from and amendments to the documents listed in the Tender Data and addenda thereto as listed in the Tender

| | | | |
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Contract: JW14302R
CONSTRUCTION OF 20 ML REINFORCED CONCRETE CARLSWALD RESERVOIR
Volume 1 Tender and Contract
Section C1 Agreement and Contract Data



Schedules, as well as any confirmation, clarification or change to the terms of the offer agreed by the Contractor and the Employer during the 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 Contractor of a completed and signed copy of this Agreement shall have any meaning or effect in the contract between the parties arising from this Agreement.

For the Contractor:

Signature(s)

Name(s)

Capacity

For the Contractor

(Name and address of
organisation)

**Name and signature
of witness**

(Name)

(Signature)

Date

For the Employer:

Name(s)

Capacity

For the Employer

**Johannesburg Water SOC (Ltd), Turbine Hall, 65 Ntemi Piliso Street,
Newtown.**

(Name and address of
organisation)

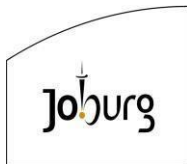
**Name and signature
of witness**

(Name)

(Signature)

Date

| | | | |
|------------------|--|--------------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



C1.2 CONTRACT DATA

C1.2.1 Part 1: Data Provided by the Employer

CONDITIONS OF CONTRACT

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

Copies of these conditions of contract may be obtained from the South African Institution of Civil Engineering (Telephone number: 011-805 5947)

C1.2.1.1 Contract Specific Data

The following contract specific data are applicable to this Contract:

| GCC Clause | Information | | | | | | | | | | | | | | | |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|--------|-------------------|--------------|----------|-------------------|-----------------------|----------|-----------------------------|------------------------|--------------|-----------------------------------|---------|------|--|
| 1.1.1.13 | The Defects Liability Period is 52 weeks from the date of issue of the Certificate of Completion. | | | | | | | | | | | | | | | |
| 1.1.1.14 | The time for achieving Practical Completion is 18 months (including non-working days and special non-working days). | | | | | | | | | | | | | | | |
| 1. 1.1.15 | The name of the Employer is Mr William Chitsa of Johannesburg Water (SOC) Limited. | | | | | | | | | | | | | | | |
| 1.1.1.16 | The name of the Employer’s Agent is Zitholele Consulting represented by Jan Swart, who is Registered as a PrEng with the Engineering Council of South Africa. | | | | | | | | | | | | | | | |
| 1.1.1.26 | The Pricing Strategy is a Bill of Quantities. | | | | | | | | | | | | | | | |
| 1.2.1.2 | <div>The address of the Employer is:</div> <table><tr><td>Physical</td><td>Postal</td><td>Tel: 011 688 1603</td></tr><tr><td>Turbine Hall</td><td>P.O. Box</td><td>Fax: 011 688 1521</td></tr><tr><td></td><td>61542</td><td></td></tr><tr><td>65 Ntemi Piliso Street</td><td>Marshalltown</td><td>Email:william.chitsa@jwater.co.za</td></tr><tr><td>Newtown</td><td>2107</td><td></td></tr></table> | Physical | Postal | Tel: 011 688 1603 | Turbine Hall | P.O. Box | Fax: 011 688 1521 | | 61542 | | 65 Ntemi Piliso Street | Marshalltown | Email:william.chitsa@jwater.co.za | Newtown | 2107 | |
| Physical | Postal | Tel: 011 688 1603 | | | | | | | | | | | | | | |
| Turbine Hall | P.O. Box | Fax: 011 688 1521 | | | | | | | | | | | | | | |
| | 61542 | | | | | | | | | | | | | | | |
| 65 Ntemi Piliso Street | Marshalltown | Email:william.chitsa@jwater.co.za | | | | | | | | | | | | | | |
| Newtown | 2107 | | | | | | | | | | | | | | | |
| 1.2.1.2 | <div>The address of the Employer’s Agent is:</div> <table><tr><td>Building 1, Maxwell</td><td>Postal</td><td>Tel: 011 207 2060</td></tr><tr><td>Office</td><td></td><td></td></tr><tr><td>Park, Magwa Crescent,</td><td>P.O. Box</td><td>Email: jans@zitholele.co.za</td></tr><tr><td></td><td>6002</td><td></td></tr></table> | Building 1, Maxwell | Postal | Tel: 011 207 2060 | Office | | | Park, Magwa Crescent, | P.O. Box | Email: jans@zitholele.co.za | | 6002 | | | | |
| Building 1, Maxwell | Postal | Tel: 011 207 2060 | | | | | | | | | | | | | | |
| Office | | | | | | | | | | | | | | | | |
| Park, Magwa Crescent, | P.O. Box | Email: jans@zitholele.co.za | | | | | | | | | | | | | | |
| | 6002 | | | | | | | | | | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| GCC Clause | Information |
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| | <div>Waterfall City Halfway</div> <div>Midrand 1685 House, 1685</div> |
| 3.2.3 | <p>Specific Approval – The Employer’s Agent is required to obtain the Employer’s approval for the following:</p> <ul style="list-style-type: none"> • Approval of Variation Orders • Approval to exceed the Contract Sum • Approval of Subcontracting Plan |
| 4.4.2 | <p>Add the following after this clause:</p> <p>Apart from subcontractors identified by the Contractor for the execution of certain sections of the Works, subcontractors shall also include SMME’s (Small Medium and Micro Enterprises), who are identified from the Local Community for the execution of certain sections of the Works identified by the Contractor.</p> <p>The appointment of subcontractors and the allocation of work to subcontractors shall, in addition to the provisions of the General Conditions of Contract, comply with, but not be limited to, the provisions of C1.2.1.2.14 (see below).</p> <p>A minimum value of 30% (thirty percent) of the Contract Price shall be subcontracted to SMME’s.</p> |
| 4.10.1 | <p>The Contractor shall employ labour from Local Communities (otherwise known as Local Labour), in accordance with the Tender Data, Scope of Work, Site Information, and Specifications. All Local Labour shall be recruited through the Community Liaison Officer (CLO) and/or Labour Desk Officer (LDO). The Contractor remains fully responsible for all Local Labour that are employed for the execution of the Works, as if they were the Contractor’s own labour.</p> |
| 4.11.1 | <p>Add the following to this clause:</p> <p>Competent Employees shall include, amongst others, the following Key Personnel:</p> <ul style="list-style-type: none"> • Contracts Manager • Construction Manager / Site Agent • Safety Officer |

| | | | |
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| GCC Clause | Information |
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| | The minimum requirements in terms of qualifications and experience of these Key Personnel are listed in C1.2.1.2.15 (see below). |
| 5.3.1 | <p>The documentation required before commencement with Works execution are:</p> <ul style="list-style-type: none"> • Approved Health and Safety File (Clause 4.3) • Approval of the Environmental File (Clause 4.3) • Initial programme & cashflow projections (Clause 5.6) • Guarantee from Bank or Insurance Company (Clause 6.2) • Insurance of the Works, Plant, etc. (Clause 8.6), including but not limited to: <ul style="list-style-type: none"> ○ SASRIA Policy ○ Liability Insurance ○ Insurance of Construction Machinery and Plant ○ Insurance of Motor Vehicle Liability, etc. • Compliance Certificate in respect of COID • Signed Notification to the Department of Labour • Construction Permit (where applicable) • Organogram of resources |
| 5.3.2 | The time to submit the documentation required before Commencement of the Works is 28 days. |
| 5.3.3 | <p>Time to instruct commencement of the Works</p> <p>Delete Clause 5.3.3 and replace with the following:</p> <p>The Contractor shall commence with carrying out the Works upon written instruction from the Employer's Agent to commence with the Works.</p> |
| 5.8. | Working days shall be Monday to Friday, between 07h00 to 17h00. |
| 5.8.1 | <p>The non-working days are Saturdays and Sundays.</p> <p>The special non-working days are all Public Holidays in terms of the Public Holidays Act (as amended), and the annual "Builder's Break "as defined by SAFCEC on an annual basis.</p> |
| 5.11.1.2 | Delete Clause 5.11.1.2 and replace with the following: |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| GCC Clause | Information |
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| | Notwithstanding any other provision of this Contract, the Contractor agrees that there shall be no suspension of the Works due to non-payment by the Employer. The Contractor shall continue to perform the Works as scheduled, regardless of any delays or failures by the Employer to make payments when due. |
| 5.13.1 | The penalty for failing to complete the Works is the greater of: An amount equal to the daily Time Related P&G rate (as calculated from the Time Related P&G section in the Bill of Quantities) or R25,000.00 per day, whichever is greater. |
| 5.14.1 | <p>The requirements for achieving Practical Completion are:</p> <ul style="list-style-type: none"> • Construction, testing & commissioning of the new 20ML Carlswald Reservoir. • Construction, testing & commissioning of all pipework including inlet, outlet, overflow, scour and drainage pipelines. • Installation, testing & commissioning of all valves. • Installation, testing & commissioning of all electrical and C&I infrastructure. • Construction, testing & commissioning of all stormwater infrastructure. • Construction of the guard house (including all civil and electrical infrastructure). • Construction of the telemetry hut (including all civil, electrical and telemetry infrastructure). • Construction of the valve building (including all pipework, valves, civil and electrical infrastructure). • Construction, Installation, testing & commissioning of all security infrastructure (including fencing, gates, CCTV systems etc). • Construction of access road. |
| 5.16.3 | The latent defects period is 10 years. |
| 6.2.1 | The time to deliver the Form of Guarantee is within 28 days from the Commencement Date. The security to be provided by the Contractor shall be in the form of an "On Demand" Guarantee and will comply with the requirements of Clause 6.2.3 and C1.3 FORMS AND SECURITIES. The value of the Performance Guarantee shall be ten (10) % of the Contract Sum, which sum excludes VAT. |
| 6.8.2 | The Contract Price Adjustment is applicable to this contract. |
| Employer: | Contractor: |
| Witness: | Witness: |

| GCC Clause | Information |
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| | <p>The following formula will be applicable.</p> $(1-x) \left[\frac{aLt}{Lo} + \frac{bPt}{Po} + \frac{cMt}{Mo} + \frac{dFt}{Fo} - 1 \right]$ <p>In which the symbols have the following meaning as per GCC 2015:</p> <p>"x" is the proportion of "Ac" which is not subject to adjustment.</p> <p>"a", "b", "c" and "d" are the coefficients contained in the Contract Data, which are deemed, irrespective of the actual constituents of the work, to represent the proportionate value of labour, contractors' equipment, material (other than "special materials" specified in the Contract Data) and fuel respectively.</p> <p>"L" is the "Labour Index"</p> <p>"P" is the "Plant Index"</p> <p>"M" is the "Materials Index"</p> <p>"F" is the "Fuel Index" The suffix "o" denotes the base indices applicable to the base month as stated in the Contract Data.</p> <p>The suffix "t" denotes the current indices applicable to the month in which the last day of the period falls to which the relevant monthly statement relates.</p> <p>If any index relevant to any particular certificate is not known at the time when the certificate is prepared, the Engineer shall estimate the value of such index. Any correction which may be necessary when the correct indices become known, shall be made by the Engineer in subsequent payment certificates.</p> <p>The value of the payment certificates issued shall be adjusted in accordance with the Contract Price Adjustment Schedule, with the following values:</p> <p>The value of "x" is 0,10</p> <p>The values of the coefficients are:</p> <p>a = 0,32 Labour</p> <p>b = 0,25 Contractor's equipment</p> <p>c = 0,33 Material</p> |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Contract: JW14302R
CONSTRUCTION OF 20 ML REINFORCED CONCRETE CARLSWALD RESERVOIR
Volume 1 Tender and Contract
Section C1 Agreement and Contract Data



| GCC Clause | Information |
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| | <p>d = 0,10 Fuel</p> <p>The province where the Site is located is Gauteng and the urban area where the project is implemented is Johannesburg.</p> <p>The base month is the month prior to the month in which the tender closes.</p> <p>The Consumer Price Indices for Labour (L), Plant (P), Material (M) and Fuel (F) are as published by Statistics South Africa for the applicable time periods.</p> |
| 6.8.3 | Price adjustments for variations in the costs of special materials are NOT allowed. |
| 6.10.1.5 | The percentage advance on materials not yet built into the Permanent Works is 80%. Proof of payment to be submitted with the claim. |
| 6.10.3 | The percentage retention on the amounts due to the Contractor is 10%. |
| 6.10.3 | The limit of retention money is 5% of the contract price. |
| 6.10.4 | <p>Delivery, dissatisfaction with and payment of payment certificates</p> <p>Delete Clause 6.10.4 and replace with the following:</p> <p>Payment shall be made upon:</p> <ul style="list-style-type: none">• The Contractor providing a payment certificate with all required supporting documents to the Employer's Agent on dates to be communicated to the Contractor upon award.• The payment certificate being submitted with an original tax invoice.• A statement being submitted on the last day of the month. <p>Payment will be made within 30 days of receipt of the Contractor's statement.</p> <p>Payment shall be subject to the Contractor submitting an Original Tax Invoice compliant with SARS requirements for a Valid Tax Invoice to the Employer for the amount due. Any dissatisfaction in respect of such payment certificate shall be dealt with in terms of Clause 10.2.</p> |
| 6.10.5 | <p>Payment of Retention Money</p> <p>Add to Clause 6.10.5 the following:</p> |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| GCC Clause | Information |
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| | Payment will be subject to Johannesburg Water processes as outlined in clause 6.10.4 as amended. |
| 6.10.6.2 | Delete Clause 6.10.6.2 |
| 6.11 | Delete Clause 6.11. |
| 7.8.2 | <p>Cost of making good of defects</p> <p>Amend Clause 7.8.2.1 as follows:</p> <p>In the first line, correct the spelling of 'therefore'.</p> |
| 8.1.5 | <p>Add to the end of Clause 8.1.5 the following text:</p> <p>"Although the Employer has made certain provisions for the protection of the Works and the Site in the Pricing Data, the Contractor shall ensure that any and all additional requirements for the protection of the Works and the Site are adequately catered for in his rates and/or prices.</p> |
| 8.4.1.1 | <p>Add to the end of Clause 8.4.1.1 the following text:</p> <p>"hereby indemnifies the Employer against any liability in respect of damage or physical loss of property of any person or injury or death of any person due to non-compliance with the Occupational Health and Safety Act (Act 85 of 1993).</p> |
| 8.6.1.1.3 | The amount to cover professional fees for repairing damage and loss to be included in the insurance sum is an amount equal to 10% of the Contract Price. |
| 8.6.1.2 | <p>Delete clause 8.6.1.2 and replace with the following:</p> <p>Following the introduction of legislation affecting the articles of the South African Special Risks Insurance Association (SASRIA), insurance cover for loss or damage to the Works caused by any event defined as a risk in terms of the insurance offered by SASRIA, will be provided under a certificate issued by SASRIA.</p> |

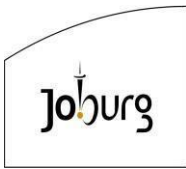
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| GCC Clause | Information |
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| 8.6.1.3 | The limit of indemnity for liability insurance is R20,000,000 (Twenty million Rand) for any single claim – the number of claims to be unlimited during the Construction and Defects Liability Periods |
| 8.6.1.5 | <p>In addition to the insurances required in terms of General Conditions of Contract Clauses 8.6.1.1 to 8.6.1.4 the following insurance is also required:</p> <ol style="list-style-type: none"> a. The Contractor shall insure all Construction Machinery and Plant (including tools, offices and other temporary structures and content) and other items, other than those intended for incorporation into the works, owned, leased or hired and brought on to the Site against all risks of physical loss or damage for the period that such Plant shall be on the Site to the full value thereof. In respect of Machinery and Plant brought on to the Site by or on behalf of Sub-Contractors, the Contractor shall be deemed to have complied with the provisions of this Sub-Clause if it has ensured that such Sub-Contractors have similarly insured such Plant and Machinery. Such insurance shall be effect with an Insurer and in terms approved by the Employer (which approval shall not be unreasonably withheld) and the Contractor shall, when required, submit to the Employer's Insurance Brokers, via the Employer's Agent, the policy or policies of insurance and receipts for payment of the current premiums. b. The Contractor and the Sub-contractors shall effect and maintain at their cost, insurance under the provision of the Compensation for Occupational Injuries and Diseases Act (COID), 1993 (Act No. 130 of 1993) c. The Contractor and the Sub-Contractors shall effect and maintain at their own cost, motor vehicle liability insurance with at least indemnification for "balance of third party" risks, including passenger liability with a limit of indemnity of not less than R2,5 million. d. Where the contract involves manufacturing and/or fabrication of the works or part thereof at premises other than the Site, the Contractor shall satisfy the Employer that all materials and equipment for incorporation in the works are adequately insured during manufacture and/or fabrication. In the event |

| | | | |
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| GCC Clause | Information |
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| | <p>of the Employer having an insurable interest in such works during manufacture or fabrication then such interest shall be noted by endorsement to the Contractor's Policies of Insurance.</p> <p>e. Any other Insurance cover that may be deemed necessary by the Contractor to ensure full and successful completion of the Works.</p> |
| 8.6 | <p>Add the following clause to 8.6</p> <p>In addition to any statutory obligations, or other requirements contained in the Conditions of Contract or in the Insurance Policy and Documents the Contractor shall report in writing to the Employer's Agent every accident within 48 hours of its occurrence, whether such accident is in respect of damage to persons or property. The report shall contain full details of the accident. The Employer's Agent shall have the right to make all and any enquiries either on the Site or elsewhere as to the cause and results of any such accident and the Contractor shall give the Employer's Agent full access and facilities for carrying out such enquiries.</p> <p>The Employer's Agent shall be given full and immediate access to all communication, reports, findings, assessments, etc. between the Contractor and its Insurance Broker (or Insurance Provider), particularly as it relates to the processing and outcomes of any and all claims. The Contractor shall further allow and authorise the Employer's Agent to communicate with its Insurance Broker (or Insurance Provider) to obtain any and all such information as the Employer's Agent deems necessary.</p> |
| 10.3.4 | <p>Add the following new clause:</p> <p>Continuation of works during dispute resolution</p> <p>Notwithstanding any Dispute Notice that may have been issued or actual dispute or disagreement that may have arisen between the Employer and the Contractor, the Contractor shall continue to perform the Works as scheduled. Both parties agree that the resolution of any disputes shall proceed in parallel with the ongoing performance of the Works, ensuring that the project timeline is maintained without interruption.</p> |
| 10.4.2 | <p>Dispute resolution shall be by Amicable Settlement, failing which, any dispute shall be resolved by way of ad-hoc Adjudication.</p> |

| | | | |
|------------------|--|--------------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Contract: JW14302R

CONSTRUCTION OF 20 ML REINFORCED CONCRETE CARLSWALD RESERVOIR

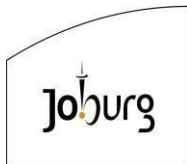
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| GCC Clause | Information |
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| 10.5.3 | The number of Adjudication Board Members to be appointed is one (1). |
| 10.7.1 | The determination of disputes shall be by arbitration. |

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



C1.2.1.2 Additions

The additional Conditions of Contract are:

C1.2.1.2.1 Penalties

In addition to GCC clause 5.13, during the Contract Period should the Contractor:

a) Fail to report

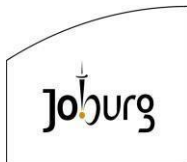
- The Employer shall levy a penalty on Contractor, should the latter fail to provide reporting as required in the specification highlighted in the Scope of Work in PS 3.2, PS 6.11 and PS 6.13, with regard to content and frequency, whilst as per the Pricing Data section no payment for work completed shall be processed.
- The penalty value shall be R5,000.00 per report per day; and If the Contractor fails to complete the aforementioned more than three incidents and should the Employer or his duly authorised representative find that the Contractor is hindering his (the Employer's) deliverables to JW Senior Management, he shall reserve the right to:
 - i. perform the Works internally or through another Contractor; and
 - ii. deduct additional costs incurred by the Employer from monies owed to the Contractor or from the Contractor's Guarantee. Additional costs incurred by the Employer shall include all claims from Contract affected parties, claims such as but not be limited to claims from customers, any costs associated with the loss of water, and all costs associated with the procurement of an alternative Contractor.
 - iii. terminate the Contract.

No liability in terms of this clause shall be attached to the Contractor if he can prove to the satisfaction of the Employer that the nature of the failure is due to fire, war, riot, strikes, act of God, lockout, accident or other unforeseen occurrences or circumstances beyond the Contractor's control, provided, however, that in all cases the Contractor has notified the Employer in writing within 24 hours of it first coming to his notice, that delivery shall be delayed or become impossible for the above-mentioned reasons.

b) Fail to pay any labourer or SMME

- The Employer shall levy a penalty on the Contractor, should the latter fail to provide payment to any labourer or SMME as required in the specification highlighted in the Scope of Work and/or specified in the appointment agreements with the Contractor and the labourer or SMME.
- The penalty value shall be R 50,000.00 per incident per occasion; and
- The Employer shall reserve the right to settle (pay) an approved invoice (on behalf of the Contractor) to any labourer, Subcontractor, SMME, etc. by the due date for payment, which the Employer shall deduct from the Contractor's payment certificate.
- If the Contractor fails to complete the aforementioned more than three incidents and should the Employer or his duly authorised representative find that the Contractor is hindering his (the Employer's) deliverables to JW Senior Management, he shall reserve the right to:

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



- i. perform the Works internally or through another Contractor; and
- ii. deduct additional costs incurred by the Employer from monies owed to the Contractor or from the Contractor's Guarantee. Additional costs incurred by the Employer shall include all claims from Contract affected parties, claims such as but not be limited to claims from customers, any costs associated with the loss of water, and all costs associated with the procurement of an alternative Contractor.
- iii. terminate the Contract.

No liability in terms of this clause shall be attached to the Contractor if he can prove to the satisfaction of the Employer that the nature of the failure is due to fire, war, riot, strikes, act of God, lockout, accident or other unforeseen occurrences or circumstances beyond the Contractor's control, provided, however, that in all cases the Contractor has notified the Employer in writing within 24 hours of it first coming to his notice, that delivery shall be delayed or become impossible for the above-mentioned reasons.

- c) **Failure to achieve targets in terms of Contract Participation Goals**
 If the Contractor fails to achieve the monetary value of the target set by the Employer for contract participation by local SMME Contractors in terms of Procurement and Particular Specifications in Scope of Works clause PS3.2.3, the Contractor shall be liable to the Employer for a sum calculated in accordance with the Contract Data and the aforementioned Scope of Works as a penalty for such underachievement."

The penalty for failing to achieve the monetary value of the target set by the Employer for contract participation by Targeted Enterprises and local SMME Contractors in terms of Small Contractor Development of Particular Specifications in PS3: Scope of Works, is 50% of the monetary value by which the achieved monetary value falls short of the target monetary value.

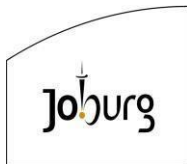
d) Environmental, Health and Safety Compliance

- i. If the Contractor fails to achieve the score as stipulated in the Environmental scorecard, the Employer will levy a penalty against the Contractor. Should the Contractor achieve a score of between 85.0% and 93.0% for 2 (two) successive months; OR achieve a score below 85.0% in any 1 (one) month, the penalty shall be levied. The penalty value shall be R10,000.00 for each non-compliant event
- ii. If the Contractor fails to achieve the score as stipulated in the Occupational Health & Safety requirements, the Employer will levy a penalty against the Contractor. Should the Contractor achieve a score of between 85.0% and 93.0% for 2 (two) successive months; OR achieve a score below 85.0% in any 1 (one) month, the penalty shall be levied. The penalty value shall be R10,000.00 for each non-compliant event.

e) Penalties irreversible

The Contractor shall note that all penalties once imposed shall be non-recoverable or non-reversible, even if the default is remedied.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



C1.2.1.2.2 Source of instructions

The Contractor shall neither seek nor accept instructions from any authority external to the Employer's Agent in connection with the performance of his services under this Contract. The Contractor shall refrain from any action which may adversely affect the Employer and shall fulfill his commitments with fullest regard for the interest of the Employer. The Contractor may only accept and comply with instructions from the Employer's Health and Safety Representative or the Employer's Environmental Representative with regards to matters regarding Health & Safety or Environmental Management respectively, but with further approval from the Employer's Agent.

C1.2.1.2.3 Officials not to benefit

The Contractor warrants that no official of the Employer has been or shall be admitted by the Contractor to any direct or indirect benefit arising from this Contract or the award thereof. The Contractor agrees that breach of this provision is a breach of the Contract.

C1.2.1.2.4 Prevention of corruption

The Employer shall be entitled to cancel the Contract and to recover from the Contractor the amount of any loss resulting from such cancellation, if the Contractor has offered or given any person any gift or consideration of any kind as an inducement or reward for doing or intending to do any action in relation to the obtaining or the execution of the Contract or any other contract with the Employer or for showing or intending to show favor or disfavor to any person in relation to the Contract or any other contract with the Employer. If similar acts have been done by any persons employed by the Contractor or acting on his behalf whether with or without the knowledge of the Contractor in relation to this or any other Contract with the Employer, the same consequences shall apply.

C1.2.1.2.5 Confidential nature of documents

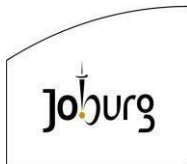
All maps, drawings, photographs, mosaics, plans, reports, recommendations, estimates, documents and all other data compiled by or received by the Contractor under the Contract shall be the property of the Employer, shall be treated as confidential and shall be delivered only to the Employer's Agent or his duly authorized representative on completion of the Works; their contents shall not be made known by the Contractor to any person other than the personnel of the Contractor performing services under this Contract without the prior written consent of the Employer.

C1.2.1.2.6 Returns of labour, SMME, plant, equipment and material

The Contractor shall provide a return in detail in the form and at such intervals as the Employer's Agent or his duly authorized representative may prescribe showing the supervisory staff and the numbers of the several classes of labour from time to time employed by the Contractor on the Site and such information respecting construction plant, equipment and material as the Employer's Agent or his duly authorized representative may require. Reporting as per JW6.1. The supporting documents required for SMMEs include but are not limited to the following:

- Valid CIPC registration (i.e. CK, COR)
- SA ID copies of owners

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



- Active CIDB membership: minimum grading 1CE
- Valid CSD compliance status
- Valid EME affidavit
- COIDA certificate
- Company Profile including similar experience and skilled personnel CVs
- Health and Safety Plan
- Proof of Payments

The supporting documents required for local labourers include but are not limited to the following

- Certified Copies of IDs
- Individual contracts
- Monthly Individual proof of payment
- Monthly Individual timesheets
- Training returns
- UIF forms (proof of registration from Labour)

C1.2.1.2.7 Materials and workmanship

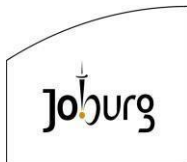
All materials and workmanship shall be of the respective kinds described in the Contract and in accordance with the Employer's Agent's instructions and shall be subjected from time to time to such tests as the Employer's Agent may direct at the place of manufacture or fabrication, or on the Site or at all or any of such places. The Contractor shall provide such assistance, instruments, machines, labour and materials as are normally required for examining, measuring and testing any work and the quality, weight or quantity of any materials used and shall supply samples of materials before incorporation in the Works for testing as may be selected and required by the Employer's Agent. All testing equipment and instruments provided by the Contractor shall be used only by the Employer's Agent or by the Contractor in accordance with the instructions of the Employer's Agent.

- a) No material not conforming with the Specifications in the Contract shall be used for the Works without prior written approval of the Employer and instruction of the Employer's Agent, provided always that if the use of such material results or may result in increasing the Contract Price, the procedure in GCC clause 6.3 (Variations) shall apply.

C1.2.1.2.8 Examination of the work before covering up

No work shall be covered up or put out of view without the approval of the Employer's Agent or his duly authorized representative and the Contractor shall afford full opportunity for the Employer's Agent or his duly authorized representative to examine and measure any work which is about to be covered up or put out of view and to examine foundations before permanent work is placed thereon. The Contractor shall give due notice to the Employer's Agent whenever any such work or foundations is or are ready or about to be ready for examination. The Employer's Agent or his duly authorized representative shall without unreasonable delay, unless he considers it unnecessary and advises the Contractor

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



accordingly, attend for the purpose of examining and measuring such work or of examining such foundations.

C1.2.1.2.9 Employer's Agent's power to order removal of improper work and materials

The Employer's Agent or his duly authorized representative shall during the progress of the Works have power to order in writing from time to time, and the Contractor shall execute at his cost and expense, the following operations:

- a) removal from the Site within such time or times as may be specified in the order of any materials which in the opinion of the Employer's Agent are not in accordance with the Contract.
- b) substitution of proper and suitable materials; and
- c) removal and proper re-execution (notwithstanding any previous test thereof or interim payment therefore) of any work which in respect of materials or workmanship is not in the opinion of the Employer's Agent or his duly authorized representative in accordance with the Contract.

C1.2.1.2.10 Default of Contractor in carrying out Employer's Agent's or his duly authorized representative's Instructions

In case of default on the part of the Contractor in carrying out an instruction of the Employer's Agent or his duly authorized representative, the Employer shall be entitled to employ and pay other persons to carry out the same, and all expenses consequent thereon or incidental thereto shall be borne by the Contractor and shall be recoverable from him by the Employer and may be deducted by the Employer from any monies due or which may become due to the Contractor.

C1.2.1.2.11 Date falling on public holiday or weekend

Where under the terms of the Contract any act is to be done or any period is to expire upon a certain day and that day or that period fall on a day of rest or recognized public holiday or weekend, the Contract shall have effect as if the act were to be done or the period to expire upon the working day following such day.

C1.2.1.2.12 Ambiguities and inconsistencies

The Employer or the Contractor shall notify the other as soon as either becomes aware of an ambiguity or inconsistency in or between the documents, which are part of this Contract. Governed by the spirit and intention of the Contract, the Employer shall give a binding instruction resolving the ambiguity or inconsistency.

C1.2.1.2.13 False claims by the Contractor

- a. Failure, by the Contractor, to demonstrate or present any feature declared during the procurement stage shall constitute grounds for Contract termination or the market related equivalent price discount, if no market related value is available, the Employer shall give a final ruling on the amount. This shall be at the discretion of the Employer based on the implication of such omission. Should the Contractor refuse to accept the Employer's price, the Contract shall be terminated.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

- b. Any false claims by the Contractor or his staff (with or without his knowledge), based on Works to be performed or completed per site stage shall constitute grounds for Contract termination and result in blacklisting on the Employer's database.

The Contractor shall note that any of the above shall constitute non-performance on the part of the Contractor, further resulting in him forfeiting his full Contract Guarantee.

C1.2.1.2.14 Special Conditions

The successful Tenderer must subcontract a minimum of 30% (thirty percent) of the value of this Contract to an entity(s) described below. The value of the Contract for the purposes of this calculation shall be equal to the Contract Price (excluding VAT) as described in the General Conditions of Contract.

The subcontractor/s or SMME's chosen for this purpose must be registered on National Treasury's Central Supplier Database (CSD) and must be from one of the following designated groups:

- An EME or QSE which is at least 51% owned by black people;
 - An EME or QSE which is at least 51% owned by black people who are youth;
 - An EME or QSE which is at least 51% owned by black women;
 - An EME or QSE which is at least 51% owned by black people with disabilities;
 - An EME or QSE which is 51% owned by black people living in rural or underdeveloped areas or townships;
 - A cooperative which is at least 51% owned by black people;
 - An EME or QSE which is at least 51% owned by black people who are military veterans;
 - an EME or QSE .
1. Subcontractors must be chosen from National Treasury's Central Supplier Database which can be accessed on National Treasury's website.
 2. The Contractor shall identify work packages that will be allocated to Subcontractors, so that the minimum requirement of 30% can be met during the implementation of the project, as follows:
 - The Contractor shall develop a Subcontracting Plan that sets out the details of the proposed Subcontracting arrangements including, but not limited to, competitive bidding process to be used for the appointment of SMME's, scope of work to be allocated, criteria for the selection of Subcontractor(s), Subcontractor agreements, cost of the work to be Subcontracted, etc.
 - The Subcontracting Plan shall be developed in consultation with the Employer (or his representative), the Ward Councillor and / or Community Liaison Officer, who shall assist the Contractor in identifying SMME's and other skills that may be available in local and surrounding communities.
 - The Subcontracting Plan shall be issued to the Employer's Agent for approval, prior to the engagement of any Subcontractor(s) by the Contractor. The activities, time periods, linkages, etc. associated with the development and approval of the Subcontracting Plan shall be included in the Project Programme, which Programme is subject to the approval of the Employer's Agent. A period of four weeks will be required for the Employer's Agent to consult with the Employer, prior to approval of the Subcontracting

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

Plan.

- The Contractor shall ensure that rates that are tendered (during Tender Stage) for work items that are likely to be Subcontracted, are market related rates. Provision is made in the Bill of Quantities (BoQ) for the Contractor to add a mark-up for the sourcing, handling, and management of Subcontractors, SMME's, and the like, for the duration of the Contract.
 - On or during appointment of Subcontractors, should Subcontractors **prove** that rates, that have been tendered by the Contractor for BoQ work items that are being subcontracted, are not market related, the Contractor will be liable to cover the cost of the difference, i.e. the difference in rate tendered by the Contractor versus the rate that is being requested by the Subcontractor. This difference in cost will be for the Contractor's account, and no Variation Orders for additional costs will be entertained by the Employer. The Contractor bears the full and complete risk for the rates that have been tendered by the Contractor during Tender Stage.
 - In the event that a rate supplied by the Contractor for a specific BoQ work item is not sufficient to cover Subcontractor costs/rates for that specific item, the Contractor shall provide a detailed rate breakdown for that specific BoQ item (and each and every subsequent BoQ work item where the rate is not sufficient to cover Subcontractor cost); and shall indicate costs (amongst others) for labour, material, handling, mark-ups, etc. to prove that the rate that was submitted during tender stage was in fact market related; and in balance with other rates that were submitted for work items that will not be undertaken by Subcontractors.
 - Should any delays be experienced during the period of the Contract due to the appointment of subcontractors by the Contractor, work stoppages by subcontractors, industrial action by subcontractors, etc. such delays shall be assigned to the Contractor, and no claims for Extension of Time will be entertained by the Employer.
 - The Contractor will be liable to pay a penalty if the Subcontracting target of 30% has not been met by the end of the Contract. The Employer will deduct this penalty amount through the Payment Certificate process. The Employer will monitor progress by the Contractor towards achieving the target, and shall have full discretion as to when the penalty will be applied (i.e. the month in which the penalty amount will be deducted). In calculating the total amount that has been (will be) paid to SMME's, all amounts that have actually been reimbursed to SMME's will be taken into account including P&G's, amounts for actual work done, etc.
 - The penalty amount described above shall be equal to 50% (fifty percent) of the difference between the target Subcontract amount (i.e. 30% of the Contract Price) and the actual amount that has been spent on Subcontractors/SMME's by the end of the Contract.
3. A Subcontracting agreement between the Main Contractor and the Subcontractor shall be submitted to JW upon appointment of any Subcontractor and must include the following minimum information:
- Name of Subcontractor and BBBEE status
 - Subcontractor *domicilium* and registered address of business, as well as status of compliance with all applicable legal requirements.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

- Area and location of project
- Scope of Work issued to the Subcontractor
- Value of the Work issued including P&G's (this information must be submitted in a format that is readily auditable).
- Assistance provided/to be provided to the Subcontractor by the Contractor, e.g. acquisition of materials, machinery, tools, etc.
- A Skills Transfer Plan which will indicate, amongst others, the proposed skills that will be transferred to the Subcontractor, individuals that will be identified for skills transfer, the amount that will be spent by the Contractor on skills transfer, evidence that will be produced by the Contractor (such as training certificates, training registers, etc.), etc.
- A specific provision that enables the Contractor to pay the Subcontractor's suppliers, labour (skilled, local, etc.) or any other service provider of the Subcontractor, should the Subcontractor fail to do so. This provision shall include (but not be limited to) the following conditions/provisions:
 - Invoices that are due for payment from suppliers and the like must be invoices that have been approved for payment, and be based on work or services that have actually been completed or delivered. Payments that are due to labour will be based on approved timesheets.
 - The Contractor is to ensure that any invoice presented for payment is indeed an approved invoice, and that the necessary work or services have been delivered or completed. The approved invoice shall be settled (paid) by the Contractor (on behalf of the Subcontractor) by the due date for payment.
 - The Contractor will be entitled to deduct payments made to any third party, on behalf of the Subcontractor, from subsequent payments that may become due to the Subcontractor.
 - The Contractor will be entitled to bill the Subcontractor a mark-up on the payments made on behalf of the sub-contractor. The mark-up shall not be more than 10% (ten percent) of the amount actually paid (i.e. the amount (excluding VAT) reflected on the invoice that has been settled). The mark-up amount shall be deducted from subsequent payments that may become due to the Subcontractor.
 - Proof of any such payments made on behalf of the Subcontractor shall be issued to the Employer's Agent, on request, with all necessary supporting information that the Employer's Agent may request
 - Payments made on behalf of the Subcontractor are not subject to the Contractor first being paid by the Employer. Therefore, the Contractor shall pay approved invoices, on behalf of the Subcontractor, irrespective of whether the Contractor has first been paid by the Employer. The Contractor will be entitled to levy interest on all payments that have been made in this regard, in accordance with the necessary interest payment provisions contained in the General and Special Conditions of Contract.

4. The successful Contractor shall submit monthly SMME/Subcontractor reports to the Employer's Agent as follows:
- Status of progress against the Subcontracting Plan (described above), to the approval

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

of the Employer's Agent

- Subcontractor *domicilium* and registered address of business, as well as ongoing status of compliance with all applicable legal requirements.
 - Name of Subcontractor and BBBEE status
 - Area and location of project
 - Scope of work issued to the Subcontractor
 - Value of the work issued (this information must be submitted in a format that is readily auditable)
 - Monthly payments made to the subcontractor (this information must be submitted in a format that is readily auditable)
 - Assistance provided to the Subcontractor e.g. advance payments, acquisition of materials, machinery, tools, etc.
 - Performance of the Subcontractor, with evidence to support this performance assessment.
5. Upon completion of the project, the Contractor is required to provide a final report to JW on skills transferred to / acquired by the Subcontractor(s) engaged on the Project, description and value of work performed, as well as their overall performance. This report must be issued to JW to enable a Certificate of Completion to be issued.
- 6.
7. The Contractor shall also indicate whether the experience gained by the Subcontractor is sufficient to assist the Subcontractor to improve their CIDB grading, with full details of supporting information.

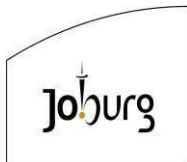
C1.2.1.2.15 Competent Employees

| Competent Employees | Qualifications | Experience |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contracts Manager | Minimum Qualifications of Contracts Manager: <ul style="list-style-type: none"> • Bachelor's degree in Civil Engineering OR • Quantity Surveying / Construction Management, equivalent or higher. AND <ul style="list-style-type: none"> • Professional Registration – Pr. Eng. / Pr. Tech (Eng) / PrCPM / PrCM / PrQS will | Minimum of three (3) completed projects involving construction of reinforced concrete reservoir and/or bulk steel pipework completed as Contracts Manager/ Site Manager / Site Agent |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

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| | obtain a score for the experience of a Contracts Manager | |
| Construction Manager | Minimum Qualifications of Site Manager: <ul style="list-style-type: none"> National Diploma in Civil/ Structural Engineering or higher; <p style="text-align: center;">AND</p> <ul style="list-style-type: none"> Registered as a Candidate Professional in the Built Environment, or higher (i.e. ECSA or SACPCMP) will be considered. | Minimum of three(3) completed projects involving the construction of reinforced concrete reservoirs of 10ML or more completed as Site Agent / Site Manager (or any other title) where the individual was site based, and managed a construction site |
| Safety Officer | Minimum Qualifications of Safety Officer; <ul style="list-style-type: none"> National Diploma (Safety Management) / National Diploma Environmental Health / Environmental Science / Environmental Management / SAMTRAC / SHEOMTRAC / SHEMTRAC / MESHTRAC / NEBOSH / Safety Officers Course (NQF 5) or higher, <p style="text-align: center;">AND</p> <ul style="list-style-type: none"> Professional Registration with SACPCMP in the Construction Health and Safety Sector. | Minimum of one (1) completed Civil / Structural engineering project completed as Safety Officer |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



C1.2.2 Part 2: Data Provided by the Contractor

| GCC Clause | Information | | | | | | |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|-----------------------|--|--|
| Clause 1.1.9 | <p>The name of the Contractor is:.....</p> <p>The Contact person is:.....</p> | | | | | | |
| Clause 1.2.1.2 | <p>The address of the Contractor is:</p> <p>Physical Address: _____ Postal Address: _____</p> <p>_____</p> <p>_____</p> <p>Tel: _____ Fax: _____</p> <p>Email: _____</p> | | | | | | |
| Clause 1.1.1.1 4 | The time for achieving Practical Completion is 18 months from the Commencement Date | | | | | | |
| Clause 6.2.1 | <p>The security to be provided by the Contractor shall be one of the following:</p> <p>“On Demand” Guarantee of 10% of the Contract Sum (which sum shall exclude VAT) under Forms and Securities Part C1.3.1.</p> | | | | | | |
| Clause 6.8.3 | <p>The variation in cost of special materials is</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Unit</th> <th>Rate</th> </tr> </thead> <tbody> <tr> <td colspan="3">NOT APPLICABLE</td> </tr> </tbody> </table> | Type | Unit | Rate | NOT APPLICABLE | | |
| Type | Unit | Rate | | | | | |
| NOT APPLICABLE | | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

Johannesburg Water (SOC) Ltd



CONTRACT NO. JW14302R

**CONSTRUCTION OF 20ML REINFORCED CONCRETE CARLSWALD
 RESERVOIR**

VOLUME 1

PART 1.3: FORMS AND SECURITIES

| | | | |
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

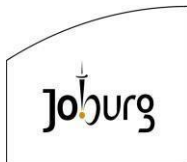
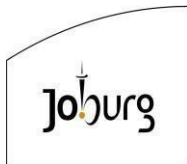


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| C1.3.2 | Blasting Indemnity | C.34 |
| C1.3.3 | Health and Safety Contract Between Employer and Contractor In Terms of Section 37(2) Of The Occupational Health and Safety Act No 85 Of 1993 | C.36 |
| C1.3.4 | Health and Safety Contract General Information | C.37 |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



C1.3 FORMS AND SECURITIES

FORMS FOR COMPLETION BY THE CONTRACTOR

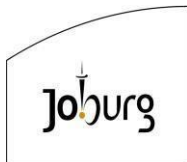
THE FOLLOWING FORMS ARE TO BE COMPLETED BY THE CONTRACTOR AFTER THE TENDER HAS BEEN AWARDED TO THE SUCCESSFUL TENDERER

- a) Form of Guarantee
- b) Blasting Indemnity
- c) Agreement in terms of the Occupational Health and Safety Act
- d) Occupational Health And Safety Indemnity Undertaking

The forms will be completed by the Contractor who will be instructed to do so in the Form of Acceptance. The completed forms will become part of the Contract.

The Form of Guarantee is a pro forma document. The Contractor will provide an original document, from a financial institution, with the same text within the time stated in the Contract Data. Only a Bank or approved Insurance Company or Guarantee Corporation is acceptable as Guarantor.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



C1.3.1 Form of Guarantee

TO BE PRINTED ON THE OFFICIAL LETTERHEAD OF THE GUARANTOR.

FORM OF ON DEMAND GUARANTEE IN RESPECT OF PERFORMANCE

GUARANTEE REFERENCE NUMBER: [*]**

FORM OF ON DEMAND PERFORMANCE GUARANTEE

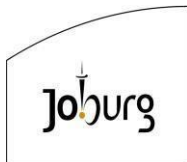
Whereas [insert the full name of the *Employer*], registration number: [insert registration number], of [insert full physical address] (the “*Employer*”) has awarded a contract for [insert a detailed description of the contract], under contract number: [insert details] (the “*Contract*”), to [insert full names of the *Contractor*], registration number [insert details], of [insert full physical address] (the “*Contractor*”).

And whereas the Contract requires the *Contractor* to provide to the *Employer* an on-demand performance guarantee for the due and proper performance by the *Contractor* of its obligations in terms of the Contract.

Now therefore: [insert full names of the Guarantor], registration number [Insert details], of [insert the full physical address] (the “*Guarantor*”), duly represented by the undersigned: [insert the full names of the signatory], and [insert the full names of the signatory], acting herein in their respective capacities as: [insert full title] and [insert full title] respectively, of the Guarantor, and being duly authorized to sign this on demand performance guarantee (this “*Guarantee*”) and to incur obligations in relation thereto, in the name, and on behalf, of the Guarantor under, and in terms of, a Resolution of the Board of Directors or other written authority of the Guarantor, hereby irrevocably and unconditionally guarantees and undertakes that:

1. The Guarantor shall pay to the *Employer* on demand any sum or sums not exceeding the following aggregate amount: R [insert the amount] (the “*Guaranteed Amount*”) on presentation of a written demand signed by the *Employer* (the “*Demand*”), supported by a written statement signed by the *Employer* certifying that the *Contractor*, in the opinion of the *Employer* as at the date of issue of such Demand, is in breach of its obligations under the Contract or that a defect had occurred following the performance by the *Contractor* of its obligations under the Contract, and without being required to prove or set out the nature of any such breach or defect.
2. Neither the failure of the *Employer* to enforce strict or substantial compliance by the *Contractor* with its obligations under the Contract nor any act, conduct or omission by the *Employer* prejudicial to the interests of the Guarantor will discharge the Guarantor from liability under this Guarantee.
3. This Guarantee:

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



3.1 automatically comes into full force and effect on the date of signature hereof by the Guarantor.

3.2 automatically expires, whether or not returned to the Guarantor at the earlier of:

3.2.1 [the *defects date*; or]

3.2.2 90 (ninety) calendar days after the date of termination of the Contract, as notified in writing to the Guarantor by the *Employer*; or

3.2.3 **[insert time]** (Central African Time), at the abovementioned address of the Guarantor on **[insert date]**,

(the “**Expiry Date**”);

3.3 constitutes the primary obligations of the Guarantor and exists independently of the Contract or any amendment, variation or novation thereof; and

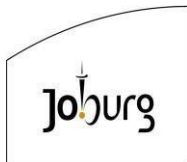
3.4 is governed by the laws of the Republic of South Africa and any dispute arising hereunder shall be subject to the jurisdiction of the South African courts. In respect of such proceedings, each of the Parties specifically consents to the non-exclusive jurisdiction of the High Court of South Africa (Gauteng Local Division, Johannesburg).

4. Any Demand must be presented at the aforementioned address of the Guarantor on or before the Expiry Date. After the Expiry Date, this Guarantee shall become null and void, whether returned to the Guarantor for cancellation or not and any Demand received after the Expiry Date shall be ineffective.

5. The *Employer* may require the *Contractor* to extend this this Guarantee or replace it if the guarantee sum has not been paid in full by the date 28 days prior to the Expiry Date. If the guaranteed sum has not been paid in full by the date 28 days prior to the Expiry Date, and the guarantee has not been extended, the Guarantor unconditionally undertakes to pay to the *Employer* any amounts which the *Contractor* has not repaid (subject to the guaranteed sum) upon receipt by the *Employer*, within such 28 day period, of written demand for payment made in accordance with the terms of the advance payment guarantee.

6. Payments made in terms of this Guarantee shall be in cash, free of any set-off, withholding, counterclaim or deduction of any nature whatsoever.

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



7. This Guarantee is transferable by the *Employer*, and the Guarantor consents to any transfer of this Guarantee by the *Employer* to any of its affiliates or any other person. This Guarantee is restricted to the payment of a sum of money only and limited to an aggregate amount equal to the Guaranteed Amount.
8. The Guarantor warrants that it has the power and has taken all action and obtained all licenses and approvals required for it, to grant and perform its obligations in terms of this Guarantee.
9. The Guarantor acknowledges that the *Employer* may make multiple demands under this Guarantee provided that the aggregate amount paid by the Guarantor in terms of this Guarantee shall not, at any time, exceed the Guaranteed Amount.
10. The Guarantor's obligations under this Guarantee are of a primary, independent nature and are not ancillary, accessory nor of a collateral nature, to the Contract. Any reference in this 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.
11. For the purposes of this Guarantee, the abovementioned address of the Guarantor shall be its *domicilium citandi et executandi* for all purposes in connection with this Guarantee.

SIGNED at _____ on this day of _____ 20____

Witnesses:

1.

For: **[insert name of the Guarantor]** _____

duly authorized and warranting such authority Full Name:

Capacity:

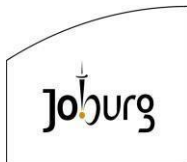
2.

For: **[insert name of Guarantor]** _____

duly authorized and warranting such authority Full Name:

Capacity:

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



C1.3.2 Blasting Indemnity

Given by

*Company Registration No.

Address

a *Company incorporated with limited liability according to the company laws of the Republic of South Africa, *Partnership, *Close Corporation, *Public Company (hereinafter called the Contractor), represented herein by

in his

capacity as the Contractor's

duly authorised hereto by a resolution

of the Contractor dated

a certified copy of which resolution is

attached to this Indemnity.

WHEREAS the Contractor has entered into a Contract with the Johannesburg Water (SOC) Ltd (hereinafter called the Employer) for,

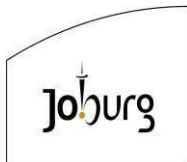
and the Company requires this Indemnity from the Contractor

NOW THEREFORE THIS DEED WITNESSETH that the Contractor does hereby indemnify and hold harmless the Company in respect of all loss or damage that may be incurred or sustained by the Employer by reason of or in any way arising out of or caused by blasting operations that may be carried out by the Contractor in connection with the aforementioned Contract and also in respect of all claims that may be made against the Employer in consequence of such blasting operations, by reason of or in any way arising out of any accidents or damage to persons, life or property or any other cause whatsoever, and also in respect of all legal or other expenses that may be incurred by the Employer in examining, resisting or settling any such claims; for the due performance of which the Contractor binds itself according to law.

THUS DONE AND SIGNED for and on behalf of the Contractor at

on the

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



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_____ day of _____ 20_____ in the
presence of the subscribing

witnesses.

As witnesses

1. _____

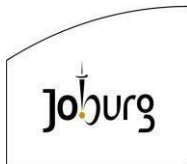
2. _____

Signature

Duly authorised to
sign on behalf of

Address

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



C1.3.3 Health and Safety Contract Between Employer and Contractor In Terms of Section 37(2) Of The Occupational Health and Safety Act No 85 Of 1993

Written agreement between Johannesburg Water ((Proprietary) Limited (hereinafter referred to as “the Employer) and _____ (hereinafter referred to as “the mandatory”) as envisaged by Section 37(2) of the Occupational Health and Safety Act, No. 85, of 1993 as amended.

I _____
representing

_____ (mandatory) do
hereby acknowledge that

_____ (mandatory) is an employer in its own right and shall be regarded as the employer for purposes of the contract work specified in the body of the principal agreement with duties as prescribed in the Occupational Health and Safety Act, No. 85 of 1993 as amended so as to ensure that all work will be performed or machinery and plant used in accordance with the provisions of the said Act. I furthermore agree to comply with the requirements of the Employer as contained in the Occupational Health and Safety Specification included with the principal agreement and to liaise with the employer should I, for whatever reason, be unable to perform in terms of this agreement.

Signed this _____ day of _____ at _____

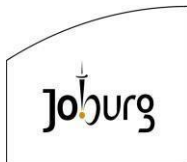
Signature on behalf of
the mandatory _____

Signature on behalf of Employer _____

Compensation Fund Registration No. of mandatory _____

Good Standing Certificate : ☐ yes ☐ no (tick one box)

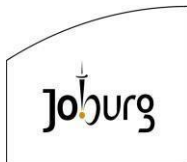
| | | | |
|------------------|--|--------------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



C1.3.4 Health and Safety Contract: General Information

1. The Occupational Health and Safety Act comprises Sections 1 to 50 and all un-repealed regulations promulgated in terms of the former Machinery and Occupational Safety Act No 6 of 1983 as amended, as well as other regulations which may be promulgated in terms of the OHS Act.
2. 'Mandatory' is defined as including an agent, a contractor or a subcontractor for work, but without derogating from his status in his own right as an employer or user of plant and machinery
3. Section 37 of the Occupational Health and Safety Act potentially punishes employers (principals) for the unlawful acts or omissions of mandataries (contractors) save where a written agreement between the parties has been concluded containing arrangements and procedures to ensure compliance with the said Act by the mandatory.
4. All documents attached or referred to in the above agreement form an integral part of the agreement.
5. To perform in terms of this agreement mandataries must be familiar with the relevant provisions of the Act.
6. Mandataries who utilise the services of their own mandataries (subcontractors) are advised to conclude a similar written agreement.
7. Be advised that this agreement places the onus on the mandatory to contact the Employer in the event of inability to perform as per this agreement. The Employer, however, reserves the right to unilaterally take any steps as may be necessary to enforce this agreement.
8. The contractor shall be responsible for the full and proper implementation of the terms and provisions of the Act and its regulations in the area in which the work is to be undertaken by the Contractor.
9. The Contractor shall be responsible for the well-being, in relation to health and safety, of all persons coming upon or into such area in accordance with that legislation, including the implementation of any directives issued by management of the Employer in this respect.
10. The work to be done is _____
11. The area in which the work is to be conducted is _____
12. The Contractor shall familiarise himself with such area and all risks existing thereon and undertakes to report to the representative of the Employer any hazard or risk to health and safety which arises during the contract work in the area concerned and over which the Contractor may have no control. All necessary and appropriate safety / health equipment shall be issued by the Contractor to all persons working on or coming into the area.

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |

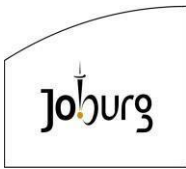


C1.3.4.1 Occupational Health and Safety Indemnity Undertaking

I, the undersigned _____
in my capacity as _____
of the firm _____

1. Hereby undertake to ensure that I/my firm and/or employees and/or subcontractors and/or his employees -
 - 1.1 comply strictly with the provisions of the Occupational Health and Safety Act of 1993 (as amended) and/or the regulations promulgated in terms thereof, with specific reference to section 37(2) of the said act, as well as any relevant legislation, in the course of the performance/execution of any service and/or work in, to or on any of the Employer's buildings, construction sites and/or premises;
 - 1.2 ensure that consultants and/or visitors comply with any instructions and measures relating to occupational health and safety, as prescribed by the Employer; and
 - 1.3 comply strictly with the statutorily prescribed work systems, operational equipment, machinery and occupational health and safety conditions;
2. And as an independent employer and contractor, hereby indemnify, in terms of the above undertakings, the Employer -
 - 2.1 in respect of any costs that I/my firm and/or employees and/or subcontractors and their employees may incur of necessity in compliance with the above undertakings; and
 - 2.2 against any claims that may be instituted against the Employer and/or any liability that the Employer may incur, whether instituted and/or caused by me/my firm's employees, agents, consultants, subcontractors and/or their employees and visitors or the Employer's clients or neighbours in respect of any incidents related to my/my firm's activities and as a result of which the occupational health and safety of the persons involved have been detrimentally affected; and
 - 2.3 against similar claims that I, managers or directors of my firm may have against the Employer and any damages for which I, managers or directors of my firm hold the Employer liable.
3. My firm's compensation commissioner number is _____
and I confirm that my firm and its subcontractors' fees have been paid up and obligations in respect of the compensation commissioner have been complied with and further that I shall furnish proof thereof in writing on request.
- 4.0 I hereby confirm that I have the authority to sign this indemnity undertaking and that the Employer is not obliged to confirm such confirmation.

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



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Signed at _____ This _____ day
of _____

Signature

Capacity

As witnesses:

1 _____
2 _____

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |

Johannesburg Water (SOC) Ltd



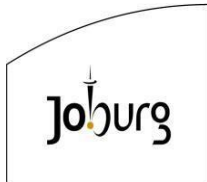
CONTRACT NO. JW14302R

**CONSTRUCTION OF 20ML REINFORCED CON-
 CRETE CARLSWALD
 RESERVOIR**

VOLUME 1

**RETURNABLE DOCUMENTS
 AND
 SCHEDULES**

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



T2.1 LIST OF RETURNABLE DOCUMENTS

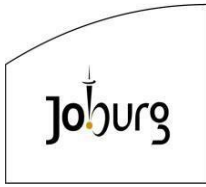
The tenderer must complete the following returnable documents:

| <u>Document</u> | <u>Page</u> |
|-------------------------------------------------------------------------------------------|-------------|
| 1. Returnable Schedules required for tender evaluation purposes | |
| T2.1.1 Record of addenda to tender documents | RD.5 |
| T2.1.2 Certificate of Authority | RD. 6 |
| T2.1.3 Compulsory Enterprise Questionnaire | RD.11 |
| T2.1.4 Preferential Procurement | RD 13 |
| MBD 6.1 Preference points claim form in terms of the preferential procurement regulations | RD.13 |
| MBD 4 Declaration of any potential conflict of interest | RD.20 |
| MBD 8 Declaration of bidder's past Supply Chain management practices | RD.22 |
| MBD 5 Declaration for Procurement above R10 Million (VAT Included) | RD.24 |
| MBD 9 Certificate of independent bid determination | RD.26 |
| T2.1.5 Proposed qualifications | RD.29 |
| T2.1.6 Schedule of the Tenderer's experience | RD.30 |
| T2.1.7 Contactable reference template | RD.31 |
| T2.1.8 Schedule of key personnel | RD.41 |
| T2.1.9 Curriculum vitae of key personnel | RD.43 |
| T2.1.10 Site Specific Method Statement | RD.52 |

T2.2 LIST OF ADDITIONAL RETURNABLE DOCUMENTS

| <u>Document</u> | <u>Page</u> |
|-----------------------------------------------------------------------------------------------------|----------------|
| 2. Other documents are required only for tender evaluation purposes | |
| T2.2.1 Certificate of Contractor Registration issued by the Construction Industry Development Board | |
| T2.2.2 SARS Tax Compliance Status Pin and Proof of CSD registration i.e. MA xxxxxxxxxxxx number | RD.58 RD.59 |

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |

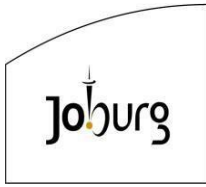


T2.3 LIST OF RETURNABLE SCHEDULES

| <u>Document</u> | <u>Page</u> |
|--------------------------------------------------------------------------------------|-------------|
| 3. Other documents that will be incorporated into the contract | |
| T2.3.1 JW 6.4 Returnable Annexure A – SHE Acknowledgment Form | RD.60 |
| T2.3.2 JW 6.5 Returnable Annexure B: Acknowledgement of Tender Drawings | RD.61 |
| T2.3.2 JW 6.6 Returnable Annexure C: Acknowledgement of Particular JW Specifications | RD.64 |

NOTE: The Tenderer is required to complete each and every schedule listed above to the best of his ability as the evaluation of tenders and the eventual contract will be based on the information provided by the tenderer.

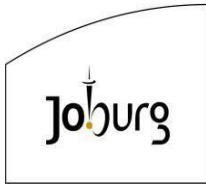
| | | | |
|------------------|--|--------------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



T2.1 LIST OF RETURNABLE DOCUMENTS

| <u>Document</u> | <u>Page</u> |
|-----------------------------------------------------------------------------|--------------------|
| 1. Returnable Schedules required only for tender evaluation purposes | |
| T2.1.1 Record of addenda to tender documents | RD.5 |
| T2.1.2 Certificate of Authority | RD.6 |
| T2.1.3 Compulsory Enterprise Questionnaire | RD.11 |
| T2.1.4 Preferential Procurement | RD.13 |
| T2.1.5 Proposed qualifications | RD.29 |
| T2.1.6 Schedule of the Tenderer's Experience | RD.30 |
| T2.1.7 Contactable reference template | RD.31 |
| T2.1.8 Schedule of key personnel | RD.41 |
| T2.1.9 Curriculum vitae of key personnel | RD.43 |
| T2.1.10 Site Specific Method Statement | RD.52 |

| | | | |
|------------------|--|--------------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Contract JW14302R
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T2.1.1 Record of Addenda to Tender Documents

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

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

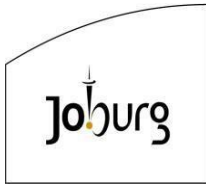
Attach additional pages if more space is required.

Signed Date

Name Position

Tenderer

| | | | |
|------------------|--|--------------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Contract JW14302R
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T2.1.2 Certificate of Authority

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

| (I) COMPANY | (II) CLOSE CORPO- RATION | (III) PARTNERSHIP | (IV) JOINT VENTURE | (V) SOLE PROPRIE- TOR |
|----------------|--------------------------------|----------------------|-----------------------|-----------------------------|
| | | | | |

i. Certificate For Company

I,, chairperson of the Board of Directors of, hereby confirm that by resolution of the Board (copy attached) taken on, Mr/Ms, acting in the capacity of, was authorised to sign all documents in connection with the tender for Contract No. JW14302R and any contract resulting from it on behalf of the company.

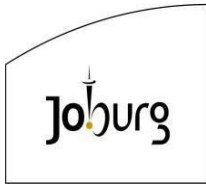
Chairman:

As Witnesses: 1.....

2.....

Date:

| | | | |
|------------------|--|--------------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Contract JW14302R
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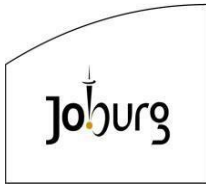
ii. Certificate For Close Corporation

We, the undersigned, being the key members in the business trading as
..... hereby authorize Mr/Ms..... , acting in the capacity of
....., to sign all documents in connection with the
tender and any contract resulting from it on our behalf.

| NAME | ADDRESS | SIGNATURE | DATE |
|------|---------|-----------|------|
| | | | |
| | | | |
| | | | |
| | | | |

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

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



iii. Certificate For Partnership

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

....., hereby authorize Mr/Ms.....,

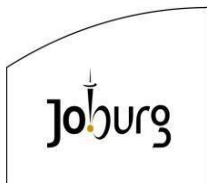
acting in the capacity of....., to sign all documents in connection

with the tender and any contract resulting from it on our behalf.

| NAME | ADDRESS | SIGNATURE | DATE |
|------|---------|-----------|------|
| | | | |
| | | | |
| | | | |
| | | | |

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

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Contract JW14302R
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iv. Certificate For Joint Venture

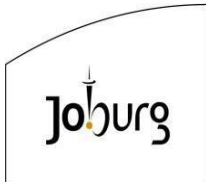
This Returnable Schedule is to be completed by joint ventures.

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

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

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

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



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v. Certificate *For Sole Proprietor*

I,, hereby confirm that I am the sole owner of the Business
trading as

Signature of Sole owner:

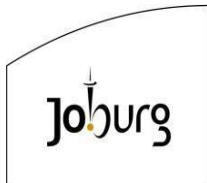
As Witnesses:

1.....

2.

Date:

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



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T2.1.3 Compulsory Enterprise Questionnaire

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

Section 1: Name of enterprise:

Section 2: VAT registration number, if any:

Section 3: CIDB registration number, if any:

Section 4: Particulars of sole proprietors and partners in partnerships

| Name* | Identity number* | Personal income tax number* |
|-------|------------------|-----------------------------|
| | | |
| | | |
| | | |

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

Section 5: Particulars of companies and close corporations

Company registration number

Close corporation number

Proof of CSD registration ie MA xxxxxxxxx number.

SARS Tax Compliance status Pin number

Section 6: Record in the service of the state

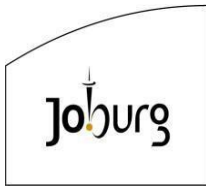
Indicate by marking the relevant boxes with a cross, if any sole proprietor, partner in a partnership or director, manager, principal shareholder or stakeholder in a company or close corporation is currently or has been within the last 12 months in the service of any of the following:

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

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

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

*insert separate page if necessary



Contract JW14302R
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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:

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

| 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:

- authorizes the Employer to verify the tax compliance status from the South African Revenue Services that my / our tax matters are in order;
- confirms that 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;
- 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.
- 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; and
- confirms that the contents of this questionnaire are within my personal knowledge and are to the best of my belief both true and correct.

Signed

Date

Name

Position

Enterprise name

T2.1.4 Preferential Procurement

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

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

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

1. GENERAL CONDITIONS

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

- the 90/10 system for requirements with a Rand value above R50 000 000 (all applicable taxes included).

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

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

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

The maximum points for this tender are allocated as follows:

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

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

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

2. DEFINITIONS

- a) **“tender”** means a written offer in the form determined by an organ of state in

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

3. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES

3.1 POINTS AWARDED FOR PRICE

a) THE 90/10 PREFERENCE POINT SYSTEMS

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

90/10

$$Ps = 90 \left(1 - \frac{Pt - P_{min}}{P_{min}} \right)$$

Where

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

4. POINTS AWARDED FOR SPECIFIC GOALS

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

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

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

| The specific goals allocated points in terms of this tender | Number of points allocated (90/10 system) | Number of points claimed (90/10 system) (To be completed by the tenderer) |
|--------------------------------------------------------------|----------------------------------------------|---------------------------------------------------------------------------------|
| Businesses located within the boundaries of COJ municipality | 6 | |
| Business owned by 51% or more- Black Youth. | 4 | |
| Total | 10 | |

5. DECLARATION WITH REGARD TO COMPANY/FIRM

5.1 Name of company/firm.....

5.2 Company registration number:

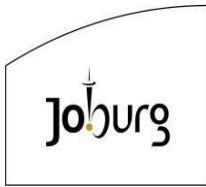
5.3 TYPE OF COMPANY/ FIRM

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

[TICK APPLICABLE BOX]

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

- i) The information furnished is true and correct;
- ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;
- iii) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 1.4 and 4.2, the contractor may be required to furnish documentary proof to the satisfaction of the organ of state that the claims are correct;
- iv) If the specific goals have been claimed or obtained on a fraudulent basis or any



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of the conditions of contract have not been fulfilled, the organ of state may, in addition to any other remedy it may have –

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

SIGNATURE(S) OF TENDERER

SURNAME AND NAME:

DATE:

ADDRESS:
.....
.....

5.5 SUB-CONTRACTING

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

(*Tick applicable box*)

| | | | |
|-----|--|----|--|
| YES | | NO | |
|-----|--|----|--|

5.5.2 If yes, indicate:

- i) What percentage of the contract will be subcontracted _____ (minimum of 30%)
 ii) The name of the sub-contractor(s):

.....

.....

.....

- iii) The black shareholders of the sub-contractor(s):

.....

.....

.....

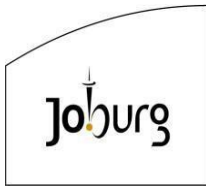
- iv) Whether the sub-contractor(s) is an EME or QSE

(*Tick applicable box*)

| | | | |
|-----|--|----|--|
| YES | | NO | |
|-----|--|----|--|

- v) Specify, by ticking the appropriate box, if subcontracting with an enterprise in terms of Preferential Procurement Regulations, 2022:

| Designated Group: An EME or QSE which is at least 51% owned by: | EME √ | QSE √ |
|-------------------------------------------------------------------|----------|----------|
| Black people | | |
| Black people who are youth | | |
| 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 | | |



5.6 DECLARATION WITH REGARD TO COMPANY/FIRM

5.6.1 Name of company/firm:

5.6.2 VAT number registration number:

5.6.3 Company registration number:

5.7 TYPE OF COMPANY/ FIRM

☐ Partnership/Joint Venture / Consortium

☐ One person business/sole propriety

☐ Close corporation

☐ Company

☐ (Pty) Limited

[TICK APPLICABLE BOX]

5.8 DESCRIBE PRINCIPAL BUSINESS ACTIVITIES

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

5.9 COMPANY CLASSIFICATION

☐ Manufacturer

☐ Supplier

☐ Professional service provider

☐ Other service providers, e.g. transporter, etc.

[TICK APPLICABLE BOX]

5.10 MUNICIPAL INFORMATION

Municipality where business is situated:

Registered Account Number:

Stand Number:

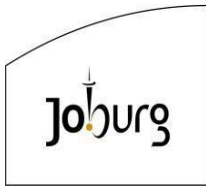
5.11 Total number of years the company/firm has been in business:.....

5.12 I/we, the undersigned, who is / are duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the Specific Goals in MBD 6.1 qualifies the company/ firm for the preference(s) shown and I / we acknowledge that:

v) The information furnished is true and correct;

vi) In the event of a contract being awarded as a result of points claimed as shown in MBD 6.1, the contractor is required to furnish documentary proof as requested in the Tender Data to the satisfaction of the purchaser that the claims are correct;

vii) If the specific goals points have been claimed or obtained on a fraudulent



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basis or any of the conditions of contract have not been fulfilled, the purchaser may, in addition to any other remedy it may have –

- (a) Disqualify the person from the bidding process;
- (b) Recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;
- (c) Cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;
- (d) Recommend that the bidder or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted by the National Treasury from obtaining business from any organ of state for a period not exceeding 10 years, after the *audi alteram partem* (hear the other side) rule has been applied; and
- (e) Forward the matter for criminal prosecution.

WITNESSES

- 1.
- 2.

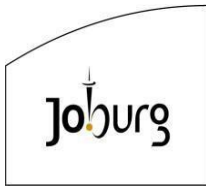
.....
SIGNATURE(S) OF BIDDERS(S)

DATE:

ADDRESS

.....

.....



MBD 4

DECLARATION OF INTEREST

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

- 3.1 Full Name of bidder or his or her representative:.....
- 3.2 Identity Number:.....
- 3.3 Position occupied in the Company (director, trustee, shareholder²):.....
- 3.4 Company Registration Number:
- 3.5 Tax Reference Number:.....
- 3.6 VAT Registration Number:
- 3.7 The names of all directors / trustees / shareholders members, their individual identity numbers and state employee numbers must be indicated in paragraph 4 below.
- 3.8 Are you presently in the service of the state? **YES / NO**
 - 3.8.1 If yes, furnish particulars.

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

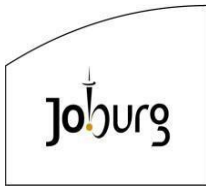
- (a) a member of –
 - (i) any municipal council;
 - (ii) any provincial legislature; or
 - (iii) the national Assembly or the national Council of provinces;
- (b) a member of the board of directors of any municipal entity;
- (c) an official of any municipality or municipal entity;
- (d) an employee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

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

- 3.9 Have you been in the service of the state for the past twelve months?..... YES / NO
 - 3.9.1 If yes, furnish particulars.....
- 3.10 Do you have any relationship (family, friend, other) with persons in the service of the state and who may be involved with the evaluation and or adjudication of this bid?

..... YES / NO

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



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

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

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

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

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

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

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

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

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

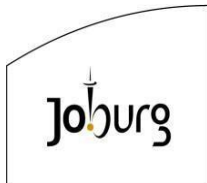
| Full Name | Identity Number | State Employee Number |
|-----------|-----------------|-----------------------|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

.....
Signature

.....
Date

.....
Capacity

.....
Name of Bidder

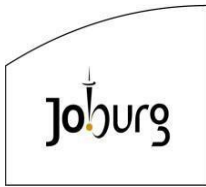


MBD 8

DECLARATION OF BIDDER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES

- 1 The bid of any bidder may be disregarded if that bidder, or any of its directors have-
 - a. abused the institution's supply chain management system;
 - b. committed fraud or any other improper conduct in relation to such system; or
 - c. failed to perform on any previous contract.
- 2 In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.

| Item | Question | Yes | No |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|--------------------------------|
| 4.1 | Is the bidder or any of its directors listed on the National Treasury's database as companies or persons prohibited from doing business with the public sector? (Companies or persons who are listed on this database were informed in writing of this restriction by the National Treasury after the <i>audi alteram partem</i> rule was applied). | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 4.1.1 | If so, furnish particulars: | | |
| 4.2 | Is the bidder or any of its directors listed on the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004)? 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 <input type="checkbox"/> | No <input type="checkbox"/> |
| 4.2.1 | If so, furnish particulars: | | |
| 4.3 | Was the bidder or any of its directors convicted by a court of law (including a court outside of the Republic of South Africa) for fraud or corruption during the past five years? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 4.3.1 | If so, furnish particulars: | | |
| 4.4 | Was any contract between the bidder and any organ of state terminated during the past five years on account of failure to perform on or comply with the contract? | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| 4.4.1 | If so, furnish particulars: | | |



CERTIFICATION

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

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

.....

Signature

.....

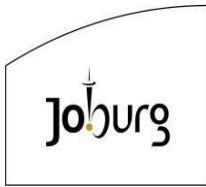
Date

.....

Position

.....

Name of Bidder

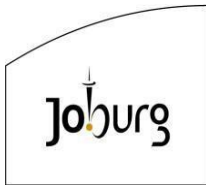


MBD 5

DECLARATION FOR PROCUREMENT ABOVE R10 MILLION (VAT INCLUDED)

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

- 1 Are you by law required to prepare annual financial statements for auditing? **YES / NO**
 - 1.1 If yes, submit audited annual financial statements for the past three years or since the date of establishment if established during the past three years.....
.....
- 2 If the bidder is not required by law to prepare annual financial statements for auditing, they shall be required to furnish their Annual Financial Statements -
 - i. for the past three years , or
 - ii. since their establishment if established during the past three years
 - 2.1 Do you have any outstanding undisputed commitments for municipal services towards a municipality or any other service provider in respect of which payment is overdue for more than 30 days?
YES / NO
 - 2.2 If no, this serves to certify that the bidder has 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.
 - 2.3 If yes, provide particulars.....
.....
- 3 Has any contract been awarded to you by an organ of state during the past five years, including particulars of any material non-compliance or dispute concerning the execution of such contract? **YES / NO**
 - 3.1 If yes, furnish particulars.....
.....
- 4 Will any portion of goods or services be sourced from outside the Republic, and, if so, what portion and whether any portion of payment from the municipality / municipal entity is expected to be transferred out of the Republic? **YES / NO**
 - 4.1 If yes, furnish particulars.....
.....



CERTIFICATION

I, THE UNDERSIGNED (NAME)

.....

**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**

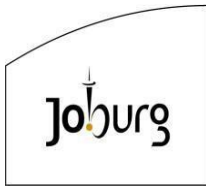
FALSE.

.....
Signature

.....
Date

.....
Position

.....
Name of Bidder



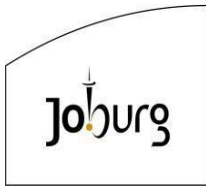
MBD 9

CERTIFICATE OF INDEPENDENT BID DETERMINATION

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

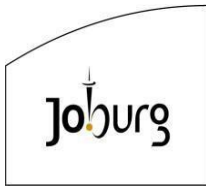
(Name of Municipality / Municipal Entity) do hereby make the following statements that I certify to be true and complete in every respect:

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 consortium³ will not be construed as collusive bidding.
7. In particular, without limiting the generality of paragraphs 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
 - (a) prices;

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.



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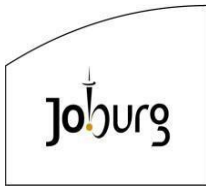
-
- (b) geographical area where product or service will be rendered (market allocation)
 - (c) methods, factors or formulas used to calculate prices;
 - (d) the intention or decision to submit or not to submit, a bid;
 - (e) the submission of a bid which does not meet the specifications and conditions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

.....
Signature

.....
Date

.....
Position

.....
Name of Bidder



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T2.1.5 Proposed Amendments and Qualifications

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

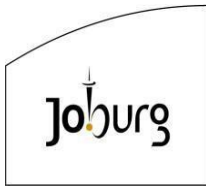
The Tenderer's attention is drawn to clause C.3.8 of the Standard Conditions of Tender referenced in the Tender Data regarding the employer's handling of material qualifications.

| Page | Clause or item | Proposal |
|------|----------------|----------|
| | | |

Signed..... Date

Name.....Position

Tenderer



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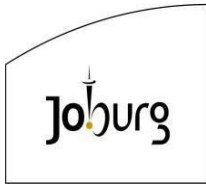
T2.1.6 Schedule of the Tenderer's Experience

| EMPLOYER: CONTACT PERSON AND TELEPHONE NUMBER | EMPLOYER'S AGENT OR REPRESENTATIVE: CONTACT PERSON AND TELEPHONE NUMBER | NATURE OF WORK | VALUE OF WORK (inclusive of VAT) | DATE COMPLETED OR EXPECTED TO BE COMPLETED |
|-----------------------------------------------|-------------------------------------------------------------------------|----------------|----------------------------------|--------------------------------------------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Signed _____ Date _____

Name _____ Position _____

| | |
|-----------------|--|
| <i>Tenderer</i> | |
|-----------------|--|



T 2.1.7 CONTACTABLE REFERENCE

To Johannesburg Water (SOC) Ltd

CRITERIA 1

I, the undersigned being duly authorised to do so, hereby furnish a reference to Johannesburg Water relative to tender Contract No. **JW14302R** for the **Construction of 20ML Reinforced Concrete Carlswald Reservoir**.

Name of Tenderer:

Description of Services provided

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.....
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Method of construction.....

Reservoir size.....

Material type.....

Name of authorized person:

Signature :.....Date

Telephone/Mobile:

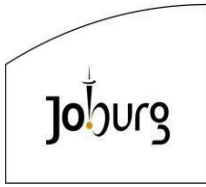
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Email:

Completed on behalf (Name of Client)

.....

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T 2.1.7 CONTACTABLE REFERENCE

To Johannesburg Water (SOC) Ltd

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Method of construction.....

Reservoir size.....

Material type.....

Name of authorized person:

Signature :Date

Telephone/Mobile:

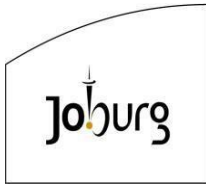
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Description of Services provided

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Method of construction.....

Reservoir size.....

Material type.....

Name of authorized person:

Signature :Date

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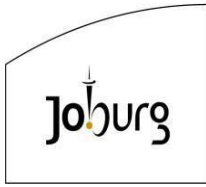
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T 2.1.7 CONTACTABLE REFERENCE

To Johannesburg Water (SOC) Ltd

CRITERIA 2

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Name of Tenderer:

Description of Services provided

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Method of construction.....

Reservoir size.....

Material type.....

Name of authorized person:

Signature :Date

Telephone/Mobile:

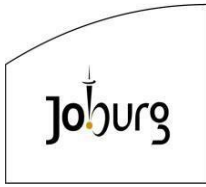
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Description of Services provided

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Method of construction.....

Reservoir size.....

Material type.....

Name of authorized person:

Signature :Date

Telephone/Mobile:

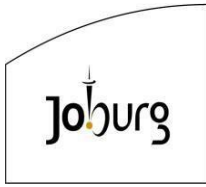
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Description of Services provided

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Method of construction.....

Reservoir size.....

Material type.....

Name of authorized person:

Signature :Date

Telephone/Mobile:

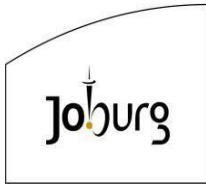
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T 2.1.7 CONTACTABLE REFERENCE

To Johannesburg Water (SOC) Ltd

CRITERIA 3

I, the undersigned being duly authorised to do so, hereby furnish a reference to Johannesburg Water relative to tender Contract No. **JW14302R** for the **Construction of 20ML Reinforced Concrete Carlswald Reservoir**.

Name of Tenderer:

Description of Services provided

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Method of construction.....

Pipe diameter size.....

Material type.....

Contract Value (Excl. VAT).....

Name of authorized person:

Signature :.....Date

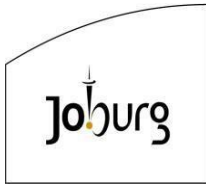
Telephone/Mobile:

Email:

Completed on behalf (Name of Client)

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Description of Services provided

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Method of construction.....

Pipe diameter size.....

Material type.....

Contract Value (Excl. VAT).....

Name of authorized person:

Signature :.....Date

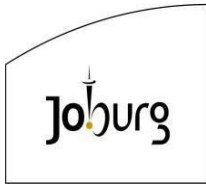
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Email:

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Method of construction.....

Pipe diameter size.....

Material type.....

Contract Value (Excl. VAT).....

Name of authorized person:

Signature :.....Date

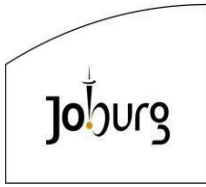
Telephone/Mobile:

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Pipe diameter size.....

Material type.....

Contract Value (Excl. VAT).....

Name of authorized person:

Signature :.....Date

Telephone/Mobile:

Email:

Completed on behalf (Name of Client)

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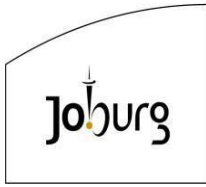
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T2.1.8 Key Personnel

In terms of the Project Specification and the Conditions of Tender, unskilled workers may only be brought in from outside the local community if such personnel are not available locally.

The Tenderer shall list below the personnel which they intend to utilize on the Works, including key personnel which may have to be brought in from outside if not available locally.

| CATEGORY OF EMPLOYEE | NUMBER OF PERSONS | | | | | |
|------------------------------------|----------------------------------------------------|---------|-------------------------------------------------------|---------|----------------------------------------------------------|---------|
| | KEY PERSONNEL, PART OF THE TENDERER'S ORGANISATION | | KEY PERSONNEL TO BE IMPORTED IF NOT AVAILABLE LOCALLY | | UNSKILLED PERSONNEL TO BE RECRUITED FROM LOCAL COMMUNITY | |
| | HDI | NON-HDI | HDI | NON-HDI | HDI | NON-HDI |
| Contracts Manager | | | | | | |
| Site Manager/Agent | | | | | | |
| Safety Officer | | | | | | |
| Quality Control | | | | | | |
| Surveyors | | | | | | |
| Technicians | | | | | | |
| Foremen | | | | | | |
| Artisans and other Skilled workers | | | | | | |
| Plant Operators | | | | | | |



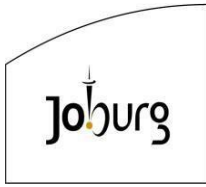
Contract JW14302R
CONSTRUCTION OF 20 ML REINFORCED CONCRETE CARLSWALD RESERVOIR
Volume 1 Tender and Contract
Section T2 Returnable Documents



| | | | | | | |
|------------------------------------|--|--|--|--|--|--|
| Unskilled Workers | | | | | | |
| Others: | | | | | | |

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

DATE:



Contract JW14302R
CONSTRUCTION OF 20 ML REINFORCED CONCRETE CARLSWALD RESERVOIR
Volume 1 Tender and Contract
Section T2 Returnable Documents

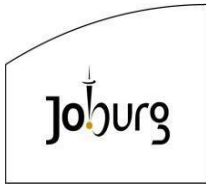


| | |
|----------------------------------------------------------------|--|
| | |
| Project Name and Locality | |
| Project Dates and Value | |
| Project Position (e.g. Project Manager, Engineer, etc.) | |
| Description of Scope and Duties | |

| | |
|----------------------------------------------------------------|--|
| Project Name and Locality | |
| Project Dates and Value | |
| Project Position (e.g. Project Manager, Engineer, etc.) | |
| Description of Scope and duties | |

| | |
|----------------------------------------------------------------|--|
| Project Name and Locality | |
| Project Position (e.g. Project Manager, Engineer, etc.) | |
| Description of Scope and duties | |

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| Project Name and Locality | |
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| Project Position (e.g. Project Manager, Engineer, etc.) | |
| Description of Scope and duties | |



Contract JW14302R
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Volume 1 Tender and Contract
Section T2 Returnable Documents

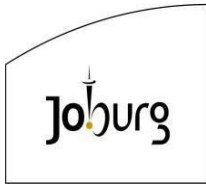


| | |
|----------------------------------------------------------------|--|
| Project Name and Locality | |
| Project Dates and Value | |
| Project Position (e.g. Project Manager, Engineer, etc.) | |
| Description of Scope and duties | |

I, , hereby declare that I am aware of the inclusion of my Curriculum Vita in the proposed project team and make myself available for this project.

Signature :

Date :



Contract JW14302R
CONSTRUCTION OF 20 ML REINFORCED CONCRETE CARLSWALD RESERVOIR
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Section T2 Returnable Documents



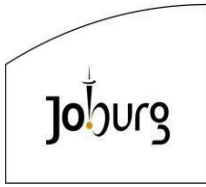
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| Description of Scope and duties | |

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| Project Name and Locality | |
| Project Dates and Value | |



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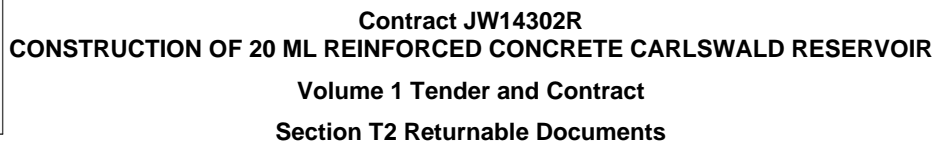


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| Project Position (e.g. Project Manager, Engineer, etc.) | |
| Description of Scope and duties | |

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Signature :

Date :



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| Proposed role in the project | SAFETY OFFICER |
|-------------------------------------|----------------|

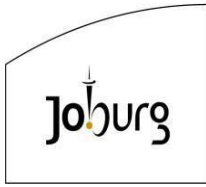
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| 1. Surname | |
| 2. First Name | |
| 3. Date and place of birth | |
| 4. Nationality | |
| 5. Membership of Professional Bodies and Professional Registration | |

| Institution (Date from – Date to) | Degree(s) or Diploma(s) obtained |
|-----------------------------------|----------------------------------|
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| Company / Organisation | (Date from – Date to) | Years of Employment | Position |
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| Project Name and Locality | |
| Project Dates and Value | |



Contract JW14302R
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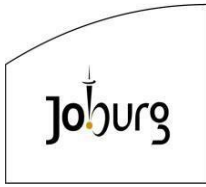
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| Project Position (e.g. Project Manager, Engineer, etc.) | |
| Description of Scope and Duties | |

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| Project Name and Locality | |
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| Description of Scope and duties | |

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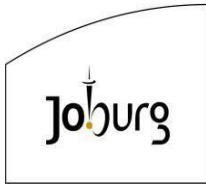
Signature :

Date :

T2.1.10 Site Specific Method Statement

THE SITE SPECIFIC METHOD STATEMENT MUST BE COMPLETED IN THE TEMPLATE LISTED BELOW. METHOD STATEMENTS THAT ARE PROVIDED IN ANY OTHER FORMAT WILL NOT BE CONSIDERED

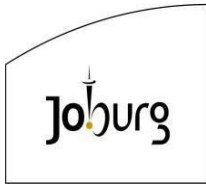
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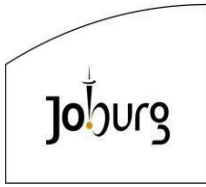
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| 1.3 | Installation of all associated pipework, including inlet, outlet and bypass |
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| 1.4 | Solar system and telemetry |
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| 1.5 | General (other items) |
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Contract JW14302R
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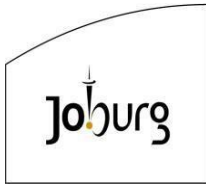
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| 2.3 | Installation of all associated pipework, including inlet, outlet and bypass |
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| 2.4 | Solar system and telemetry |
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| 2.5 | General (other items) |
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Contract JW14302R
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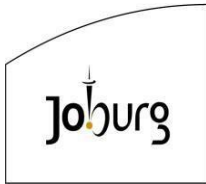
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| 3 | Health and Safety (with respect to working at heights and confined spaces and addresses the major components listed below) |
| 3.1 | Construction of 20ML Reservoir |
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| 3.2 | Construction of chambers in the reservoir complex; |
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| 3.3 | Installation of all associated pipework, including inlet, outlet and bypass |
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| 3.4 | Solar system and telemetry |
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| 3.5 | General (other items) |
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| 4 | <p>Project Programme/Schedule (On <i>MS Projects or any other Gantt Chart</i>, as an Annexure) outlining a critical path, durations of tasks/activities aligned to the scope of works, linkages of tasks, aligned to the contractual timelines, and including all contractual dates. The following major components and their sub-tasks must be shown;</p> <ul style="list-style-type: none">• Construction of 20ML Reservoir;• Construction of chambers in the reservoir complex;• Installation of all associated pipework, including inlet, outlet and bypass, and• Solar system and telemetry |



T2.2.1 Contractor's Certificate of Registration With CIDB

NB: The Tenderer shall attach hereto the Contractor's Certificate of Registration with CIDB OR provide the CIDB registration number that JW can use to verify CIDB requirements for this tender. Failure to submit the certificate or CIDB registration number with the tender document will lead to the conclusion that the Tenderer is not registered with the CIDB and therefore not eligible to tender.

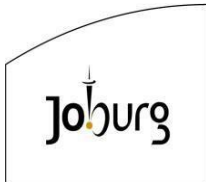
Tenderers who have made application to CIDB for registration and are capable of being so registered prior to the evaluation of submissions must attach a notification from CIDB that their application is being considered.

CIDB status to be active at the required CIDB grading at time of evaluation to avoid disqualification.

SIGNATURE:
.....

DATE:

(of person authorized to sign on behalf of the Tenderer)



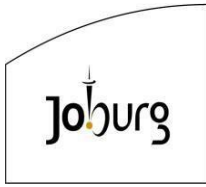
T2.2.2 SARS Tax Compliance Status Pin and Proof of CSD registration

The Tenderer must attach hereto a copy SARS Tax Compliance Status Pin and Proof of CSD registration i.e. MA xxxxxxxxxxx number.

SIGNATURE:
.....

DATE:

(of person authorized to sign on behalf of the Tenderer)



T2.3.1 JW 6.4 Returnable Annexure A: Acknowledgement of SHE Specification & Annexures

DECLARATION BY CONTRACTOR

I, the undersigned, and representing the tenderer as indicated hereby acknowledge that I have obtained copies of the following listed documentation and confirm that I fully understand the contents thereof and confirm compliance thereto in the event of being successful:

- OHS Specification (Volume 3)
- Annexure 1: Baseline Risk Assessment
- Annexure 2: Medical Screening Policy
- Annexure 3: Sign off form
- Annexure 4: Environmental Management Plan

We furthermore commit to:

- Comply with all applicable SHE related legal and other requirements.
- Inform all staff of their role in managing environmental impacts and safety hazards on site.

Signed at on this Day of 20.....

| | |
|----------------------------------|--|
| Name of tenderer | |
| Name of Authorized person | |
| Authorized Signature* | |

T2.3.2 JW 6.5 Returnable Annexure B: Acknowledgement of Tender Drawings

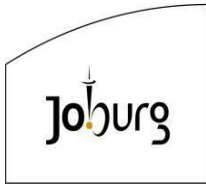
DECLARATION BY CONTRACTOR

I, the undersigned, and representing the tenderer as indicated hereby acknowledge that I have obtained copies of the following listed documentation and confirm that I fully understand the contents thereof and confirm compliance thereto in the event of being successful:

The drawings that are issued for **TENDER PURPOSES** are those noted below:

| DRAWING NUMBER | DESCRIPTION | REV |
|-----------------|----------------------------------------------------------------------------|-----|
| 13214-73-01-001 | LAYOUT OF EXISTING SERVICES & PROPOSED NEW INFRA-STRUCTURE | C00 |
| 13214-73-01-002 | SETTING OUT INFORMATION FOR THE NEW INFRASTRUC-TURE | C00 |
| 13214-73-01-003 | JW CONSTRUCTION NAME BOARD | C00 |
| 13214-73-02-001 | TERRACING, INTERCONNECTING PIPEWORK, ACCESS ROAD & SETTING OUT INFORMATION | C00 |
| 13214-73-02-002 | LEAK DETECTION, SCOUR PIPING & ACCESS ROAD LONG SECTIONS | C00 |
| 13214-73-02-003 | INLET, OUTLET PIPING & TERRACE LONG SECTIONS | C00 |
| 13214-73-02-004 | FENCE LAYOUT & DETAILS | C00 |
| 13214-73-04-001 | GENERAL ARRANGEMENT & DETAILS | C00 |
| 13214-73-04-002 | LEAK DETECTION, CAT LADDERS & ACCESS HATCH DETAILS | C00 |
| 13214-73-04-003 | RESERVOIR PIPING (INLET, OUTLET, OVERFLOW, SCOUR & DRAIN) DETAILS | C00 |
| 13214-73-04-004 | FLOWMETER CHAMBERS - 3D VIEWS | C00 |
| 13214-73-04-005 | FLOWMETER CHAMBERS - LAYOUT, SECTIONS & DETAILS | C00 |
| 13214-73-04-006 | VALVE CHAMBER - 3D VIEWS | C00 |
| 13214-73-04-007 | VALVE CHAMBER - LAYOUT, SECTIONS & DETAILS | C00 |
| 13214-73-04-010 | SCOUR BOX- 3D VIEWS | C00 |
| 13214-73-04-011 | SCOUR BOX - LAYOUT & SECTIONS | C00 |
| 13214-73-04-012 | INTERCONNECTING PIPING LAYOUT | C00 |
| 13214-73-04-013 | PIPE AND VALVE SCHEDULE (SHEET 1 OF 2) | C00 |

| DRAWING NUMBER | DESCRIPTION | REV |
|-----------------|------------------------------------------------------------------------------|-----|
| 13214-73-04-013 | PIPE AND VALVE SCHEDULE (SHEET 2 OF 2) | C00 |
| 13214-73-04-017 | TIE-IN BOX 3D VIEWS | C00 |
| 13214-73-04-018 | TIE-IN BOX LAYOUT, SECTIONS & DETAILS | C00 |
| 13214-73-05-001 | TELEMETRY BUILDING LAYOUTS, ELEVATIONS, SECTIONS AND DETAILS | C00 |
| 13214-73-05-002 | GUARD HOUSE 3D VIEWS | C00 |
| 13214-73-05-003 | GUARDHOUSE LAYOUTS, ELEVATIONS, SECTIONS AND DETAILS | C00 |
| 13214-73-05-004 | VALVE BUILDING - 3D VIEWS | C00 |
| 13214-73-05-005 | VALVE BUILDING - LAYOUT, DOOR & WINDOW SCHEDULE | C00 |
| 13214-73-05-006 | VALVE BUILDING - SECTIONS & DETAILS | C00 |
| 13214-73-05-007 | GUARDHOUSE LAYOUTS, ELEVATIONS, SECTIONS AND DETAILS -ARCHITECTURAL | C00 |
| 13214-73-05-008 | TELEMETRY BUILDING LAYOUTS, ELEVATIONS, SECTIONS AND DETAILS - ARCHITECTURAL | C00 |
| 13214-73-06-001 | ELECTRICAL CABLE ROUTES | C00 |
| 13214-73-06-002 | EARTHING LAYOUT | C00 |
| 13214-73-06-003 | SINGLE LINE DIAGRAM | C00 |
| 13214-73-06-004 | TYPICAL LOOP DIAGRAM LEVEL SENSOR | C00 |
| 13214-73-06-005 | TYPICAL LOOP DIAGRAM CLAMP-ON TYPE FLOW METER | C00 |
| 13214-73-06-006 | TYPICAL LOOP DIAGRAM OPEN CLOSE ACTUATOR | C00 |
| 13214-73-06-007 | TYPICAL LOOP DIAGRAM MODULATING ACTUATOR | C00 |
| 13214-73-06-008 | GUARD HUT POWER AND LIGHTING LAYOUT | C00 |
| 13214-73-06-009 | TELEMETRY HUT | C00 |
| 13214-73-06-010 | TYPICAL FIELD JB'S | C00 |
| 13214-73-06-011 | TYPICAL FIELD PLC | C00 |
| 13214-73-06-012 | EARTHING AND LIGHTING SYMBOLS. | C00 |
| 13214-73-06-013 | EXTERIOR LIGHTING LAYOUT | C00 |
| 13214-73-06-014 | VALVE BUILDING POWER AND LIGHTING LAYOUT | C00 |

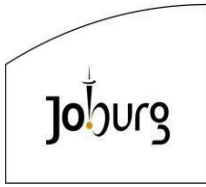


Contract JW14302R
CONSTRUCTION OF 20 ML REINFORCED CONCRETE CARLSWALD RESERVOIR
Volume 1 Tender and Contract
Section T2 Returnable Documents



Signed at on this Day of 20.....

| | |
|----------------------------------|--|
| Name of tenderer | |
| Name of Authorized person | |
| Authorized Signature* | |



T2.3.3 JW 6.6 Returnable Annexure C: Acknowledgement of JW Specifications

DECLARATION BY CONTRACTOR

I, the undersigned, and representing the tenderer as indicated hereby acknowledge that I have obtained copies of the following listed documentation and confirm that I fully understand the contents thereof and confirm compliance thereto in the event of being successful:

- C & I Specifications
- Corrosion Specifications
- Electrical Specifications
- Mechanical Specifications

Signed at on this Day of 20.....

| | |
|----------------------------------|--|
| Name of tenderer | |
| Name of Authorized person | |
| Authorized Signature* | |

Johannesburg Water (SOC) Ltd



CONTRACT JW14302R

**CONSTRUCTION OF 20ML REINFORCED CONCRETE CARLSWALD
RESERVOIR**

VOLUME 1

PART 2: PRICING DATA

| | | | | |
|-----------|--|-------------|--|--|
| Employer: | | Contractor: | | |
| Witness: | | Witness: | | |

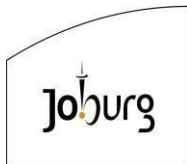
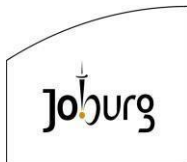


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| C2.1.1 | General Preamble to the Bill of Quantities | C.42 |
| C2.1.2 | Special Payment Conditions | C.44 |
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| C2.2 | Bill of Quantities/ Schedule of Rates | C.50 |
| C2.2.1 | Summary of Bill of Quantities | C.106 |

| | | | | |
|-----------|--|-------------|--|--|
| Employer: | | Contractor: | | |
| Witness: | | Witness: | | |



C2 PRICING DATA

C2.1 PRICING INSTRUCTIONS

C2.1.1 General Preamble to the Bill of Quantities

- a) **The Contract is to be constructed by maximising the use of labour. In cases where the use of a plant is required, the Contractor must motivate and obtain written permission before the work is undertaken with plant. Payment will not be made for unauthorized use of plant to carry out work.**
- b) All items in the Bill of Quantities, except where otherwise specified in Clause 8 of a Standardised Specification or in the Project Specification, shall be measured and shall cover operations as recommended in the standard system of measurement of civil engineering quantities, published under the title "Civil Engineering Quantities", by the South African Institution of Civil Engineering.
- c) The basis and principles of measurement and payment are described in this section (Pricing Instructions) and Clause 8 of each of the Standardised Specifications for Civil Engineering Construction. The applicable SANS 1200 Standardised Specifications are listed in the Scope of Work, Portion 1: Project Specification. Portion 2: comprises the Technical specifications for the works of each discipline in this contract.
- d) Descriptions in the Bill of Quantities are abbreviated and comply generally with those in the Standardised Specifications. Clause 8 of each Standardised Specification, read together with the relevant clauses of the Scope of Work, set out what ancillary or associated activities are included in the rates for the operations specified. Should any requirements of the measurement and payment clause of the applicable Standardised Specification or the Scope of Work, conflict with the terms of the Bill of Quantities, the requirements of the Standardised Specification or Scope of Work, as applicable, shall prevail.
- e) The clauses in a specification in which further information regarding the Schedule item may be found are listed in the "Payment Refers" column in the Schedule. The reference clauses indicated are not necessarily the only sources of information in respect of listed items. Further information and specifications may be found elsewhere in the Contract Documents. Standardised Specifications are identified by the letter or letters which follow SANS in the SANS 1200 series of specifications, e.g. G for SANS 1200G.
- f) Unless otherwise stated, items are measured net in accordance with the drawings, and no allowance is made for waste.
- g) Cable quantities given in the Schedule of Quantities and Cable Schedules have been measured against scaled drawings. It is the contractor's responsibility to measure the exact cable lengths before purchasing/installing cables. All cables will be subject to re-measure by the Employer's Agent once installed. Furthermore, before any material is purchased, the contractor must obtain the written permission of the Employer's Agent.
- h) The quantities set out in the Bill of Quantities are the estimated quantities of the Contract Works, but the Contractor shall be required to undertake whatever quantities may be directed by the Engineer from time to time. The Contract Price for the completed Works shall be computed from the actual quantities of work done, valued at the relevant unit rates and/or prices.

| | | | | |
|------------------|--|--------------------|--|--|
| Employer: | | Contractor: | | |
| Witness: | | Witness: | | |

- i) The rates and/or prices to be inserted in the Bill of Quantities are to be the full inclusive prices for the work described under the several items. Such rates and/or prices 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, as well as overhead charges and profit. Reasonable charges shall be inserted as these shall be used as a basis for assessment of payment for additional work that may have to be carried out.
- j) The units of measurement described in the Bill of Quantities are metric units. Alternatives used 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 | = | meganewtom-metre |
| m ³ km | = | cubic metre-kilometre | P Csum | = | Prime Cost sum |
| l | = | litre | Prov sum | = | Provisional sum |
| kl | = | kilolitre | % | = | percent |
| MPa | = | megapascal | kW | = | kilowatt |

- k) For the purpose of this Bill of Quantities, where applicable, the following words shall have the meanings hereby assigned to them:

Unit : The unit of measurement for each item of work as defined in the SANS Standard Specification for South African National Standards.

Quantity : The number of units of work for each item.

Rate : The agreed payment per unit of measurement.

Amount : The product of the quantity and the agreed rate for an item.

Lump sum: An agreed amount for an item, the extent of which is described in the Bills of Quantities, but the quantity of work of which is not measured in any units.

- l) Arithmetical errors in the Bill of Quantities shall be corrected in accordance with Clause C3.9 of the Conditions of Tender. Should there be any discrepancy between rates and/or prices written in the Assessment Schedule and the Bill of Quantities, the latter shall govern.
- m) A price or rate is to be entered against each item in the Bill of Quantities, whether the quantities are stated or not. An item against which no price/rate is entered will be considered to be a "nil" price/rate, and deemed to be covered by the other prices in the Schedule.
- n) The Bill of Quantities shall be completed by hand in **INK or TYPED**. An electronic version of the BoQ will be made available to all tenderers. Tenderers are permitted to insert rates and prices in the electronic version and submit the completed electronic version of the BoQ as part of their tender pack. Tenderers are to ensure that all line item totals, page totals and summary totals are correct, and will remain fully responsible for the priced BoQ that has been submitted. The Employer will accept no responsibility for any errors or omissions in the priced BoQ.

| | | | | |
|------------------|--|--------------------|--|--|
| Employer: | | Contractor: | | |
| Witness: | | Witness: | | |



C2.1.2 Special Payment Conditions

This clause shall be read in conjunction with the 'Penalties' clause(s). Where the penalty clause shall always receive precedence over this clause, should it be found that duplicative financial corrective measures exists.

C2.1.2.1 Provided Previously

The Contractor shall not re-execute works under this Contract where he has successfully executed works for the Employer under a previous contract(s) that comply with the requirements of this Contract. However, where applicable, the Contractor shall:

- a) clearly state this in his qualifications; and
- b) still provide the associated rates and prices in the schedule in the associated line item, but not calculate an associated amount.

The Employer shall at his sole discretion decide to re-execute such works.

C2.1.2.2 Security

The Contractor shall have been deemed to have included all security related costs in the Provisional and General item rates, including allowing for minimum 100% (high risk areas) of the sites requiring security provision for the Employer and Engineer representative(s).

C2.1.2.3 Materials and Equipment

The Employer shall not provide any works material and equipment, as this shall be provided by the Contractor and deemed to have been included in his provided activity rates or prices.

C2.1.2.4 Permits and Wayleaves

All associated costs to obtain permits and way-leaves as required for the execution of the works, where such affect other services, shall be deemed to have been included in the scheduled rates for SANS 1200A or SANS 1200AA or SANS 1200AB where pricing provision for such items have been allowed for in the pricing schedules, alternatively, it shall be deemed to be included in the various scheduled activity rates or prices provided by the Contractor

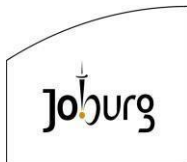
C2.1.2.5 Confined space

The Contractor shall note that work activities shall be executed within confined spaces, and it shall be deemed that allowance has been made in all activity pricing.

C2.1.2.6 Payment ONLY for works completed

The Contractor shall note that payment shall only be made for Works activities successfully (delivering the end result) executed, complying with the quality requirements and provided to the Engineer or his duly authorised representative.

| | | | | |
|-----------|--|-------------|--|--|
| Employer: | | Contractor: | | |
| Witness: | | Witness: | | |



C2.1.3 Health and Safety

The principal Contractor's health and safety plan has to follow the framework as laid out in the HEALTH AND SAFETY SPECIFICATION AND ENVIRONMENTAL MANAGEMENT PLAN, as a minimum.

No payment shall be applicable where equipment is not provided and services are not rendered in terms of the approved Health and Safety Plan. Additionally, the Contractor shall also be penalised in terms of Clause (30) of the Occupational Health and Safety Act 183 (1993), Construction Regulations (2014).

C2.1.3.1 Compilation of health and safety plan

Unit: Sum

The rate shall include the complete cost for the provision of resources (human and equipment), communication, transportation and travelling, documentation of activities and reporting activities required to compile a Health and Safety Plan as per the Health and Safety Specifications contained in Volume 2, and approval of such plan thereof. Remuneration shall be a lump sum.

C2.1.3.2 Implementation of health and safety plan

Unit: Sum

The rate shall include the complete cost for the provision of resources (human and equipment), communication, transportation and travelling, documentation of activities and reporting activities required to fully comply with the implementation and maintenance of the Health and Safety Plan. Remuneration shall be on a monthly basis for services rendered, by dividing the total sum tendered by the construction duration.

Safety officer

Unit: Sum

The rate shall include the wages and salary that is to be paid to the safety officer/s, whose responsibility it is to ensure that all activities required fully comply with the Health and Safety Plan as per the Health and Safety Specifications contained in Volume 2 for the duration of the Contract. The rate shall be on a monthly basis for services rendered, by dividing the total sum tendered by the construction duration.

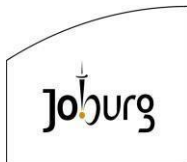
NOTE: The Contractor shall clearly state the number of Health and Safety officers in the provided space in the Bill of Quantities that he has allowed for in his price. Where no number is provided the Employer shall assume that adequate provision, minimum one (1) per site, has been made to implement the provided Health and Safety Plan successfully.

C2.1.4 EMP Implementation and Maintenance

Unit: Sum

The rate shall include the complete cost for the provision of resources (human and equipment), communication, transportation and travelling, documentation of activities and reporting activities required to fully comply with the implementation and maintenance of the EMP contained in Volume 2

| | | | | |
|-----------|--|-------------|--|--|
| Employer: | | Contractor: | | |
| Witness: | | Witness: | | |



for the duration of the Contract. Remuneration shall be on a monthly basis for services rendered, by dividing the total sum tendered by the construction duration.

No payment shall be applicable where equipment is not provided and services are not rendered in terms of the approved EMP.

C2.1.5 Subcontracting

C2.1.5.1

The Contractor shall ensure that rates that are tendered (during Tender Stage) for work items that are likely to be Subcontracted, are market related rates. Provision is made in the Bill of Quantities (BoQ) for the Contractor to add a mark-up for the sourcing, handling, and management of Subcontractors, SMME's, and the like, for the duration of the Contract.

C2.1.5.2

On or during appointment of Subcontractors, should Subcontractors **prove** that rates, that have been tendered by the Contractor for BoQ work items that are being subcontracted, are not market related, the Contractor will be liable to cover the cost of the difference, i.e. the difference in rate tendered by the Contractor versus the rate that is being requested by the Subcontractor. This difference in cost will be for the Contractor's account, and no Variation Orders for additional costs will be entertained by the Employer. The Contractor bears the full and complete risk for the rates that have been tendered by the Contractor during Tender Stage.

C2.1.5.3

In the event that a rate supplied by the Contractor for a specific BoQ work item is not sufficient to cover Subcontractor costs/rates for that specific item, the Contractor shall provide a detailed rate breakdown for that specific BoQ item (and each and every subsequent BoQ work item where the rate is not sufficient to cover Subcontractor cost); and shall indicate costs (amongst others) for labour, material, handling, mark-ups, etc. to prove that the rate that was submitted during tender stage was in fact market related; and in balance with other rates that were submitted for work items that will not be undertaken by Subcontractors.

C2.1.5.4

Should any delays be experienced during the period of the Contract due to the appointment of subcontractors by the Contractor, work stoppages by subcontractors, industrial action by subcontractors, etc. such delays shall be assigned to the Contractor, and no claims for Extension of Time will be entertained by the Employer.

| | | | | |
|-----------|--|-------------|--|--|
| Employer: | | Contractor: | | |
| Witness: | | Witness: | | |

C2.1.6 Recommended Labour-Intensive Tasks (to be used where necessary, with prior approval of the Employer's Agent)

| ACTIVITY | TOOLS | TASK |
|-------------------------------------------------------------------------------|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bush clearing | Axe, saw, rope | Medium dense bush (4 to 7 bushes per 100 m ²) 350 m ² /md Dense bush (10 to 15 bushes per 100 m ²) 200 m ² /md Very dense bush (20 to 30 bushes per 100 m ²) 100 m ² /md |
| Grass clearing | Slasher, spade, hoe, fork, rake. | Dense grass 85 m ² /md |
| Stripping ground cover and grubbing out roots, haul to nearby dump and spread | Pick, shovel, fork, rake | Light vegetation, dig to 50 mm deep 150 m ² /md Medium vegetation, dig to 100 mm deep 75 m ² /md Heavy vegetation, dig to 150 mm deep 40 m ² /md |
| Grubbing out roots to 250 mm deep | Pick, shovel, fork, rake | Dig in soft ground to remove roots 42 m ² /md |
| Destumping (removal of stumps large roots) | Pick, shovel, axe | Medium dense bush 60 m ² /md |
| Removal of bush and tree cuttings | Bush hook, rope, axe, saw | Cut, bundle and load branches, tree trunk pieces, other vegetation 8 m ³ /md |
| Boulder removal | Crowbar | Daily paid |
| Excavation (measured in place) | | Throwing distance: up to 4 m 4 to 6 m |
| Loose soil | Shovel | 5 to 6 m ³ /md 4.5 to 5 m ³ /md |
| Sticky soil | Spade, fork, forked hoe | 2 to 3 m ³ /md 1.5 to 2 m ³ /md |
| Firm soil | Pick, shovel, spade, hoe | 3 to 4.5 m ³ /md 2.5 to 4 m ³ /md |
| Hard stony gravel | Pick, shovel, crowbar | 1.5 to 2 m ³ /md 1 to 1.5 m ³ /md |
| Loading (measured loose) into: | Shovel | Loose soil or gravel: |
| Wheelbarrow | | 12 to 15 m ³ /md |
| Trailer | | 7 to 10 m ³ /md |
| Truck | | 4 to 6 m ³ /md |

| | | | | |
|-----------|--|-------------|--|--|
| Employer: | | Contractor: | | |
| Witness: | | Witness: | | |

Section C2 Pricing Data

| | | | |
|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wheel-barrow haul (measured loose; haul and unload only) | Wheelbarrow (Note production increases 30% for good haul route and decreases 30% for poor haul route) | Equivalent haul distance = length + 10(rise + fall) 20 m 40 60 80 100 120 140 160 180 200 | Production in loose m ³ /md over average haul route 4.44 3.16 2.44 2.00 1.70 1.44 1.28 1.15 1.02 0.95 |
| Levelling roadbed (measured loose) | Shovel, spreader 60 m ² /md | 60 m ² /md | |
| Picking loose roadbed (bank m ³) | Pick, shovel, fork | 40 m ² /md | |
| Spreading loose material (loose m ³) | Shovel, spreader, hoe | Soil 12 loose m ³ /md Gravel 10 loose m ³ /md | |
| Watering, mixing, spreading and levelling | Shovel, spreader, hoe, string-lines, water bowser | Sandy soil 4.5 m ³ /md Gravel 3 m ³ /md (measured tight after compaction) | |
| Compaction and re- levelling | Roller, string lines, straightedge, shovel, spreader. | Depends upon chosen roller (see below) | |
| Compaction by pedestrian-controlled double drum vibro-roller | "Stampede" rollers: R75/50 S R90/55 S | Mass kg 980 1 350 | Passes 5 4 Layer 100 mm 100 mm Output 8 m ³ /h 13 m ³ /h (tight) |
| Loosen material in trench with pneumatic tools | Compressor, pneumatic tools, team of 4 people | Intermediate 19 m ³ for team Rock 12 m ³ for team | |
| Screen bedding material | Sieve, shovel | 7 m ³ loose /md | |
| Offload flat-bed truck or trailer | Shovel | 15 m ³ loose /md | |
| Trench backfill, hand compaction | Shovel, spreader, hand- stamper, watering can | Backfill, compact, clean-up and load spoil 4.5 m ³ /md | |
| Collecting loose stone | Gloves, wheelbarrows | Up to 20 m 2.5 m ³ /md 20 to 50 m 2.0 m ³ /md | |
| Quarrying, prying out cracked rock | Crowbar, gloves, sledgehammer. | Up to 20 m 0.5 to 1 m ³ /md | |
| Rock crushing | New Dawn Engineering hand-turned rock crusher, shovel | 0.25 m ³ /md (depends on size of feed- stock and size of product) | |
| Backfill trench and compact | Shovel, watering can, hand stamper | 3.0 m ³ /md | |
| Lay kerbing on level base | Shovel, rubber mallet, string-line, trowel, wheelbarrow | Straight 6.5 to 10.0 m/md Curved 2.0 to 5.0 m/md | |
| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| | | |
|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Stone pitching: Plain stone pitching | Club hammer, gloves, string-line, shovel, | 10 to 15 m ² /md, 200 mm thick |
| Grouted stone pitching Wired and grouted stone pitching | wheelbarrow, stiff broom, pliers, short crowbar | 6 to 10 m ² /md, 200 mm thick 3 to 5 m ² /md, 200 mm thick |
| Block paving: placing bedding sand, laying blocks, compacting, joint filling, clean up | Shovel, screed rails and beam, rubber mallet, plate compactor, bass broom, wheelbarrow, gloves | 16 to 20 m ² /md |
| Stormwater drainage pipes: trimming, bedding, laying, backfilling, compaction | Shovel, rake, boning rods, hand stamper, watering can, rope and ground anchors | 450 mm dia concrete: 1.2 m/md (needs team of 10) 600 mm dia concrete: 1.0 m/md (needs team of 10) 450 mm dia plastic: 3.5 m/md (needs team of 5) |
| Concrete base slab: batch, mix, transport, pour and finish off | Batching boxes, wheelbarrow, shovel, screed beam, wood float | 0.8 m ³ /md (needs team of 5) |
| Stone masonry walls | Wheelbarrow, shovel, trowel, club hammer, string line, spirit level, batching box. | 1.0 m ³ /md |
| Gabion work | Gloves, string-line, shovel, wheelbarrow, pliers, short crowbar | 1.5 m ³ /md |

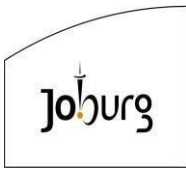
ABBREVIATIONS USED

md = man-day
dia = diameter

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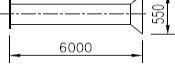
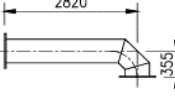
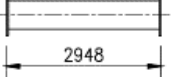
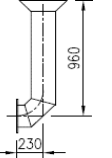
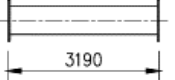
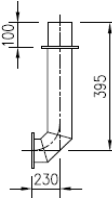
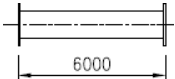
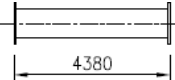
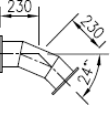
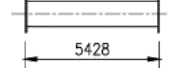
Construction Education and Training Authority, Learning Material for Unity Standard 15165: "Use
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| Employer: | | Contractor: | | |
| Witness: | | Witness: | | |

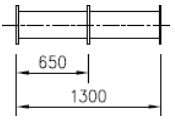
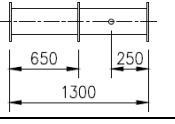
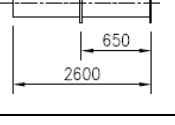
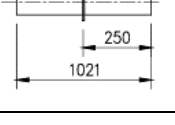
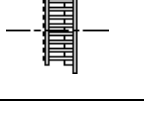
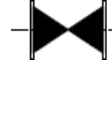
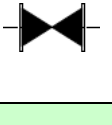
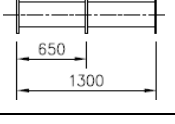
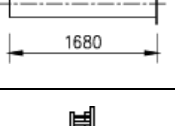
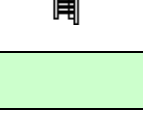


C2.2 BILL OF QUANTITIES

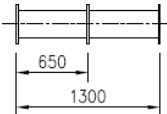
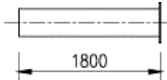

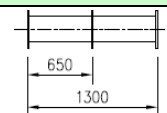
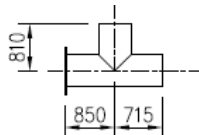


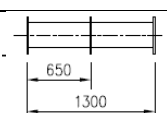
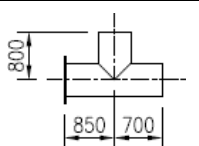


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| Employer: | | Contractor: | | |
| Witness: | | Witness: | | |

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| SECTION 4: RESERVOIR | | | | | | | |
| OVERFLOW PIPING | | | | | | | |
| OF-001 | 350 | Coated SS 304 4mm w.t. | FLANGED BELLMOUTH, O.A. 6000mm, BELLMOUTH 550mm DIA. |  | 1 | | |
| OF-002 | 350 | Coated SS 304 4mm w.t. | FLANGED 90° SHORT RADIUS BEND. ONE END 355mm C. to F. OTHER END 2820mm C. to F. |  | 1 | | |
| OF-003 | 350 | Coated SS 304 4mm w.t. | FLANGED PIPE, O.A. 2948mm |  | 1 | | |
| SCOUR PIPING | | | | | | | |
| SP-001 | 150 | Coated SS 304 3mm w.t. | 90° SHORT RADIUS BEND ONE END 230mm C. TO F. AND FLANGED, OTHER END 960mm C. to F. WITH BELLMOUTH OD OF 245mm |  | 1 | | |
| SP-002 | 150 | Coated SS 304 3mm w.t. | FLANGED PIPE O.A.3190mm |  | 1 | | |
| DRAIN PIPING | | | | | | | |
| DR-001 | 150 | Coated SS 304 3mm w.t. | FLANGED 90° SHORT RADIUS BEND. ONE END 230mm C. TO F. OTHER END PLAIN 395mm O.A.WITH PUDDLE FLANGE 100mm FROM PLAIN END |  | 1 | | |
| DR-002 | 150 | Coated SS 304 3mm w.t. | FLANGED PIPE O.A 6000mm |  | 2 | | |
| DR-003 | 150 | Coated SS 304 3mm w.t. | FLANGED PIPE O.A 4380mm |  | 1 | | |
| DR-004 | 150 | Coated SS 304 3mm w.t. | FLANGED 24° MEDIUM RADIUS BEND 230mm C. to F. |  | 1 | | |
| DR-005 | 150 | Coated SS 304 3mm w.t. | FLANGED PIPE O.A.5428mm |  | 1 | | |
| TOTAL CARRIED TO ITEM 4.2.1 | | | | | | | |

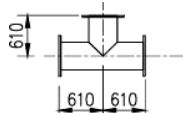
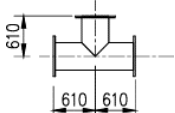
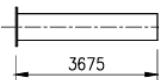
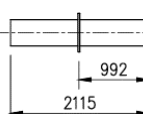

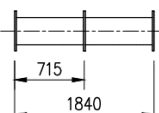
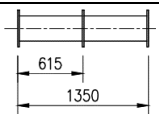
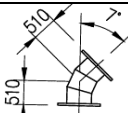
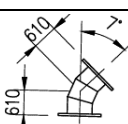
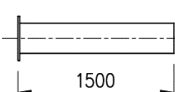
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

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| SECTION 5: CHAMBERS AND BOXES | | | | | | | |
| SCOUR BOX | | | | | | | |
| SB-001 | 150 | Coated SS 304 3mm w.t. | PUDDLE PIPE O.A.1300mm. BOTH ENDS FLANGED WITH PUDDLE FLANGE 650mm FROM ONE END. |  | 1 | | |
| SB-002 | 150 | Coated SS 304 3mm w.t. | PUDDLE PIPE O.A.1300mm. BOTH ENDS FLANGED WITH P.F. 650mm FROM ONE END AND 50mm BOSS 250mm FROM OTHER END |  | 1 | | |
| SB-003 | 350 | Coated SS 304 3mm w.t. | PUDDLE PIPE O.A.2600mm. ONE END FLANGED WITH PUDDLE FLANGE 650mm FROM FLANGED END. |  | 1 | | |
| SB-004 | 150 | Coated SS 304 3mm w.t. | PUDDLE PIPE O.A.1021mm. BOTH ENDS PLAIN WITH PUDDLE FLANGED 250mm FROM END. |  | 2 | | |
| SB-005 | 150 | Coated M.S. | FLANGED ADAPTOR |  | 2 | | |
| V-001 | 150 | D.I. | WEDGE GATE VALVE, PN10, NON RISING SPINDLE, CLOCKWISE CLOSING, COMPLETE WITH HANDWHEEL, DUCTILE IRON BODY AND COVER, STAINLESS STEEL SPINDLE, "O" RING GLAND SEAL ARRANGEMENT, PINNED GUNMETAL SEATS |  | 2 | | |
| V-002 | 50 | SS 304 | THREADED BALL VALVE |  | 1 | | |
| TOTAL CARRIED TO ITEM 5.1.6.1 | | | | | | | |
| INLET FLOW METER CHAMBER | | | | | | | |
| IFC-001 | 500 | Coated SS 304 4mm w.t. | PUDDLE PIPE O.A. 1300mm. BOTH ENDS FLANGED WITH PUDDLE FLANGE 650mm FROM ONE END. |  | 2 | | |
| IFC-002 | 500 | Coated MS 5mm w.t. | FLANGED PIPE O.A. 1680mm |  | 1 | | |
| IFC-003 | 500 | Coated M.S. | FLANGE ADAPTOR |  | 1 | | |
| TOTAL CARRIED TO ITEM 5.2.6.1 | | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

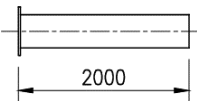
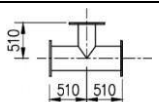
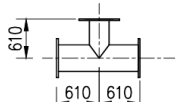
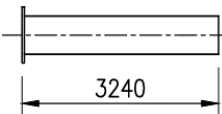
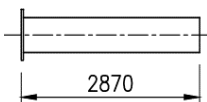

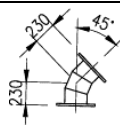
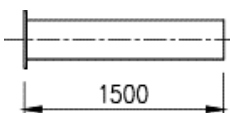


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| OUTLET FLOW METER CHAMBER | | | | | | | |
| OFC-001 | 600 | Coated SS 304 5mm w.t. | PUDDLE PIPE O.A.1300mm. BOTH ENDS FLANGED WITH PUDDLE FLANGE 650mm FROM ONE END. |  | 2 | | |
| OFC-002 | 600 | Coated MS 6mm w.t. | PIPE O.A.1800mm, ONE END FLANGED OTHER END PLAIN |  | 1 | | |
| OFC-003 | 600 | Coated M.S. | FLANGE ADAPTOR |  | 1 | | |
| TOTAL CARRIED TO ITEM 5.3.6.1 | | | | | | | |
| VALVE CHAMBERS | | | | | | | |
| VC-001 | 500 | Coated SS 304 4mm w.t. | PUDDLE PIPE O.A.1300mm. BOTH ENDS FLANGED WITH PUDDLE FLANGE 650mm FROM ONE END. |  | 3 | | |
| VC-002 | 500 | Coated MS 5mm w.t. | UN-EQUAL TEE, PLAIN ENDED BRANCH 810mm C. to F. 850mm C. to F. FROM FLANGED END, OTHER END PLAIN 715mm C. to F. |  | 1 | | |
| VC-003 | 500 | Coated M.S. | FLANGE ADAPTOR |  | 2 | | |
| VC-004 | 500 | D.I. | WAFER TYPE KNIFE GATE VALVE WITH STAINLESS STEEL BLADE AND SPINDLE, PN10, O.A. 100mm |  | 2 | | |
| VC-005 | 600 | Coated SS 304 5mm w.t. | PUDDLE PIPE O.A.1300mm. BOTH ENDS FLANGED WITH PUDDLE FLANGE 650mm FROM ONE END. |  | 3 | | |
| VC-006 | 600 | Coated MS 6mm w.t. | UN-EQUAL TEE, PLAIN ENDED BRANCH 800mm C. to F. 850mm C. to F. FROM FLANGED END, OTHER END PLAIN 700mm C. to F. |  | 1 | | |
| VC-007 | 600 | Coated M.S. | FLANGE ADAPTOR |  | 2 | | |
| VC-008 | 600 | D.I. | WAFER TYPE KNIFE GATE VALVE WITH STAINLESS STEEL BLADE AND SPINDLE, PN10, O.A. 110mm |  | 2 | | |
| TOTAL CARRIED TO ITEM 5.5.6.1 | | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

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|----------------------------------------------|-----------------|------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----|------|--------|
| TIE-IN BOX & SCOUR VALVE CHAMBERS | | | | | | | |
| TB-001 | 600 x 500 | Coated M.S 6mm w.t. | FLANGED REDUCING TEE, 610mm C. to F. |  | 1 | | |
| TB-002 | 600 | Coated M.S 6mm w.t. | FLANGED EQUAL TEE, 610mm C. to F. |  | 1 | | |
| TB-003 | 600 | Coated M.S 6mm w.t. | PIPE ONE END PLAIN, OTHER END FLANGED, O.A. 3675mm |  | 1 | | |
| TB-004 | 600 | Coated SS 304 5mm w.t. | PUDDLE PIPE O.A 2115mm. ONE END FLANGED WITH P.F. 992mm FROM FLANGED END. |  | 2 | | |
| TB-005 | 600 | Coated M.S. | FLANGE ADAPTOR |  | 5 | | |
| TB-006 | 500 | Coated SS 304 5mm w.t. | PUDDLE PIPE O.A.1840mm. BOTH ENDS FLANGED WITH P.F. 715mm FROM ONE END. |  | 1 | | |
| TB-007 | 600 | Coated SS 304 5mm w.t. | PUDDLE PIPE O.A.1350mm. BOTH ENDS FLANGED WITH P.F. 615mm FROM ONE END. |  | 1 | | |
| TB-008 | 500 | Coated M.S. 5mm w.t. | D.F 7° LONG RADIUS BEND 510mm C. to F. |  | 1 | | |
| TB-009 | 600 | Coated M.S 6mm w.t. | D.F 7° LONG RADIUS BEND 610mm C. to F. |  | 1 | | |
| TB-010 | 500 | Coated M.S. 5mm w.t. | PIPE ONE END PLAIN, OTHER FLANGED, O.A. 1500mm |  | 1 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SCHEDULE OF QUANTITIES
PIPE SCHEDULES

| Mark on dwg | NB (mm) | Mat | Decription | Sketch | No. | Rate | Amount |
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| brought forward | | | | | | | |
| TB-011 | 600 | Coated M.S. 6mm w.t. | PIPE ONE END PLAIN, OTHER FLANGED, O.A. 2000mm |  | 1 | | |
| TB-012 | 500 X 150 | Coated M.S. 5mm w.t. | FLANGED REDUCING TEE |  | 1 | | |
| TB-013 | 600 X 150 | Coated M.S. 6mm w.t. | FLANGED REDUCING TEE |  | 1 | | |
| TB-014 | 500 | Coated M.S. 5mm w.t. | PIPE ONE END PLAIN, OTHER FLANGED, O.A. 3240mm |  | 1 | | |
| TB-015 | 600 | Coated M.S. 6mm w.t. | PIPE ONE END PLAIN, OTHER FLANGED, O.A. 2870mm |  | 1 | | |
| TB-016 | 500 | Coated M.S. | FLANGE ADAPTOR |  | 2 | | |
| TB-017 | 150 | HDG | D.F 45° FLANGED SHORT RADIUS BEND 230mm C. TO F. |  | 2 | | |
| TB-018 | 150 | HDG | PIPE ONE END PLAIN, OTHER FLANGED, O.A. 1500mm |  | 2 | | |
| TB-019 | 150 | Coated M.S. | FLANGE ADAPTOR |  | 4 | | |
| V-017 | 600 | D.I | WEDGE GATE VALVE, PN10, NON RISING SPINDLE, CLOCKWISE CLOSING, GEARBOX OPERATED COMPLETE WITH HANDWHEEL, DUCTILE IRON BODY AND COVER, STAINLESS STEEL SPINDLE, "O" RING GLAND SEAL ARRANGEMENT, PINNED GUNMETAL SEATS, O.A. 600mm |  | 1 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | | |


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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



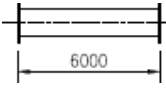
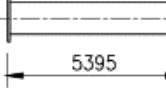

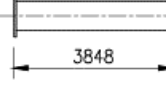
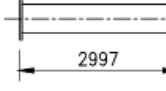
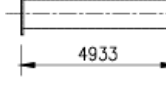
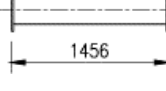
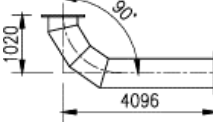
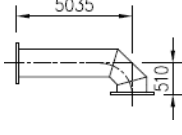
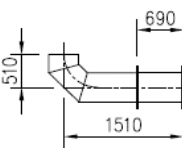
SCHEDULE OF QUANTITIES
PIPE SCHEDULES

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|--------------------------------------|------------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----|------|--------|
| brought forward | | | | | | | |
| V-018 | 150 | D.I | 150mm ND WATER WORKS PATTERN RESILIENT SEAL GATE VALVE, CLASS 16 TO SANS 664 WITH FLANGED ENDS TO TABLE 1600/3 OF SANS 1123, WITH CAP, NON- RISING SPINDLE, ANTI- CLOCKWISE CLOSING |  | 2 | | |
| TOTAL CARRIED TO ITEM 5.6.7.1 | | | | | | | |
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

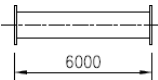
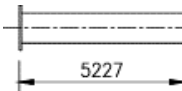

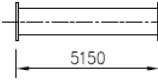
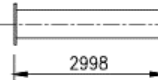
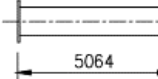
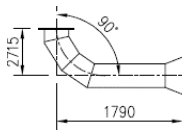
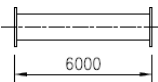


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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| Mark on dwg | NB (mm) | Mat | Description | Sketch | No. | Rate | Amount |
|--------------------------------------------|------------|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----|------|--------|
| SECTION 6: INTERCONNECTING PIPEWORK | | | | | | | |
| INLET PIPING | | | | | | | |
| IP-001 | 500 | Coated M.S. 5mm w.t. | FLANGED PIPE O.A.600mm |  | 9 | | |
| IP-002 | 500 | Coated M.S. 5mm w.t. | PIPE PME EMD FLANGED O.A.5395mm |  | 1 | | |
| IP-003 | 500 | Coated M.S. | FLANGE ADAPTOR |  | 1 | | |
| IP-004 | 500 | Coated M.S. 5mm w.t. | FLANGED PIPE O.A.3848mm |  | 1 | | |
| IP-005 | 500 | Coated M.S. 5mm w.t. | FLANGED PIPE O.A.2997mm |  | 1 | | |
| IP-006 | 500 | Coated M.S. 5mm w.t. | FLANGED PIPE O.A.4933mm |  | 1 | | |
| IP-007 | 500 | Coated M.S. 5mm w.t. | FLANGED PIPE O.A.1456mm |  | 1 | | |
| IP-008 | 500 | Coated M.S. 5mm w.t. | FLANGED 90° MEDIUM RADIUS BEND. ONE END 1020mm c. TO F. OTHER END 4096mm C. TO F. |  | 1 | | |
| IP-009 | 500 | Coated M.S. 5mm w.t. | FLANGED 90° MEDIUM RADIUS BEND. ONE END 5035mm C. TO F. OTHER END 510mm C. TO F. |  | 1 | | |
| IP-010 | 500 | Coated SS 304 4mm w.t. | UNEQUAL 90° SHORT RADIUS BEND, ONE END PLAIN 510mm C. to F. OTHER END FLANGED 1510 C. to F. WITH P.F. 690mm FROM FLANGED END |  | 1 | | |
| TOTAL CARRIED TO ITEM 6.2.4 | | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SCHEDULE OF QUANTITIES
PIPE SCHEDULES

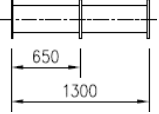
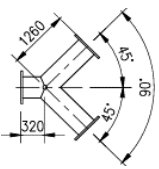
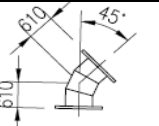
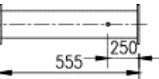

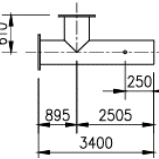
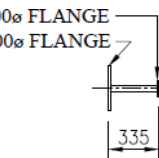
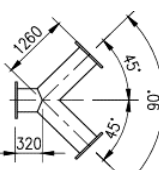
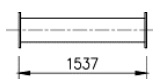
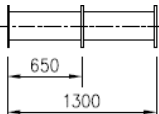
| Mark on dwg | NB (mm) | Mat | Decription | Sketch | No. | Rate | Amount |
|-----------------------------|------------|------------------------------|----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----|------|--------|
| OUTLET PIPING | | | | | | | |
| OP-001 | 600 | Coated M.S. 6mm w.t. | FLANGED PIPE O.A.6000mm |  | 7 | | |
| OP-002 | 600 | Coated M.S. 6mm w.t. | PIPE ONE END FLANGED O.A.5227mm |  | 1 | | |
| OP-003 | 600 | Coated M.S. | FLANGE ADAPTOR |  | 1 | | |
| OP-004 | 600 | Coated M.S. 6mm w.t. | FLANGED PIPE O.A.5150mm |  | 1 | | |
| OP-005 | 600 | Coated M.S. 6mm w.t. | FLANGED PIPE O.A.2998mm |  | 1 | | |
| OP-006 | 600 | Coated M.S. 6mm w.t. | FLANGED PIPE O.A.5064mm |  | 1 | | |
| OP-007 | 600 | Coated SS 304 5mm w.t. | UNEQUAL 90° MEDIUM RADIUS BEND, ONE END FLANGED 2715mm C. to F. OTHER END WITH BELLMOUTH 1790mm C. to F. |  | 1 | | |
| OP-008 | 600 | Coated SS 304 5mm w.t. | FLANGED PIPE O.A.6000mm |  | 1 | | |
| TOTAL CARRIED TO ITEM 6.2.5 | | | | | | | |
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Employer:

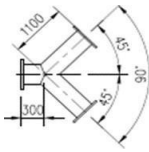
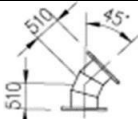
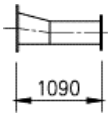
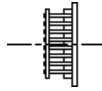
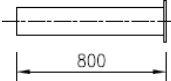
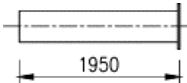
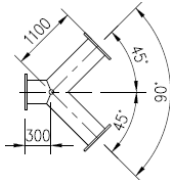


Witness:

Contractor:







Witness:

| Mark on dwg | NB (mm) | Mat | Description | Sketch | No. | Rate | Amount |
|----------------------------------|-------------|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----|------|--------|
| SECTION 9: VALVE BUILDING | | | | | | | |
| VALVE BUILDING | | | | | | | |
| VB-001 | 600 | Coated SS 304 5mm w.t. | PUDDLE PIPE O.A.900mm BOTH ENDS FLANGED WITH PUDDLE FLANGE 450mm FROM ONE END. |  | 2 | | |
| VB-002 | 600 | Coated M.S. 6mm w.t. | FLANGED 90° Y-PIECE, BRANCHES 1260mm C to F. MAIN PIPE 320mm C. to F. WITH 50mm BOSS 320mm FROM MAIN FLANGED END |  | 1 | | |
| VB-003 | 600 | Coated M.S. 6mm w.t. | STANDARD D.F 45° MEDIUM RADIUS BEND, 610mm C TO F. |  | 4 | | |
| VB-004 | 600 | Coated M.S. 6mm w.t. | FLANGED PIPE O.A.555mm WITH 25mm BOSS 250mm FROM ONE END. |  | 2 | | |
| VB-005 | 600 | Coated M.S. | FLANGE ADAPTOR |  | 2 | | |
| VB-006 | 600 | Coated M.S. 6mm w.t. | UN-EQUAL TEE, ONE END FLANGED 610mm C.to F. OTHER END PLAIN 2505mm C. to F. WITH FLANGED ENDED BRANCH 895mm C. to F. |  | 2 | | |
| VB-007 | 100X 600 | Coated M.S. | 600Ø BLANK FLANGE DRILLED FOR 100Ø PIPE O.A.335mm WITH FLANGED END |  | 2 | | |
| VB-008 | 600 | Coated M.S. 6mm w.t. | FLANGED 90° Y-PIECE, BRANCHES 1260mm C to F. MAIN PIPE 320mm C. to F. |  | 1 | | |
| VB-009 | 600 | Coated M.S. 6mm w.t. | FLANGED PIPE O.A. 1537mm |  | 1 | | |
| VB-010 | 500 | Coated SS 304 4mm w.t. | D.F. PUDDLE PIPE O.A.1300mm. WITH P.F. 650mm FROM ONE END. |  | 2 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| Mark on dwg | NB (mm) | Mat | Description | Sketch | No. | Rate | Amount |
|-----------------------------------|-------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----|------|--------|
| brought forward | | | | | | | |
| VALVE BUILDING (CONTINUED) | | | | | | | |
| VB-011 | 500 | Coated M.S. 5mm w.t. | FLANGED 90° Y-PIECE, BRANCHES 1100mm C. to F. MAIN PIPE 300mm C. to F. WITH 50mm BOSS 300mm FROM FLANGED END. |  | 1 | | |
| VB-012 | 500 | Coated M.S. 5mm w.t. | STANDARD D.F 45° MEDIUM RADIUS BEND 510mm C. TO F. |  | 4 | | |
| VB-013 | 500X 300 | Coated M.S. 4mm w.t. | FLANGED ECCENTRIC 500mm to 300mm REDUCER AND 300mm DIA. PIPE O.A.1090mm |  | 2 | | |
| VB-014 | 300 | Coated M.S. | FLANGE ADAPTOR |  | 4 | | |
| VB-015 | 300 | Coated M.S. 4mm w.t. | PIPE ONE END FLANGED O.A.800mm |  | 2 | | |
| VB-016 | 300 | Coated M.S. 4mm w.t. | PIPE ONE END FLANGED O.A. 1950mm. |  | 2 | | |
| VB-017 | 500 | Coated M.S. 5mm w.t. | FLANGED 90° Y-PIECE, BRANCHES 1100mm C. to F. MAIN PIPE 300mm C. to F. WITH 50mm THREADED ENDED BOSS 300mm FROM FLANGED END AT THE BOTTOM AND A 100mm DIA. FLANGED ENDED BOSS AT THE TOP. |  | 1 | | |
| V-005 | 600 | D.I. | WEDGE GATE VALVE, PN10, NON RISING SPINDLE, CLOCKWISE CLOSING, GEARBOX OPERATED COMPLETE WITH HANDWHEEL, DUCTILE IRON BODY AND COVER, STAINLESS STEEL SPINDLE, "O" RING GLAND SEAL ARRANGEMENT, PINNED GUNMETAL SEATS, O.A. 600mm |  | 2 | | |
| V-006 | 100 | SS 304 | FLANGED BALL VALVE |  | 2 | | |
| V-007 | 100 | SS 304 | DOUBLE ORIFICE AIR RELEASE AND VACUUM BREAKER VALVE WITH ANTI SHOCK MECHANISM | | 2 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| Mark on dwg | NB (mm) | Mat | Description | Sketch | No. | Rate | Amount |
|-------------------------------------|------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----|------|--------|
| brought forward | | | | | | | |
| VALVE BUILDING (CONTINUED) | | | | | | | |
| V-008 | 600 | D.I. | FLANGED TILTING DISC NON-RETURN VALVE |  | 2 | | |
| V-009 | 300 | D.I. | WEDGE GATE VALVE, PN10, NON RISING SPINDLE, CLOCKWISE CLOSING, GEARBOX OPERATED COMPLETE WITH HANDWHEEL, DUCTILE IRON BODY AND COVER, STAINLESS STEEL SPINDLE, "O" RING GLAND SEAL ARRANGEMENT, PINNED GUNMETAL SEATS, O.A. 380MM |  | 4 | | |
| V-010 | 300 | D.I. | HYDRAULIC CONTROL VALVE INCLUDING 20mm SS BI-LEVEL CONTROL PILOT INSIDE RESERVOIR WITH 15mm SS CONNECTION PIE | | 2 | | |
| V-011 | 300 | Coated M.S. 4mm w.t. | FLANGED BASKET STRAINER, O.A. 800mm | | 2 | | |
| V-012 | 50 | SS 304 | THREADED BALL VALVE |  | 2 | | |
| V-013 | 50 | SS 304 | DOUBLE ORIFICE AIR RELEASE AND VACUUM BREAKER VALVE WITH ANTI SHOCK MECHANISM | | 1 | | |
| V-014 | 600 | D.I. | WAFFER TYPE KNIFE GATE VALVE, PN 10, STAINLESS STEEL BLADE AND SPINDLE, O.A 110mm. |  | 4 | | |
| V-015 | 500 | D.I. | WAFFER TYPE KNIFE GATE VALVE, PN 10, STAINLESS STEEL BLADE AND SPINDLE, O.A. 70mm |  | 4 | | |
| V-016 | 25 | SS 304 | THREADED BALL VALVE |  | 3 | | |
| TOTAL CARRIED TO ITEM 9.1.10 | | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SCHEDULE OF QUANTITIES

SECTION 1: PRELIMINARY AND GENERAL

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----|------|--------|
| | SANS 1200A | SECTION 1: PRELIMINARY & GENERAL | | | | |
| 1.1 | 8.3 | FIXED CHARGE AND VALUE RELATED ITEMS | | | | |
| | 8.3.1 | Contractual Requirements | | | | |
| 1.1.1 | | Surety or Bank Guarantee | Sum | 1 | | |
| 1.1.2 | | Insurance of Works | Sum | 1 | | |
| 1.1.3 | | Common Law Liability Insurance | Sum | 1 | | |
| 1.1.4 | | Third Party Insurance | Sum | 1 | | |
| 1.1.5 | | Insurance of Construction Plant and Equipment | Sum | 1 | | |
| 1.1.6 | PSA 8.3.1 | Initial Insurance Deductible | Sum | 1 | | |
| 1.1.7a | | Any Other Insurances that the Tenderer deems necessary to comply with Insurance requirements (Detail) | Sum | 1 | | |
| 1.1.7b | | Other (Detail) | Sum | 1 | | |
| | | Forward Cover | | | | |
| 1.1.8 | PS 6.18 | In respect of the total value of imported content of goods used in the reservoir from page RD30 Imported Content Sheet R | | | | |
| 1.1.9 | | Allow a Provisional Sum to cover variation in exchange rate prior to obtaining forward cover. Tenderer is to insert an amount = 20% of the above amount from Item 1.1.8 | Prov. Sum | 1 | | |
| 1.1.10 | | Allow a Provisional Sum to cover the cost of forward cover Tenderer is to insert an amount = 10% of the above amount from item 1.1.8 | Prov. Sum | 1 | | |
| 1.1.11 | | Allowance as a percentage of the PC value of items under 1.1.9 and 1.1.10 for Contractor's cost and profit. Tenderer to insert the summed amount (calculated under 1.1.9 and 1.1.10) in the "Qty" column, and state percentage in the "Rate" column. | % | | | |
| | 8.3.2 | Establish Facilities on the Site | | | | |
| | 8.3.2.1 | Facilities for the Employer's Agent | | | | |
| 1.1.12 | PS 5.6.1 | (a) Offices (3 no. off) | Sum | 1 | | |
| 1.1.13 | | (c) Nameboards | Sum | 2 | | |
| 1.1.14 | PSA 8.3.2.1 | (d) Latrine facilities | Sum | 1 | | |
| 1.1.15 | PSA 8.3.2.1 | (e) Boardroom to accommodate 15 people | Sum | 1 | | |
| 1.1.16 | PSA 8.3.2.1 | (f) Carports (5 off) | Sum | 1 | | |
| 1.1.17 | PSA 8.3.2.1 | (h) Construction and setting out of survey beacons, including beacons to confirm property boundaries | No. | 8 | | |
| 1.1.18 | PSA 8.3.2.1 | (i) Furniture for offices and meeting rooms | Sum | 1 | | |
| 1.1.19 | PSA 8.3.2.1 | (j) Laptop, Data and Software | Sum | 1 | | |
| | 8.3.2.2 | Facilities for the Contractor | | | | |
| 1.1.20 | | (a) Offices and Storage Sheds | Sum | 1 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SCHEDULE OF QUANTITIES

SECTION 1: PRELIMINARY AND GENERAL

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------|------|-----|------|--------|
| | | brought forward | | | | |
| 1.1.21 | | (b) Workshops | Sum | 1 | | |
| 1.1.22 | | (c) Laboratories | Sum | 1 | | |
| 1.1.23 | | (e) Ablution and Latrine Facilities | Sum | 1 | | |
| 1.1.24 | PSA 8.3.2.2 | (f) Tools and Equipment | Sum | 1 | | |
| 1.1.25 | | (g) Water Supplies, Electric Power & Communications | Sum | 1 | | |
| 1.1.26 | | (h) Dealing with Water | Sum | 1 | | |
| 1.1.27 | | (i) Access | Sum | 1 | | |
| 1.1.28 | | (j) Plant | Sum | 1 | | |
| 1.1.29 | PSA 8.3.2.2 | (k) Security of the works | Sum | 1 | | |
| 1.1.30 | PSA 8.3.2.2 | (l) Personal protection equipment | Sum | 1 | | |
| 1.1.31 | 8.3.3 | Other Fixed Charge Obligations | Sum | 1 | | |
| 1.1.32 | 8.3.4 | Removal of Site Establishment | Sum | 1 | | |
| 1.1.33 | | Compliance with the Occupational Health and Safety Act and Specification (Including compliance with COVID-19 Regulations) | Sum | 1 | | |
| 1.1.34 | | Compliance with the Environmental Management Plan and Vegetation Management Plan | Sum | 1 | | |
| 1.1.35 | | Hazard Identification and Risk Assessment | Sum | 1 | | |
| 1.1.36 | | Health & Safety Plan | Sum | 1 | | |
| 1.1.37 | | Construction Safety Officer and Other Appointments | Sum | 1 | | |
| 1.1.38 | | Work Skills Plan and Implementation Report to CETA | Sum | 1 | | |
| 1.1.39 | | Pre-Employment Medical Examinations | Sum | 1 | | |
| 1.2 | 8.4 | TIME RELATED ITEMS | | | | |
| | 8.4.1 | Contractual Requirements | | | | |
| 1.2.1 | | Surety or Bank Guarantee | Sum | 1 | | |
| 1.2.2 | | Insurance of Works | Sum | 1 | | |
| 1.2.3 | | Common Law Liability Insurance | Sum | 1 | | |
| 1.2.4 | | Third Party Insurance | Sum | 1 | | |
| 1.2.5 | | Insurance of construction plant and equipment | Sum | 1 | | |
| 1.2.6a | | Any Other Insurances that the Tenderer deems necessary to comply with Insurance requirements (Detail) | Sum | 1 | | |
| 1.2.6b | | Other (Detail) | Sum | 1 | | |
| | 8.4.2 | Operation and Maintenance of facilities on site, for the duration of construction, except where otherwise stated | | | | |
| | 8.4.2.1 | Facilities for Employer's Agent for the Duration of Construction | | | | |
| 1.2.7 | | (a) Furnished offices (3 no. off.) | Sum | 1 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SCHEDULE OF QUANTITIES

SECTION 1: PRELIMINARY AND GENERAL

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------|-----------|-----|--------------|--------------|
| 1.2.8 | | (c) Nameboards | Sum | 1 | | |
| 1.2.9 | PSA 8.4.2.1 | (e) Latrine facilities for the sole use of the Employer's Agent | Sum | 1 | | |
| 1.2.10 | PSA 8.4.2.1 | (f) Boardroom to accommodate 15 personnel | Sum | 1 | | |
| 1.2.11 | PSA 8.4.2.1 | (g) Carports (5 off) | No. | 5 | | |
| 1.2.12 | PSA 8.4.2.1 | (h) Construction and setting out of survey beacons | No. | 8 | | |
| 1.2.13 | PSA 8.4.2.1 | (i) Furniture for offices and meeting rooms | Sum | 1 | | |
| 1.2.14 | | (j) Laptop, Data and Software | Sum | 1 | | |
| | 8.4.2.2 | Facilities for the Contractor | | | | |
| 1.2.15 | | (a) Offices and Storage Sheds | Sum | 1 | | |
| 1.2.16 | | (b) Workshops | Sum | 1 | | |
| 1.2.17 | | (c) Laboratories | Sum | 1 | | |
| 1.2.18 | | (e) Ablution and Latrine Facilities | Sum | 1 | | |
| 1.2.19 | | (f) Tools and Equipment | Sum | 1 | | |
| 1.2.20 | | (g) Water supplies, electricpower and communications, dealing with water and access | Sum | 1 | | |
| 1.2.21 | | (h) Dealing with water | Sum | 1 | | |
| 1.2.22 | | (i) Access | Sum | 1 | | |
| 1.2.23 | | (j) Plant | Sum | 1 | | |
| 1.2.24 | PSA 8.4.2.2 | (k) Security of the works | Sum | 1 | | |
| 1.2.25 | PSA 8.4.2.2 | (l) Water tanker for dust suppression | Sum | 1 | | |
| 1.2.26 | PSA 8.4.3 | Supervision for the duration of theContract | Sum | 1 | | |
| 1.2.27 | 8.4.4 | Company and head office overhead costs for the duration of the contract | Sum | 1 | | |
| 1.2.28 | | Compliance with the Occupational Health and Safety Act and Specification (Including compliance with COVID-19 Regulations) | Sum | 1 | | |
| 1.2.29 | | Compliance with the Environmental Management Plan and Vegetation Management Plan | Sum | 1 | | |
| 1.2.30 | | Construction Safety Officer and Other Appointments | Sum | 1 | | |
| 1.2.31 | | Work Skills Plan and Implementation Report to CETA | Sum | 1 | | |
| 1.2.32 | | Compliance with contractual reporting requirements and managing of processes for local content | Sum | 1 | | |
| 1.2.33 | 8.4.5 | Other time-related obligations | Sum | 1 | | |
| 1.3 | PSA 8.5 | SUMS STATED PROVISIONALLY BY THE EMPLOYER'S AGENT | | | | |
| 1.3.1 | (b) (3) | (a) Provisional sum for control testing to be carried out as required by the Employer's Agent including testing of the structure | Prov. Sum | 1 | R 100 000.00 | R 100 000.00 |
| 1.3.2 | | (b) Additional tests ordered by the Employer's Agent | Prov. Sum | 1 | R 50 000.00 | R 50 000.00 |
| 1.3.3 | | (c) Community Liaison Officer (CLO) and/or Labour Desk Officer (LDO) | Prov. Sum | 1 | R 360 000.00 | R 360 000.00 |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SCHEDULE OF QUANTITIES

SECTION 1: PRELIMINARY AND GENERAL

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------|----------------|----------------|
| | | brought forward | | | | |
| 1.3.4 | | (d) Training of targetted labour and SMME's | Prov.Sum | 1 | R 1 000 000.00 | R 1 000 000.00 |
| 1.3.5 | | (e) Skills Development and Training | Prov.Sum | 1 | R 864 000.00 | R 864 000.00 |
| 1.3.6 | | (f) Signage for buildings | Prov.Sum | 1 | R 50 000.00 | R 50 000.00 |
| 1.3.7 | | (g) GPR survey | Prov.Sum | 1 | R 100 000.00 | R 100 000.00 |
| 1.3.8 | | (h) Protection of existingservices | Prov.Sum | 1 | R 150 000.00 | R 150 000.00 |
| 1.3.9 | | (i) Application for Environmental regulation | Prov.Sum | 1 | R 50 000.00 | R 50 000.00 |
| 1.3.10 | | (j) Environmental Control Officer | Prov.Sum | 1 | R 144 000.00 | R 144 000.00 |
| 1.3.11 | | (k) Full time Environmental Liaison Officer | Prov.Sum | 1 | R 720 000.00 | R 720 000.00 |
| 1.3.12 | | (l) Project Mentor or support services for the Contractor or for Sub-contractors, SMME's, etc. | Prov.Sum | 1 | R 3 660 000.00 | R 3 660 000.00 |
| 1.3.13 | | (m) Contractor's percentage to cover cost of handling for items 1.3.1 to 1.3.12 | % | R 7 248 000 | | |
| 1.3.14 | | (n) Cellphones (1) and Contract (1), including data, for the duration of the contract | Prov. Sum | 1 | R 50 000.00 | R 50 000.00 |
| 1.3.15 | | (o) Stationery, equipment and software required by Engineer and his staff | Prov. Sum | 1 | R 50 000.00 | R 50 000.00 |
| 1.3.16 | | (p) Independent testing where ordered by Engineer | Prov. Sum | 1 | R 20 000.00 | R 20 000.00 |
| 1.3.17 | | (q) Monthly maintenance of IT Equipment | Prov. Sum | 1 | R 50 000.00 | R 50 000.00 |
| 1.3.18 | | (r) Aerial photographic record of progress (aerial photos to be taken monthly, for the duration of the contract) | Prov. Sum | 1 | R 100 000.00 | R 100 000.00 |
| 1.4 | 8.7 | DAYWORK | | | | |
| 1.4.1 | PSA 8.7.1 | Expenditure on dayworks | Prov.Sum | 1 | R 200 000.00 | R 200 000.00 |
| | PSA 8.7.2 | Extra over item 1.4.1 for supervision, overheads and all other costs related to the Daywork items under item 1.4.2 to 1.4.4 for the following: | | | | |
| 1.4.2 | | (a) Skilled labourers | % | 75 000 | | |
| 1.4.3 | | (b) Unskilled labourers | % | 75 000 | | |
| 1.4.4 | | (c) Material | % | 50 000 | | |
| | PS 8.7.3 | Plant Hire Rates | | | | |
| | | The appropriate types and sizes (T&S) of the plant shall be stated in the space provided: | | | | |
| 1.4.5 | | Mobile cranes (Type & Size | hrs | 24 | | |
| 1.4.6 | | Front-end loader (T&S | hrs | 40 | | |
| 1.4.7 | | Bulldozer (T&S | hrs | 40 | | |
| 1.4.8 | | Grader (T&S | hrs | 40 | | |
| 1.4.9 | | Excavators (T&S | hrs | 40 | | |
| 1.4.10 | | Tip Trucks (T&S | hrs | 40 | | |
| 1.4.11 | | TLB's (T&S | hrs | 40 | | |
| 1.4.12 | | Portable compressor and breakers etc. (T&S | hrs | 40 | | |
| 1.4.13 | | Portable pumps and hoses (T&S | hrs | 40 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SCHEDULE OF QUANTITIES

SECTION 1: PRELIMINARY AND GENERAL

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|-------------------------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----|--------------|-----------------------|
| 1.4.14 | | brought forward Others give full details: rate/hr hrs only | | | | |
| 1.5 | PSA 8.8 | TEMPORARY WORKS | | | | |
| 1.5.1 | PSA 8.8.2 | Dealing with traffic and maintain Roads | Sum | 1 | | |
| | PSA 8.8.4 | Relocation of services | | | | |
| 1.5.2 | | Excavation for exposing services in the following depth ranges below ground level: (a) 0.0m up to 2.0m: | | | | |
| 1.5.3 | | (i) Soft material | m ³ | 60 | | |
| 1.5.4 | | (ii) Intermediate material | m ³ | 180 | | |
| 1.5.5 | | (iii) Hard material | m ³ | 60 | | |
| | | (b) Exceeding 2.0m up 4.0m: | | | | |
| 1.5.6 | | (i) Soft material | m ³ | 64 | | |
| 1.5.7 | | (ii) Intermediate material | m ³ | 192 | | |
| 1.5.8 | | (iii) Hard material | m ³ | 64 | | |
| 1.6 | PSA 8.9 | DELAYS | | | | |
| 1.6.1 | | Delay due to total work stoppage (the Daily rate must equal the total of the Daily Time Related P&G Cost. Only this Daily rate will be paid in the event of ANY approved delays to the Due Completion Date of the Contract) | days | 20 | | |
| 1.7 | PSA 8.10 | SUBCONTRACTORS (SMME's) | | | | |
| 1.7.1 | | Fixed-Charge items for the sub-contractors Contractual Requirements | | | | Refer to Summary Page |
| 1.7.2 | PSA 8.10.2 | Overhead, charges and profit for the Main Contractor to provide for fixed-charge items for the sub-contractors Contractual Requirements | | | | Refer to Summary Page |
| 1.7.3 | | Time Related items for the sub-contractors Contractual Requirements | | | | Refer to Summary Page |
| 1.7.4 | PSA 8.10.3 | Overhead, charges and profit for the Main Contractor to provide for time related items for the sub-contractors Contractual Requirements | | | | Refer to Summary Page |
| 1.7.5 | PSA 8.10.4 | Provisional Sum to cover costs incurred by the Contractor when making payments of behalf of the sub-contractor (ref Contract Data) or to provide ad-hoc services on behalf of the sub-contractor | Prov.Sum | 1 | R 100 000.00 | R 100 000.00 |
| 1.8 | | Security for the duration of the contract | | | | |
| 1.8.1 | | Dayshift - 2 no. of armed guards (grade of guard to be determined by Contractor, appropriate for the assignment at hand), including patrol vehicles (if required) for the duration of the contract | Months | 18 | | |
| 1.8.2 | | Nightshift - 2 no. of armed guards (grade of guard to be determined by Contractor, appropriate for the assignment at hand), including patrol vehicles (if required) for the duration of the contract | Months | 18 | | |
| TOTAL FOR SECTION 1 (Carried to Summary) | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SECTION 2: SITE PREPERATION & FENCING

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|--------------------------------------------------|-------------------|-------------------------------------------------------------------------------------------------------------------------|--------------------|-------|------|--------|
| SECTION 2: SITE PREPERATION & FENCING | | | | | | |
| 2.1 | SANS 1200C | SITE CLEARANCE | | | | |
| 2.1.1 | 8.2.1 | Clear and grub small trees and bushes | ha | 2 | | |
| 2.1.2 | 8.2.1 | Clear and grub strip 2 m wide for fence | m | 455 | | |
| 2.2 | SANS 1200D | EARTHWORKS | | | | |
| | 8.3.1 | Site Preparation | | | | |
| 2.2.1 | 8.3.1.2 | Remove topsoil to nominal depth of 150 mm, stockpile and maintain (only where ordered by the Engineer) | m ² | 12682 | | |
| | PSD 8.3.2 | Bulk Excavation | | | | |
| | 8.3.2 (a) | Excavate in all materials and use for embankment or backfill or dispose as ordered within freehaul distance | | | | |
| 2.2.2 | | (1) Excavate to main terrace level of reservoir and ancillary structures use for fill or dispose | m ³ | 2560 | | |
| 2.2.3 | | (2) Excavate to main terrace level of access road use for fill or dispose | m ³ | 250 | | |
| 2.2.4 | | Extra over items 2.2.2 to 2.2.3 for additional excavations required by the Engineer after excavation has been completed | m ³ | 820 | | |
| 2.2.5 | | Rip and recompact 300 mm to underside of structure in 2 x 150 mm layers compacted to 95% Mod AASHTO density | m ³ | 1155 | | |
| | 8.3.2(b) | Extra over items 2.2.2 to 2.2.4 for excavations in: | | | | |
| 2.2.6 | | (1) Intermediate material | m ³ | 1686 | | |
| 2.2.7 | | (2) Hard rock material | m ³ | 843 | | |
| 2.2.8 | 8.3.4 | Fill with material from Commercial Sources | m ³ | 500 | | |
| 2.2.9 | 8.3.4 | G5 layer work compacted to 95% Mod AASHTO with material from Commercial Sources | m ³ | 848 | | |
| 2.2.10 | 8.3.6 | Overhaul | m ³ .km | 200 | | |
| | PSVA | Landscapping and Grassing | | | | |
| | | Trimming: | | | | |
| 2.2.11 | PSVA 8.1 (a) | Machine trimming areas to receive grass | m ² | 5290 | | |
| | | Preparing areas for grassing (Only where no trimming was done) | | | | |
| 2.2.12 | PSVA 8.3 (a) | Scarifying where ordered by the Engineer | m ² | 1058 | | |
| | PSVA 8.3 (b) | Top soiling (100mm thick) with: | | | | |
| 2.2.13 | | Topsoil obtained from stockpile on site | m ² | 529 | | |
| 2.2.14 | | Topsoil obtained by the Contractor (from commercial sources) | m ² | 5290 | | |
| | PSVA 8.3 (d) | Supplying and applying of Chemical Fertiliser @ 50g/m² | | | | |
| 2.2.15 | | 2:3:2 (22) Fertilizer | kg | 265 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SECTION 2: SITE PREPERATION & FENCING

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|-------------------------------------------------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|--------------|--------------|
| | | brought forward | | | | |
| | PSVA 8.4 | Grassing | | | | |
| 2.2.16 | PSVA 8.4 (b) | Kikuyu sodding | m ² | 1587 | | |
| 2.2.17 | PSVA 8.4 (d) | Hydroseeding mix | m ² | 794 | | |
| 2.2.18 | PSVA 8.7 | Dealing with weeds | m ² | 1323 | | |
| 2.2.19 | PSVA 8.8 | Extra over for Landcapping | Prov. Sum | 1 | R 100 000.00 | R 100 000.00 |
| 2.3 | PSVB | FENCING | | | | |
| | | Supply and erection of new security fencing material | | | | |
| 2.3.1 | PSVB 8.1 | Supply and Install a new 2.4m high Clear Galvanised Steel Mesh Fence including columns | m | 455 | | |
| 2.3.2 | | 600mm Deep by 200mm wide concrete (Class 15/20) strip below fence | m ³ | 55 | | |
| 2.3.3 | PSVB 8.2 | Supply and Install 3.7m long Motorised Galvanised Steel Swing Gates with High Density Anti-Climbing and Anti-Cut Pressed Mesh to suit 2.1m high Face Brick fence wall | No. | 2 | | |
| 2.4 | PSU | BRICKWORK | | | | |
| 2.4.1 | PSU 8.1 (b) | Fence wall (Z-shaped): 230mm thick, both faces, 14MPa face brick including brick force | m ² | 1 300 | | |
| 2.4.2 | PSU 8.16 (b) | 550mm wide x 10mm thick expansion joint in fence wall | m | 290 | | |
| 2.4.3 | PSU 8.16 (a) | Forming of 50mm diameter weeping hole through 230mm fence wall @ 1m c/c | No. | 460 | | |
| 2.4.4 | PSU 8.1 (d) | Retaining wall: 300mm thick cavity wall, both faces engineering bricks with 70mm infill reinforced concrete (including reinforcing and concrete) | m ² | 120 | | |
| 2.5 | SANS 1200G | CONCRETE (STRUCTURAL) | | | | |
| | 8.4.2 | Blinding Layer in Grade 15/19 concrete with 50mm thickness | | | | |
| 2.5.1 | | Underneath Retaining and Fence Wall footings | m ² | 460 | | |
| | | Strength Concrete 25/19 | | | | |
| 2.5.2 | | Retaining wall Strip footing (900 mm wide, 300 mm thick) | m ³ | 10 | | |
| 2.5.3 | | Fence wall strip footing (800mm wide, 300 mm thick) | m ³ | 130 | | |
| 2.6 | PSG 8.3 | Reinforcement | | | | |
| 2.6.1 | 8.3.1 | High tensile steel bars | t | 20 | | |
| 2.6.2 | 8.3.1 | Mild steel bars | t | 2 | | |
| TOTAL FOR SECTION 2 (Carried to Summary) | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----|------|--------|
| 3.1 | SANS 1200DB | SECTION 3: ROADS AND STORMWATER | | | | |
| | | PIPE TRENCHES | | | | |
| | PSD 8.3.2 | Excavate in all materials for trenches, backfill and compact, including disposal of surplus unsuitable material for pipes and cable ducts over 300 mm up to 600 mm diameter for depths. | | | | |
| 3.1.1 | | (a) 0.0 m - 2.0 m | m | 35 | | |
| 3.1.2 | | (b) 2.0 m - 4.0 m | m | 5 | | |
| 3.1.3 | | Extra over items 3.1.1 to 3.1.2 for additional excavations required by the Employer's Agent after excavation has been completed | m ³ | 8 | | |
| | PSD 8.3.2(b) | Extra over items 3.1.1 to 3.1.2 for | | | | |
| 3.1.4 | | (1) Intermediate excavation | m ³ | 5 | | |
| 3.1.5 | | (2) Hard rock excavation | m ³ | 5 | | |
| 3.1.6 | 8.3.2 (c) | Excavate and dispose of unsuitable material from trench bottom (provisional) | m ³ | 40 | | |
| | 8.3.3 | Excavation Ancilliaries | | | | |
| | | Make up deficiency in backfill material (provisional) | | | | |
| 3.1.7 | | (c) by importation from commercial sources (G7) | m ³ | 860 | | |
| 3.1.8 | 8.3.3.4 | Overhaul | m ³ .km | 200 | | |
| 3.1.9 | 8.3.4 | Particular Items | | | | |
| 3.1.10 | | a) Shore trench opposite structure or service (Provisional) | m | 35 | | |
| | PSDB 8.3.5 | Existing Services that Intersect or Adjoin a Pipe Trench | | | | |
| 3.1.11 | | (a) Services that intersect with the trench | No. | 10 | | |
| 3.1.12 | | (b) Services that adjoin a trench | m | 50 | | |
| | 8.3.6 | Finishing | | | | |
| 3.1.13 | 8.3.6.1 | Reinstate road sidewalk complete with all courses at pipe crossings as per existing layerworks and surface treatment | m ² | 50 | | |
| 3.2 | SANS 1200DM | ACCESS ROAD | | | | |
| | 8.3.3 | Treatment of road-bed | | | | |
| | 8.3.3.3 (a) | Road Bed Preparation and Compaction of Material to: | | | | |
| 3.2.1 | | Rip and recompact in-situ material to 150mm depth, moisten and compact to minimum of 93% Mod. AASHTO density. | m ³ | 45 | | |
| 3.2.2 | | Tie into existing road | Sum | 1 | | |
| 3.3 | SANS 1200G | CONCRETE ROAD | | | | |
| | 8.2 | Formwork | | | | |
| 3.3.1 | 8.2.1 | Rough Formwork along sides of concrete road slabs | m | 90 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----|--------------|--------------|
| | | brought forward | | | | |
| | 8.3 | Reinforcement | | | | |
| 3.3.2 | 8.3.1 | High tensile steel bars | t | 0.5 | | |
| 3.3.3 | 8.3.1 | Mild steel bars | t | 0.2 | | |
| | 8.3.2 | High Tensile Welded Mesh | | | | |
| 3.3.4 | | Ref. 888 for road slabs | m ² | 500 | | |
| | 8.4 | Concrete | | | | |
| 3.3.5 | 8.4.3 | Strength Concrete of Class 20/19 utilised for: (a) Road Surface Slab | m ³ | 100 | | |
| | 8.4.4 | Unformed Surface Finishes | | | | |
| 3.3.6 | | (a) Wood-Floated Finish for road slab | m ² | 500 | | |
| 3.4 | PSG 8.5 | JOINTS | | | | |
| | PSG 8.5.2 | Filled Joints | | | | |
| | | Joint filler consisting of closed cell expanded polyethylene with density not less than 120kg/m ³ including bullnose finish to both sides of joint and tear off strip | | | | |
| 3.4.1 | | 20 mm wide between 200mm concrete members | m | 240 | | |
| | PSG 8.5.3 | Sealed Joints | | | | |
| | | Joint sealer (20 x 15 mm) consisting of a two component polyether based polyurethane sealing compound on visible face of joint including primer and bond breaker | | | | |
| 3.4.2 | (a) | 20 mm x 15 mm joints between concrete members | m | 240 | | |
| 3.4.3 | | Saw-cut Joints | m | 240 | | |
| 3.5 | SANS 1200LB | PIPE BEDDING | | | | |
| | 8.2.2 | Supply only of Bedding by Importation | | | | |
| | 8.2.2.3 | From commercial sources | | | | |
| 3.5.1 | (a) | Selected granular material (G7) compacted to 95% MOD AASHTO | m ³ | 9 | | |
| 3.5.2 | (b) | Selected fill blanket | m ³ | 14 | | |
| 3.5.3 | 8.2.4 | Encasing of 450 mm pipe in 15 MPa concrete | m ³ | 33 | | |
| 3.6 | SANS 1200LE | STORMWATER DRAINAGE | | | | |
| | 8.2.1 | Supply, handle, lay, bed Class B concrete pipes with interlocking joints | | | | |
| 3.6.1 | | 450 mm diameter Class 100D | m | 35 | | |
| 3.6.2 | | Ancillary Stormwater Infrastructure | Prov. Sum | 1 | R 350 000.00 | R 350 000.00 |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|-------------------------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------|----------------|-----|--------------|--------------|
| | | brought forward | | | | |
| 3.7 | SANS 1200ME | SUBBASE | | | | |
| | 8.3.3 | Construct the subbase course/ shoulder with material from commercial sources or designated borrow pits. | | | | |
| 3.7.1 | | G7 material compacted in 150mm layer to 93% of modified AASHTO maximum density. | m ³ | 45 | | |
| 3.7.2 | | Construct 150mm layer of G5 base compacted to 93% of MOD AASHTO from commercial sources | m ³ | 45 | | |
| 3.8 | SANS 1200MF | STABILISATION | | | | |
| 3.8.1 | 8.3.5 | Process base material by Stabilisation | m ³ | 45 | | |
| | 8.3.8 | Stabilising Agent: | | | | |
| 3.8.2 | 8.3.8 (b) | Portland Cement | t | 9 | | |
| 3.9 | SANS 1200MK | KERBING & CHANNELLING | | | | |
| | 8.2.1 | Concrete kerbing (Class 20/20 Concrete) | | | | |
| 3.9.1 | | Edge beam (150mm x 150mm) | m ³ | 1 | | |
| 3.9.2 | | 300 x 150mm Barrier kerb (Straight) Fig 3 | m | 125 | | |
| 3.9.3 | | Allowance for 80mm thick interlocking paving blocks | Prov. Sum | 1 | R 950 000.00 | R 950 000.00 |
| 3.10 | SANS 1200MM | ANCILLIARY ROADWORKS | | | | |
| 3.10.1 | | Allowance for signage, barriers and markings | Prov. Sum | 1 | R 100 000.00 | R 100 000.00 |
| 3.10.2 | | Tie into road stormwater network | Prov. Sum | 1 | R 250 000.00 | R 250 000.00 |
| | | PROVISION FOR PAVING | | | | |
| 3.11 | SANS 1200ME | SUBBASE | | | | |
| 3.11.1 | | Rip and recompact in-situ material to 150mm depth, moisten and compact to minimum of 93% Mod. AASHTO density. | m ³ | 800 | | |
| 3.11.2 | 8.3.3 | Construct the subbase course/ shoulder with material from commercial sources or designated borrow pits. | m ³ | 800 | | |
| 3.11.3 | | Construct 150mm layer of G5 base compacted to 93% of MOD AASHTO from commercial sources | m ³ | 800 | | |
| 3.11.4 | | 150 mm C4 compacted to 95% MOD. AASHTO. | m ³ | 800 | | |
| 3.11.5 | 8.3.8 (b) | Stabilizing agent: Portland cement (3%) | t | 30 | | |
| TOTAL FOR SECTION 3 (Carried to Summary) | | | | | | |

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| Witness: | | Witness: | |

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|------|--------|
| | | SECTION 4: RESERVOIR | | | | |
| 4.1 | SANS 1200D | EARTHWORKS | | | | |
| | 8.3.3 | RESTRICTED EXCAVATION | | | | |
| | PSD 8.3.3(a) | Excavate for restricted foundations, footings and pipe trenches in all materials and use as described for items 4.1.1 to 4.1.3 | | | | |
| 4.1.1 | | 0 to 2m deep | m ³ | 900 | | |
| 4.1.2 | | 2m to 4m deep | m ³ | 300 | | |
| | PSD 8.3.3 (b) | Extra over items 4.1.1 to 4.1.2 for | | | | |
| 4.1.3 | 1) | Intermediate excavation | m ³ | 450 | | |
| 4.1.4 | 2) | Hard rock excavation | m ³ | 450 | | |
| 4.1.5 | | Extra over items 4.1.1 to 4.1.4 for additional excavations required by the Engineer after excavation has been completed | m ³ | 180 | | |
| 4.1.6 | 8.3.6 | Overhaul | m ³ .km | 11 250 | | |
| 4.2 | SANS 1200L | PIPEWORK | | | | |
| | PSL 8.2.5 | PIPE SPECIALS | | | | |
| 4.2.1 | | Supply, testing and installation of pipework, fittings and specials brought forward from the Pipe Schedule (building in of pipes measured elsewhere) | Sum | 1 | | |
| 4.3 | PSLD | BUILDING PIPES INTO CONCRETE WORK | | | | |
| | 8.3 (a) | Pipes supplied and installed by the Contractor (Irrespective of type) | | | | |
| 4.3.1 | | 150 mm diameter | No. | 1 | | |
| 4.3.2 | | 350 mm diameter | No. | 1 | | |
| 4.3.3 | | 500 mm diameter | No. | 1 | | |
| 4.3.4 | | 600 mm diameter | No. | 1 | | |
| 4.4 | SANS 1200G | CONCRETE (STRUCTURAL) | | | | |
| | 8.2 | Formwork | | | | |
| | 8.2.2 | Smooth Formwork | | | | |
| | | Plane Vertical | | | | |
| 4.4.1 | | Drainage trench walls | m ² | 41 | | |
| 4.4.2 | | Edges of buttresses | m ² | 147 | | |
| | | Curved Cylindrical | | | | |
| 4.4.3 | | Vertical sides of reservoir wall footing (outer radius 30175 mm) | m ² | 90 | | |
| 4.4.4 | | Vertical sides of reservoir wall footing (inner radius 28125 mm) | m ² | 80 | | |
| 4.4.5 | | Wall of reservoir (outer radius 29450 mm) | m ² | 1 701 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|----------------|--------------------------------------------------------------------------------------------------------------------------|----------------|-------|------|--------|
| | | brought forward | | | | |
| 4.4.6 | | Wall of reservoir (inner radius 29000mm) | m ² | 1 674 | | |
| 4.4.7 | | Ring beam (outer radius 29800 mm) | m ² | 255 | | |
| 4.4.8 | | Ring beam (inner radius 29000 mm) | m ² | 210 | | |
| 4.4.9 | | Roof Vent | m ² | 158 | | |
| | 8.2.5 | Narrow width (up to 300mm wide) | | | | |
| 4.4.10 | | Sides of drainage trench floor (250mm high) | m | 53 | | |
| 4.4.11 | | Edge of apron around reservoir | m | 218 | | |
| | | Curved Spherical | | | | |
| 4.4.12 | | Internal soffit of reservoir roof | m ² | 3 060 | | |
| | 8.2.6 | Box Out Holes/Form Voids | | | | |
| 4.4.13 | 8.2.6(d) | Rectangular openings for access hatch A (1000x1000mm) as shown in drawing: 13214-73-04-002 | No. | 2 | | |
| 4.4.14 | 8.2.6(d) | Rectangular opening for ventilator (1350x1350mm) as shown in drawing: 13214-73-04-001 | No. | 1 | | |
| | PSG 8.2.7 | Chamfers larger than 20mm x 20mm | | | | |
| 4.4.15 | | 25 mm along ring beam | m | 370 | | |
| 4.4.16 | | 25 mm at roof ventilator | m | 8 | | |
| | 8.3 | Reinforcement | | | | |
| 4.4.17 | 8.3.1 | High tensile steel bars | t | 399 | | |
| 4.4.18 | 8.3.1 | Mild steel bars | t | 32 | | |
| | 8.4 | Concrete | | | | |
| | PSG 8.4.3 | Strength of Concrete: 15/19 | | | | |
| 4.4.19 | 8.4.2 | Blinding layer 75mm thick in reservoir floor and footing (horizontal) | m ² | 3 010 | | |
| 4.4.20 | | Blinding layer 50mm thick underneath drainage trench as per drawing 13214-73-04-001 | m ² | 30 | | |
| | | STRENGTH CONCRETE NF 20 | | | | |
| 4.4.21 | | No Fines concrete layer 100mm thick (horizontal) in reservoir floor | m ² | 2 645 | | |
| 4.4.22 | | 300x300mm No Fines concrete around 110 diameter slotted PVC pipe as per drawing 13214-73-04-002 | m ³ | 40 | | |
| 4.4.23 | | No Fines concrete around 75 diameter perforated PVC pipe within the leak detection system as per drawing 13214-73-04-002 | m ³ | 30 | | |
| 4.4.24 | | Mass concrete as ordered by the engineer | m ³ | 100 | | |
| | PSG 8.4.3 | Strength of Concrete: 25/19 | | | | |
| 4.4.25 | | Apron Slab | m ³ | 140 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|------|--------|
| | | brought forward | | | | |
| | PSG 8.4.3 | Strength of Concrete: 35/19 | | | | |
| 4.4.26 | | Wall Footings | m ³ | 153 | | |
| 4.4.27 | | Floors | m ³ | 530 | | |
| 4.4.28 | | Walls (including 350 x 2000 Buttresses) | m ³ | 876 | | |
| 4.4.29 | | Ring beam | m ³ | 255 | | |
| 4.4.30 | | Roof (including base of ventilation structure) | m ³ | 1001 | | |
| 4.4.31 | | Drainage trench floor | m ³ | 16 | | |
| 4.4.32 | | Drainage trench walls | m ³ | 11 | | |
| | 8.4.4 | Unformed Surface Finishes | | | | |
| | 8.4.4 (a) | Wood Floated Finish | | | | |
| 4.4.33 | | Drainage trench (floor and top of walls) | m ² | 45 | | |
| 4.4.34 | | Domed roof | m ² | 3 213 | | |
| | 8.4.4 (b) | Steel Floated Finish | | | | |
| 4.4.35 | | Floor inside reservoir | m ² | 2 670 | | |
| | PSG 8.9 | Sealing of openings in top surface of NF-concrete layer with plaster | | | | |
| 4.4.36 | | horizontal | m ² | 2 670 | | |
| 4.5 | PSG 8.5 | JOINTS | | | | |
| | | Filled Joints (Including Formwork) | | | | |
| | | Joint Filler Consisting of Closed Cell Expanded Polyethylene with Density not Less than 100 kg/m³ Including Bullnose Finish to Both Sides of Joint. | | | | |
| 4.5.1 | | 20 mm wide between 100 mm concrete members | m | 190 | | |
| 4.5.2 | | 20 mm wide between 150 mm concrete members | m | 190 | | |
| 4.5.3 | | 20 mm wide between 200 mm concrete members | m | 645 | | |
| | PSG 8.5.3 | Sealed Joints | | | | |
| | | Joint Sealer (20 X 15 mm) Consisting of a two Component Polyether Based Polyurethane Sealing Compound on Visible Face of Joint Including Primer and Backing Cord or Bond Breaker | | | | |
| 4.5.4 | | 20 mm joints between concrete wall and floor interface as per drawings 13214-73-04-001 | m | 735 | | |
| 4.5.5 | | 20 mm wide sealed expansion joint along perimeter of drainage trench as per drawing 13214-73-04-001 | m | 55 | | |
| 4.5.6 | | 20 mm expansion joint along reservoir floor | m | 450 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--------|------|--------|
| | | brought forward | | | | |
| | PSG 8.5.4 | Waterstops | | | | |
| 4.5.7 | (a) | 200 mm wide Rearguard with centerbulb PVC waterstop at floor joints | m | 450 | | |
| 4.5.8 | (b) | 250mm Rearguard with centerbulb PVC waterstop at wall and floor joint (29m radius) | m | 183 | | |
| 4.5.9 | (c) | Extra-over items (a) and (b) above for factory moulded intersection pieces | No. | 30 | | |
| | PSG 8.5.5 | Bandaged Joints | | | | |
| 4.5.10 | (a) | 200mm wide X 2mm thick epoxy-fixed bandage along floor expansion joints | m | 450 | | |
| 4.5.11 | (b) | 250mm wide x 2mm thick flexible epoxy-fixed bandage along horizontal wall construction joints | m | 1 095 | | |
| 4.5.12 | (c) | 300mm wide X 2mm thick flexible epoxy-fixed bandage along wall and floor expansion joints (90 degree angle) incl. 60x60 corner fillet | m | 183 | | |
| | | Sundry Items | | | | |
| 4.6 | | PLASTIC SHEETING | | | | |
| 4.6.1 | PSLE 8.2.18 | 250 micron PVC sheeting underneath floor slab | m ² | 2 610 | | |
| 4.6.2 | | 200 micron PVC sheeting adjacent to scour pipe as per drawing 13214-73-04-003: Scour Pipe Detail | m ² | 1 872 | | |
| 4.7 | | BEARING STRIPS | | | | |
| 4.7.1 | | Supply and install 200 kN/m strip bearing at reservoir footing as per drawing 13214-73-04-001: Prestressed Wall/Footing Detail | m | 185 | | |
| 4.7.2 | | Supply and install 95 kN/m strip bearing on top of reservoir wall as per drawing 13214-73-04-001: Ringbeam Detail | m | 185 | | |
| 4.8 | PSG 8.13 | WATERPROOFING | | | | |
| 4.8.1 | | Two-component polymer modified cementitious waterproof mortar slurry coating on all internal tank wall, floor surfaces and on top of external surface of the tank roof (Polymer for flexibility and Cementitious component must contain Crystalline type material that will penetrate into the concrete to assist with waterproofing) | m ² | 11 000 | | |
| 4.9 | PSG 8.10 | TESTING STRUCTURE FOR WATERTIGHTNESS | | | | |
| 4.9.1 | | Reservoir | No. | 1 | | |
| 4.10 | SANS 1200HA | STRUCTURAL STEELWORK | | | | |
| | | Ladder | | | | |
| 4.10.1 | | Heavy Duty Hot Dipped Galvanised SABS 763 External Cat Ladder including cage - as per drawing 13214-73-04-002: Typical Cat Ladder Detail | No. | 2 | | |
| 4.10.2 | | Stainless Steel Grade 304 Internal Access ladder including cage as per drawing 13214-73-04-002: Typical Cat Ladder Detail | No. | 2 | | |
| 4.10.3 | | Stainless Steel Grade 304 grating to fit in a stainless steel frame to be placed over outlet and scour pipes as per drawing 13214-73-04-003 | No. | 2 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|-------------------------------------------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----|------|--------|
| | | brought forward | | | | |
| 4.10.4 | | Stainless Steel Grade 304 energy dissipating plate 4.5mm thick bolted to Reservoir wall with a neoprene rubber in between installed below inlet pipe as per drawing 13214-73-04-003 | No. | 1 | | |
| | | Handrail | | | | |
| 4.10.5 | | Hot Dipped Galvanised handrail assembly complete on top of roof | m | 200 | | |
| | | Access Hatch | | | | |
| 4.10.6 | | Lockable access hatch (1000mm x 1000mm opening) as per drawing 13214-73-04-002: Plan on Access Hatch | No. | 2 | | |
| 4.11 | SANS 1200L | MEDIUM PRESSURE PIPELINES | | | | |
| | 8.2.1 | Subsoil Drainage Pipework | | | | |
| 4.11.1 | | 50mm diameter drainage pipe encased in concrete | m | 75 | | |
| 4.11.2 | | 75mm diameter perforated drainage pipe in no fines concrete | m | 310 | | |
| 4.11.3 | | 110mm diameter perforated drainage pipe in no fines concrete | m | 340 | | |
| | 8.2.2 | Specials and Fittings | | | | |
| | | Extra over for the supply & installation of fittings and specials as shown in drawing 13214-73-04-002: Typical Cross & T Connection | | | | |
| 4.11.4 | | (a) 110 diameter PVC cross | No. | 10 | | |
| 4.11.5 | | (b) 110 diameter PVC tee | No. | 8 | | |
| | | Mild Steel Pipes | | | | |
| 4.11.6 | | 50 mm Galvanised MS outlet pipes | No. | 31 | | |
| | 1200LB 8.2.4 | Concrete at Pipes | | | | |
| 4.11.7 | | Encasing of 50mm dia underfloor drainage pipes in concrete | m ³ | 60 | | |
| 4.11.8 | | Encasing of 110mm dia underfloor drainage pipes in concrete | m ³ | 60 | | |
| 4.11.9 | | Encasing of 150mm dia drainage & scour pipes in concrete | m ³ | 8 | | |
| 4.11.10 | | Encasing of 350mm dia overflow pipe in concrete | m ³ | 4 | | |
| 4.11.11 | | Encasing of 500mm dia inlet pipe in concrete | m ³ | 10 | | |
| 4.11.12 | | Encasing of 600mm dia outlet pipe in concrete | m ³ | 15 | | |
| 4.12 | PSG 8.11 | RESERVOIR STERILIZATION | | | | |
| 4.12.1 | | Sterilization of the reservoir | Sum | 1 | | |
| 4.13 | PSU 8.14 | ROOF VENTILATOR | | | | |
| 4.13.1 | | Supply and install Roof ventilator as per the detail on drawing 13214-73-04-001: Roof Ventilator Detail | Sum | 1 | | |
| TOTAL FOR SECTION 4 (Carried to Summary) | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SECTION 5: CHAMBERS & BOXES

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|--------------------------------------|-------------------|-----------------------------------------------------------------------------------------------------------------------------|-------|-----|------|--------|
| SECTION 5: CHAMBERS AND BOXES | | | | | | |
| 5.1 | | SCOUR CHAMBER | | | | |
| 5.1.1 | SANS 1200D | EARTHWORKS | | | | |
| | PSD 8.3.3 | Restricted Excavation | | | | |
| | PSD 8.3.3(a) | Excavate for Restricted Foundations, Footings and Pipe Trenches in all materials and use as described for Items | | | | |
| 5.1.1.1 | | 0 to 2m deep | m³ | 110 | | |
| 5.1.1.2 | | 2m to 4m deep | m³ | 95 | | |
| | PSD 8.3.3 (b) | Extra over items 5.1.1 to 5.1.2 for | | | | |
| 5.1.1.3 | 1) | Intermediate excavation | m³ | 98 | | |
| 5.1.1.4 | 2) | Hard rock material | m³ | 42 | | |
| 5.1.1.5 | | Extra over items 5.1.1.3 to 5.1.1.4 for additional excavations required by the Engineer after excavation has been completed | m³ | 50 | | |
| 5.1.1.6 | 8.3.6 | Overhaul | m³.km | 50 | | |
| 5.1.2 | SANS 1200G | CONCRETE (STRUCTURAL) | | | | |
| | 8.2 | Formwork | | | | |
| | 8.2.2 | Smooth Formwork | | | | |
| | | Plane Vertical | | | | |
| 5.1.2.1 | | Scour chamber walls (internal and external) | m² | 160 | | |
| 5.1.2.2 | | Scour chamber floors | m² | 5 | | |
| 5.1.2.3 | | Sides of valve supports | m² | 2 | | |
| | 8.2.5 | Narrow width (up to 300mm wide) | | | | |
| 5.1.2.4 | | Sides of floor slab | m | 22 | | |
| 5.1.2.5 | | Sides of roof floor slab | m | 20 | | |
| | PSG 8.3 | Reinforcement | | | | |
| 5.1.2.6 | 8.3.1 | High tensile steel bars | t | 2 | | |
| 5.1.2.7 | 8.3.1 | Mild steel bars | t | 1 | | |
| 5.1.2.8 | 8.4 | Strength of Concrete: 15/19 | | | | |
| 5.1.2.9 | | Benching to floors of boxes | m² | 16 | | |
| | 8.4.3 | Strength of Concrete: 15/19 | | | | |
| 5.1.2.10 | | Mass Concrete | m³ | 1 | | |
| 5.1.2.11 | 8.4.2 | Blinding layer 50mm thick | m² | 25 | | |
| | 8.4.3 | Strength of Concrete: 35/19 | | | | |
| 5.1.2.12 | | Floors | m³ | 8 | | |
| 5.1.2.13 | | Walls | m³ | 17 | | |
| 5.1.2.14 | | Pipe supports | m³ | 2 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SECTION 5: CHAMBERS & BOXES

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----|------|--------|
| | | brought forward | | | | |
| | 8.4.4 | Unformed Surface Finishes | | | | |
| | 8.4.4 (a) | Wood Floated Finish | | | | |
| 5.1.2.15 | | Top surface of box walls | m ² | 5 | | |
| | 8.4.4 (b) | Steel Floated Finish | | | | |
| 5.1.2.16 | | Benching in boxes | m ² | 20 | | |
| | | Sundry Items | | | | |
| 5.1.3 | | PRE-CAST CONCRETE | | | | |
| 5.1.3.1 | | Precast concrete roof slab sections (1280mm x 2000mm x 300mm) (including lockable access hatch and holding brackets) as per drawing 13214-73-04-011: Scourbox Layout | No. | 1 | | |
| 5.1.3.2 | | Precast concrete roof slab sections (1280mm x 2000mm x 300mm) as per drawing 13214-73-04-011: Scourbox Layout | No. | 1 | | |
| 5.1.4 | SANS 1200HA | STRUCTURAL STEELWORK | | | | |
| 5.1.4.1 | | Galvanised steel ladder fixed with M16 chemical anchors | No. | 1 | | |
| 5.1.4.2 | PSHA 5.2.13 | 50 mm Galvanised open floor grating | m ² | 10 | | |
| 5.1.4.3 | | 50x50x5L with 150x25x3 lugs as per drawing 13214-73-04-011: Galvanised Open Grid Flooring | No | 2 | | |
| | | Access Hatch | | | | |
| 5.1.4.4 | | Lockable access hatch (1535mm x 1535mm) as per drawing 13214-73-04-002: Plan on Access Hatch | No. | 2 | | |
| 5.1.5 | PSLD | BUILDING PIPES INTO CONCRETE WORK | | | | |
| | 8.3 (a) | Pipes Supplied and Installed by the Contractor (Irrespective of type) | | | | |
| 5.1.5.1 | | 110mm | No. | 3 | | |
| 5.1.5.2 | | 150mm | No. | 4 | | |
| 5.1.5.3 | | 350mm | No. | 2 | | |
| 5.1.5.4 | | 600mm | No. | 1 | | |
| 5.1.6 | SANS 1200L | PIPEWORK | | | | |
| | PSL 8.2.5 | PIPE SPECIALS | | | | |
| 5.1.6.1 | 8.2.5 | Supplying, testing and installation of pipes, fittings and specials brought forward from the Scour Chamber Pipe Schedule | Sum | 1 | | |
| 5.2 | | INLET FLOWMETER CHAMBER | | | | |
| 5.2.1 | SANS 1200D | EARTHWORKS | | | | |
| | 8.3.3 | Restricted Excavation | | | | |
| | 8.3.3(a) (i) | Excavate for Restricted Foundations, Footings and Pipe Trenches in all materials and use as described for Items | | | | |
| 5.2.1.1 | | 0 to 2m deep | m ³ | 29 | | |
| 5.2.1.2 | | 2m to 4m deep | m ³ | 19 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SECTION 5: CHAMBERS & BOXES

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|-------------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------|-----|------|--------|
| | | brought forward | | | | |
| 5.2.1.3 | | (b) Intermediate excavation | m ³ | 51 | | |
| 5.2.1.4 | | (c) Hard rock material | m ³ | 21 | | |
| 5.2.1.5 | | Extra over items 5.2.1.3 to 5.2.1.4 for additional excavations required by the Engineer after excavation has been completed | m ³ | 35 | | |
| 5.2.1.6 | 8.3.6 | Overhaul | m ³ .km | 50 | | |
| 5.2.2 | SANS 1200G | CONCRETE (STRUCTURAL) | | | | |
| | 8.2 | Formwork | | | | |
| | 8.2.2 | Smooth Formwork | | | | |
| | | Plane Vertical | | | | |
| 5.2.2.1 | | Internal & external sides of inlet flowmeter chamber walls | m ² | 30 | | |
| 5.2.2.2 | | Sides of valve supports | m ² | 1 | | |
| | | Plane Horizontal | | | | |
| | PSG 8.2.6 | Box Out Holes/Form Voids | | | | |
| | PSG 8.2.6(a) | Circular holes for pipes | | | | |
| 5.2.2.3 | | 500mm | No. | 2 | | |
| | 8.2.5 | Narrow width (up to 300mm wide) | | | | |
| 5.2.2.4 | | Sides of floor slab (250mm high) | m | 22 | | |
| | 8.3 | Reinforcement | | | | |
| 5.2.2.5 | 8.3.1 | High tensile steel bars | t | 3 | | |
| 5.2.2.6 | 8.3.1 | Mild steel reinforcement | t | 1 | | |
| | 8.3.2 | High Tensile Welded Mesh | | | | |
| 5.2.2.7 | | Ref. 245 for flow meter chamber cover | m ² | 5 | | |
| | 8.4 | Concrete | | | | |
| | 8.4.3 | Strength of Concrete: 15/19 | | | | |
| 5.2.2.8 | | Benching to floors of boxes | m ² | 8 | | |
| | 8.4.3 | Strength of Concrete: 15/19 | | | | |
| 5.2.2.9 | 8.4.2 | Blinding layer 50mm thick | m ² | 15 | | |
| | 8.4.3 | Strength of Concrete: 35/19 | | | | |
| 5.2.2.10 | | Floors | m ³ | 5 | | |
| 5.2.2.11 | | Walls | m ³ | 14 | | |
| 5.2.2.12 | | Pipe supports | m ³ | 0.1 | | |
| 5.2.2.13 | | 500x500x300 deep sump | m ³ | 0.4 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SECTION 5: CHAMBERS & BOXES

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----|------|--------|
| | | brought forward | | | | |
| | 8.4.4 | Unformed Surface Finishes | | | | |
| | 8.4.4 (a) | Wood Floated Finish | | | | |
| 5.2.2.14 | | Top surface of box walls | m ² | 5 | | |
| | 8.4.4 (b) | Steel Floated Finish | | | | |
| 5.2.2.15 | | Benching in boxes | m ² | 8 | | |
| | | Sundry Items | | | | |
| 5.2.3 | | PRE-CAST CONCRETE | | | | |
| 5.2.3.1 | | Precast concrete roof slab sections (including lockable access hatch and holding brackets) as per drawing 13214-73-04-005 | No. | 1 | | |
| 5.2.4 | SANS 1200HA | STRUCTURAL STEELWORK | | | | |
| 5.2.4.1 | | Galvanised steel ladder fixed with M16 chemical anchors | No. | 1 | | |
| 5.2.5 | PSLD | BUILDING PIPES INTO CONCRETE WORK | | | | |
| | 8.3 (a) | Pipes Supplied and Installed by the Contractor (Irrespective of type) | | | | |
| 5.2.5.1 | | 500 mm diameter | No. | 2 | | |
| 5.2.6 | SANS 1200L | PIPEWORK | | | | |
| | PSL 8.2.5 | PIPE SPECIALS | | | | |
| 5.2.6.1 | | Supplying, testing and installation of pipes, fittings and specials brought forward from the Inlet Flow Meter Chamber Pipe Schedule | Sum | 1 | | |
| 5.3 | | OUTLET FLOWMETER CHAMBER | | | | |
| 5.3.1 | SANS 1200D | EARTHWORKS | | | | |
| | 8.3.3 | Restricted Excavation | | | | |
| | 8.3.3(a) (i) | Excavate for Restricted Foundations, Footings and Pipe Trenches in all materials and use as described for Items | | | | |
| 5.3.1.1 | | (a) Soft excavation | m ³ | 25 | | |
| 5.3.1.2 | | (b) Intermediate excavation | m ³ | 12 | | |
| 5.3.1.3 | | (c) Hard rock material | m ³ | 9 | | |
| 5.3.1.4 | | Extra over items 5.3.1.1 to 5.3.1.3 for additional excavations required by the Engineer after excavation has been completed | m ³ | 35 | | |
| 5.3.1.5 | 8.3.6 | Overhaul | m ³ .km | 100 | | |
| 5.3.2 | SANS 1200G | CONCRETE (STRUCTURAL) | | | | |
| | 8.2 | Formwork | | | | |
| | 8.2.2 | Smooth Formwork | | | | |
| | | Plane Vertical | | | | |
| 5.3.2.1 | | Internal & external sides of inlet chamber walls | m ² | 31 | | |
| 5.3.2.2 | | Sides of valve supports | m ² | 1 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SECTION 5: CHAMBERS & BOXES

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------|----------------|-----|------|--------|
| | | brought forward | | | | |
| 5.3.2.3 | 8.2.5 | Narrow width (up to 300mm wide) Sides of floor slab (250mm high) | m | 22 | | |
| | 8.3 | Reinforcement | | | | |
| 5.3.2.4 | 8.3.1 | High tensile steel bars | t | 3 | | |
| 5.3.2.5 | 8.3.1 | Mild steel bars | t | 2 | | |
| | 8.3.2 | High Tensile Welded Mesh | | | | |
| 5.3.2.6 | | Ref. 245 for flow meter chamber cover | m ² | 5 | | |
| | 8.4 | Concrete | | | | |
| | 8.4.3 | Strength of Concrete: 15/10 | | | | |
| 5.3.2.7 | | Benching to floors of boxes | m ² | 8 | | |
| | 8.4.3 | Strength of Concrete: 15/19 | | | | |
| 5.3.2.8 | 8.4.2 | Blinding layer 50mm thick | m ² | 15 | | |
| | 8.4.3 | Strength of Concrete: 35/19 | | | | |
| 5.3.2.9 | | Floors | m ³ | 5 | | |
| 5.3.2.10 | | Walls | m ³ | 15 | | |
| 5.3.2.11 | | Pipe supports | m ³ | 1 | | |
| 5.3.2.12 | | 500x500x300 deep sump | m ³ | 5 | | |
| | 8.4.4 | Unformed Surface Finishes | | | | |
| | 8.4.4 (a) | Wood Floated Finish | | | | |
| 5.3.2.13 | | Top surface of box walls | m ² | 5 | | |
| | 8.4.4 (b) | Steel Floated Finish | | | | |
| 5.3.2.14 | | Benching in boxes | m ² | 8 | | |
| | | Sundry Items | | | | |
| 5.3.3 | | PRE-CAST CONCRETE | | | | |
| 5.3.3.1 | | Precast concrete roof slab sections (including lockable access hatch and holding brackets) as per drawing 13214-73-04-005 | No. | 1 | | |
| 5.3.4 | SANS 1200HA | STRUCTURAL STEELWORK | | | | |
| 5.3.4.1 | | Galvanised steel ladder fixed with M16 chemical anchors | No. | 1 | | |
| 5.3.5 | PSLD | BUILDING PIPES INTO CONCRETE WORK | | | | |
| | 8.3 (a) | Pipes Supplied and Installed by the Contractor (Irrespective of type) | | | | |
| 5.3.5.1 | | 600 mm diameter | No. | 2 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SECTION 5: CHAMBERS & BOXES

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------|----------------|-----|------|--------|
| | | brought forward | | | | |
| 5.3.6 | SANS 1200L | PIPEWORK | | | | |
| | PSL 8.2.5 | PIPE SPECIALS | | | | |
| 5.3.6.1 | | Supplying, testing and installation of pipes, fittings and specials brought forward from the Inlet Flow Meter Chamber Pipe Schedule | Sum | 1 | | |
| 5.4 | | DRAINAGE BOXES | | | | |
| 5.4.1 | SANS 1200D | EARTHWORKS | | | | |
| | 8.3.3 | Restricted Excavation | | | | |
| | 8.3.3(a) (i) | Excavate for Restricted Foundations, Footings and Pipe Trenches in all materials and use as described for Items | | | | |
| 5.4.1.1 | | (i)(a) 0 m up to 2 m | m ³ | 86 | | |
| | 8.3.2(b) | Extra Over Items for Excavations in: | | | | |
| 5.4.1.2 | | (a) Intermediate excavation | m ³ | 30 | | |
| 5.4.1.3 | | (b) Hard rock material | m ³ | 27 | | |
| 5.4.1.4 | | Extra over items 5.4.1.2 to 5.4.1.3 for additional excavations required by the Engineer after excavation has been completed | m ³ | 35 | | |
| 5.4.2 | SANS 1200G | CONCRETE (STRUCTURAL) | | | | |
| | 8.2 | Formwork | | | | |
| | 8.2.2 | Smooth Formwork | | | | |
| | | Plane Vertical | | | | |
| 5.4.2.1 | | Internal & external sides of drainage chamber walls | m ² | 391 | | |
| | 8.2.5 | Narrow width (up to 300mm wide) | | | | |
| 5.4.2.2 | | Sides of floor slab (250mm high) | m | 22 | | |
| | 8.3 | Reinforcement | | | | |
| 5.4.2.3 | 8.3.1 | High tensile steel bars | t | 20 | | |
| 5.4.2.4 | 8.3.1 | Mild steel bars | t | 6 | | |
| | 8.4 | Concrete | | | | |
| | 8.4.3 | Strength of Concrete: 15/10 | | | | |
| 5.4.2.5 | | Benching to floors of boxes | m ² | 24 | | |
| | 8.4.3 | Strength of Concrete: 15/19 | | | | |
| 5.4.2.6 | 8.4.2 | Blinding layer 50mm thick | m ² | 40 | | |
| | 8.4.3 | Strength of Concrete: 35/19 | | | | |
| 5.4.2.7 | | Floors | m ³ | 10 | | |
| 5.4.2.8 | | Walls | m ³ | 40 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SECTION 5: CHAMBERS & BOXES

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------|-----|------|--------|
| | | brought forward | | | | |
| | 8.4.4 | Unformed Surface Finishes | | | | |
| | 8.4.4 (a) | Wood Floated Finish | | | | |
| 5.4.2.9 | | Top surface of box walls | m ² | 16 | | |
| | 8.4.4 (b) | Steel Floated Finish | | | | |
| 5.4.2.10 | | Benching in boxes | m ² | 24 | | |
| | | Sundry Items | | | | |
| 5.4.3 | SANS 1200HA | STRUCTURAL STEELWORK | | | | |
| 5.4.3.1 | | Grade 304 Stainless Steel frame to be cast into concrete walls of 1400mm x 1400mm boxes | No. | 12 | | |
| 5.4.4 | | GRP Products | | | | |
| 5.4.4.1 | | GRP grating with solid top with grit finish to fit inside item 5.4.3.1 | No. | 12 | | |
| 5.4.4 | PSLD | BUILDING PIPES INTO CONCRETE WORK | | | | |
| | 8.3 (a) | Pipes Supplied and Installed by the Contractor (Irrespective of type) | | | | |
| 5.4.4.1 | | 50 mm diameter | No. | 48 | | |
| 5.4.4.2 | | 110 mm diameter | No. | 24 | | |
| 5.5 | | VALVE CHAMBERS | | | | |
| 5.5.1 | SANS 1200D | EARTHWORKS | | | | |
| | 8.3.3 | Restricted Excavation | | | | |
| | 8.3.3(a) (i) | Excavate for Restricted Foundations, Footings and Pipe Trenches in all materials and use as described for Items | | | | |
| 5.5.1.1 | | (a) Soft excavation | m ³ | 22 | | |
| 5.5.1.2 | | (b) Intermediate excavation | m ³ | 37 | | |
| 5.5.1.3 | | (c) Hard rock material | m ³ | 15 | | |
| 5.5.1.4 | | Extra over items 5.5.1.1 to 5.5.1.3 for additional excavations required by the Engineer after excavation has been completed | m ³ | 70 | | |
| 5.5.1.5 | 8.3.6 | Overhaul | m ³ .km | 200 | | |
| 5.5.2 | SANS 1200G | CONCRETE (STRUCTURAL) | | | | |
| | 8.2 | Formwork | | | | |
| | 8.2.2 | Smooth Formwork | | | | |
| | | Plane Vertical | | | | |
| 5.5.2.1 | | Internal & external sides of inlet chamber walls | m ² | 31 | | |
| 5.5.2.2 | | Sides of valve supports | m ² | 2 | | |
| | 8.2.5 | Narrow width (up to 300mm wide) | | | | |
| 5.5.2.3 | | Sides of floor slab (250mm high) | m | 22 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SECTION 5: CHAMBERS & BOXES

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------|----------------|-----|------|--------|
| | | brought forward | | | | |
| | 8.3 | Reinforcement | | | | |
| 5.5.2.4 | 8.3.1 | High tensile steel bars | t | 5 | | |
| 5.5.2.5 | 8.3.1 | Mild steel bars | t | 2 | | |
| | 8.3.2 | High Tensile Welded Mesh | | | | |
| 5.5.2.6 | | Ref. 245 for flow meter chamber cover | m ² | 10 | | |
| | 8.4 | Concrete | | | | |
| | 8.4.3 | Strength of Concrete: 15/10 | | | | |
| 5.5.2.7 | | Benching to floors of boxes | m ² | 8 | | |
| | 8.4.3 | Strength of Concrete: 15/19 | | | | |
| 5.5.2.8 | 8.4.2 | Blinding layer 50mm thick | m ² | 11 | | |
| | 8.4.3 | Strength of Concrete: 35/19 | | | | |
| 5.5.2.9 | | Floors | m ³ | 6 | | |
| 5.5.2.10 | | Walls | m ³ | 11 | | |
| 5.5.2.11 | | Pipe supports | m ³ | 1 | | |
| 5.5.2.12 | | 500x500x300 deep sump | m ³ | 5 | | |
| | 8.4.4 | Unformed Surface Finishes | | | | |
| | 8.4.4 (a) | Wood Floated Finish | | | | |
| 5.5.2.13 | | Top surface of box walls | m ² | 10 | | |
| | 8.4.4 (b) | Steel Floated Finish | | | | |
| 5.5.2.14 | | Benching in boxes | m ² | 16 | | |
| | | Sundry Items | | | | |
| 5.5.3 | | PRE-CAST CONCRETE | | | | |
| 5.5.3.1 | | Precast concrete roof slab sections (including lockable access hatch and holding brackets) as per drawing 13214-73-04-005 | No. | 2 | | |
| 5.5.4 | SANS 1200HA | STRUCTURAL STEELWORK | | | | |
| 5.5.4.1 | | Galvanised steel ladder fixed with M16 chemical anchors | No. | 2 | | |
| 5.5.5 | PSLD | BUILDING PIPES INTO CONCRETE WORK | | | | |
| | 8.3 (a) | Pipes Supplied and Installed by the Contractor (Irrespective of type) | | | | |
| 5.5.5.1 | | 500 mm diameter | No. | 2 | | |
| 5.5.5.2 | | 600 mm diameter | No. | 2 | | |
| 5.5.6 | SANS 1200L | PIPEWORK | | | | |
| | PSL 8.2.5 | PIPE SPECIALS | | | | |
| 5.5.6.1 | | Supplying, testing and installation of pipes, fittings and specials brought forward from the Inlet Flow Meter Chamber Pipe Schedule | Sum | 1 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SECTION 5: CHAMBERS & BOXES

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|---------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------|------|------|--------|
| | | brought forward | | | | |
| 5.6 | | TIE-IN BOX TO EXISTING BULKWATER LINE AND SCOUR VALVE CHAMBERS | | | | |
| 5.6.1 | SANS 1200D | EARTHWORKS | | | | |
| | 8.3.3 | Restricted Excavation | | | | |
| | 8.3.3(a) (i) | Excavate for Restricted Foundations, Footings and Pipe Trenches in all materials and use as described for Items | | | | |
| 5.6.1.1 | | (a) Soft excavation | m ³ | 14 | | |
| 5.6.1.2 | | (b) Intermediate excavation | m ³ | 43 | | |
| 5.6.1.3 | | (c) Hard rock material | m ³ | 29 | | |
| 5.6.1.4 | | Extra over items 5.6.1.1 to 5.6.1.3 for additional excavations required by the Engineer after excavation has been completed | m ³ | 28 | | |
| 5.6.1.5 | 8.3.6 | Overhaul | m ³ .km | 100 | | |
| 5.6.2 | SANS 1200G | CONCRETE (STRUCTURAL) | | | | |
| | 8.2 | Formwork | | | | |
| | 8.2.2 | Smooth Formwork | | | | |
| | | Plane Vertical | | | | |
| 5.6.2.1 | | Internal & external sides of tie-in box walls | m ² | 198 | | |
| 5.6.2.2 | | Sides of valvesupports | m ² | 5 | | |
| | 8.2.5 | Narrow width (up to 300mm wide) | | | | |
| 5.6.2.3 | | Sides of floor slab (250mm high) | m | 22 | | |
| | 8.3 | Reinforcement | | | | |
| 5.6.2.4 | 8.3.1 | High tensile steel bars | t | 4.00 | | |
| 5.6.2.5 | 8.3.1 | Mild steel bars | t | 2 | | |
| | 8.3.2 | High Tensile Welded Mesh | | | | |
| 5.6.2.6 | | Ref. 311 for tie-in box & scour valve chambers cover slabs | m ² | 27 | | |
| | 8.4 | Concrete | | | | |
| | 8.4.3 | Strength of Concrete: 15/10 | | | | |
| 5.6.2.7 | | Benching to floors of boxes | m ² | 19 | | |
| | 8.4.3 | Strength of Concrete: 15/19 | | | | |
| 5.6.2.8 | 8.4.2 | Blinding layer 50mm thick | m ² | 27 | | |
| | 8.4.3 | Strength of Concrete: 35/19 | | | | |
| 5.6.2.9 | | Floors | m ³ | 6 | | |
| 5.6.2.10 | | Walls | m ³ | 23 | | |
| 5.6.2.11 | | Pipe supports | m ³ | 2 | | |
| 5.6.2.12 | | 500x500x300 deep sump | m ³ | 0.1 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SECTION 5: CHAMBERS & BOXES

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|-------------------------------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----|------|--------|
| | | brought forward | | | | |
| | 8.4.4 | Unformed Surface Finishes | | | | |
| | 8.4.4 (a) | Wood Floated Finish | | | | |
| 5.6.2.13 | | Top surface of tie-in box walls | m ² | 198 | | |
| | 8.4.4 (b) | Steel Floated Finish | | | | |
| 5.6.2.14 | | Benching in boxes | m ² | 19 | | |
| | | Sundry Items | | | | |
| 5.6.3 | | PRE-CAST CONCRETE | | | | |
| 5.6.3.1 | | Precast concrete roof slab sections (2.7mx1.1m*0.15m) as per drawing 13214-73-04-018 | No. | 6 | | |
| 5.6.3.2 | | Precast concrete roof slab section including built in type 2A C.I. manhole cover and frame (2.7mx1.1m*0.15m) as per drawing 13214-73-04-018 | No. | 1 | | |
| 5.6.3.3 | | Precast concrete roof slab section including built in type 2A C.I. manhole cover and frame for scour valve box (1.36mx1.36m*0.15m) as per drawing 13214-73-04-018 | No. | 2 | | |
| 5.6.4 | SANS 1200HA | STRUCTURAL STEELWORK | | | | |
| 5.6.4.1 | | Galvanised steel ladder fixed with M16 chemical anchors | No. | 1 | | |
| 5.6.5 | PSLD | BUILDING PIPES INTO CONCRETE WORK | | | | |
| | 8.3 (a) | Pipes Supplied and Installed by the Contractor | | | | |
| 5.6.5.1 | | 500mm diameter steel pipe | No. | 1 | | |
| 5.6.5.2 | | 600mm diameter steel pipe | No. | 3 | | |
| 5.6.6 | PSU | BRICKWORK | | | | |
| 5.6.6.1 | PSU 8.1 (b) | 220mm thick, both faces 14 MPa face brick including brick force for scour valve chamber walls | m ² | 71 | | |
| 5.6.7 | SANS 1200L | PIPEWORK | | | | |
| | PSL 8.2.5 | PIPE SPECIALS | | | | |
| 5.6.7.1 | | Supplying, testing and installation of pipes, fittings and specials brought forward from the Tie-In Box & Scour Valve Chamber Pipe Schedule | Sum | 1 | | |
| TOTAL FOR SECTION 5 (Carried to Summary) | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SECTION 6: INTERCONNECTING PIPEWORK

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----|------|--------|
| 6.1 | SANS 1200DB | SECTION 6: INTERCONNECTING PIPEWORK | | | | |
| | | PIPE TRENCHES | | | | |
| | | Excavation | | | | |
| | 8.3.2 | Excavate in all materials For Trenches, Backfill and Compact, including Disposal of Surplus Unsuitable Maternal for Pipes | | | | |
| | | Up to 300 mm Diameter for depths | | | | |
| 6.1.1 | | 0.0m - 1.0m | m | 48 | | |
| 6.1.2 | | 1.0m - 2.0m | m | 85 | | |
| 6.1.3 | | 2.0m - 3.0m | m | 178 | | |
| | | Over 300mm up tp 600 mm diameter for depths | | | | |
| 6.1.4 | | 0.0m - 1.0m | m | 150 | | |
| 6.1.5 | | 1.0m - 2.0m | m | 150 | | |
| 6.1.6 | | 2.0m - 3.0m | m | 88 | | |
| 6.1.7 | | 3.0m - 4.0m | m | 10 | | |
| | 8.3.2 (b) | Extra Over items 6.1.1 to 6.1.7 for excavations | | | | |
| 6.1.8 | 8.3.2 (I) | Intermediate material | m ³ | 366 | | |
| 6.1.9 | 8.3.2 (ii) | Hard rock material | m ³ | 238 | | |
| | 8.3.3 | Excavation Ancillaries | | | | |
| 6.1.10 | 8.3.3.3 | Compaction in road reserve (provisional) | m ³ | 10 | | |
| 6.1.11 | 8.3.3.4 | Overhaul | m ³ .km | 50 | | |
| | PSDB 8.3.5 | Existing Services that Intersect or Adjoin of a Pipe Trench | | | | |
| 6.1.12 | | (a) Services that intersect with the trench | No. | 10 | | |
| 6.1.13 | | (b) Services that adjoin a trench | m | 50 | | |
| | 8.3.6 | Finishing | | | | |
| 6.1.14 | 8.3.6.1 | (a) Reinststate road surface complete with all courses at pipe crossings | m ² | 50 | | |
| 6.1.15 | 8.3.7 | Accommodation of Traffic | Sum | 1 | | |
| 6.2 | SANS 1200L | MEDIUM PRESSURE PIPEWORK | | | | |
| | 8.2.1 | Interconnecting Pipework | | | | |
| | | Supply, lay, join and test pipework on granular bedding | | | | |
| 6.2.1 | | 50 mm diameter PE100PN10 HDPE pipe | m | 50 | | |
| 6.2.2 | | 110mm diameter uPVC drainage pipe between leak detection chambers | m | 210 | | |
| 6.2.3 | | 160 mm diameter uPVC scour pipe | m | 100 | | |
| | PSL 8.2.5 | Pipe Specials | | | | |
| 6.2.4 | | Supply, testing and installation of pipework, fittings and specials brought forward from the Pipe Schedule for the Inlet Pipe (building in of pipes measured elsewhere) | Sum | 1 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----|------|--------|
| | | brought forward | | | | |
| 6.2.5 | 8.2.11 | Supply, testing and installation of pipework, fittings and specials brought forward from the Pipe Schedule for the Outlet Pipe (building in of pipes measured elsewhere) | Sum | 1 | | |
| | | Thrust Blocks | | | | |
| 6.2.6 | | Concrete grade 15/20 in thrust blocks (per Employer's Agent instruction) | m ³ | 10 | | |
| 6.2.7 | | Rough shuttering at thrust blocks (per Employer's Agent's instruction) | m ² | 50 | | |
| 6.3 | SANS 1200LB | BEDDING | | | | |
| | 8.2.2.1 | Provision of bedding material from trench or other excavations within freehaul distance | | | | |
| 6.3.1 | (a) | Selected granular material | m ³ | 86 | | |
| 6.3.2 | (b) | Selected fill blanket | m ³ | 120 | | |
| | 8.2.2.3 | Provision of bedding material by importation from commercial sources. | | | | |
| 6.3.3 | (a) | Selected granular material | m ³ | 86 | | |
| 6.3.4 | (b) | Selected fill blanket | m ³ | 120 | | |
| | 8.2.4 | Concrete at Pipes | | | | |
| 6.3.5 | | Encasing of 500mm dia inlet pipe in concrete | m ³ | 10 | | |
| 6.3.6 | | Encasing of 600mm dia outlet pipe in concrete | m ³ | 15 | | |
| 6.4 | SANS 1200LG | PIPE JACKING | | | | |
| | 8.2.6 | Supply and install pipes by pipe jacking method, complete with excavations | | | | |
| 6.4.1 | | for 500mm steel pipe | m | 20 | | |
| 6.4.2 | | for 600mm steel pipe | m | 21 | | |
| | 8.2.8 | Extra-over 8.2.6 for Excavation in Rock | | | | |
| 6.4.3 | (a) | using pneumatic tools or other techniques where blasting is not permitted | m ³ | 120 | | |
| | | SEWERS | | | | |
| 6.5 | SANS 1200DB | Excavation | | | | |
| | PSD 8.3.3 (a) | Excavate in all materials for backfill, compact and dispose of material | | | | |
| 6.5.1 | | 0m - 2m | m ³ | 639 | | |
| | PSD 8.3.3 (b) | Extra-over items for excavating in | | | | |
| 6.5.2 | | Intermediate material | m ³ | 383 | | |
| 6.5.3 | | Hard rock material | m ³ | 256 | | |
| 6.5.4 | | Extra over items 6.5.1 to 6.5.3 for additional excavations required by the Employer's Agent after excavation has been completed | m ³ | 90 | | |
| 6.6 | SANS 1200LB | BEDDING | | | | |
| | 8.2.2.1 | Provision of Bedding Material from Trench or Other Excavations within Freehaul Distance | | | | |
| 6.6.1 | (a) | Selected granular material | m ³ | 70 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SECTION 6: INTERCONNECTING PIPEWORK

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------|----------------|-----|------|--------|
| | | brought forward | | | | |
| | 8.2.2.3 | Provision of bedding material by importation from commercial sources | | | | |
| 6.6.3 | (a) | Selected granular material | m ³ | 20 | | |
| 6.6.4 | (b) | Selected fill blanket | m ³ | 30 | | |
| 6.6.5 | 8.2.3 | Grade 20/19 concrete in bedding cradle | m ³ | 50 | | |
| 6.7 | SANS 1200LD | SEWER RETICULATION | | | | |
| | 8.2.1 | Supply, Lay, Joint and test uPVC Pipes | | | | |
| 6.7.1 | | 50 mm diameter uPVC basin drain from guard house | m | 100 | | |
| 6.7.2 | | 110mm diameter PVC sewer drainage pipe connecting from guard house to conservancy tank | m | 20 | | |
| 6.7.3 | | 200mm diameter uPVC sewer drainage pipe connecting from guard house | m | 20 | | |
| | | Manholes | | | | |
| | 8.2.3 | Manholes 1250 mm inside diameter complete with concrete base, type 4 cover and frame, for depths | | | | |
| 6.7.4 | | 0.5m - 1.0m | No. | 2 | | |
| 6.7.5 | | 1.0m - 1.5m | No. | 2 | | |
| | | Extra over for type 2A manhole cover and frame | No. | 2 | | |
| | (a) | Services that Intersect a pipe trench | | | | |
| 6.7.6 | | Electrical cables (irrespective of diameter) | No. | 2 | | |
| 6.7.7 | | Pipeline (irrespective of diameter) | No. | 2 | | |
| | (b) | Services that adjoin a pipe trench | | | | |
| 6.7.8 | | Pipeline (irrespective of diameter) | m | 100 | | |
| 6.7.9 | 8.2.7 | Encasement of pipes in class 15/20 concrete where directed by the Employer's Agent only | m ³ | 25 | | |
| | 8.2.11 | Connection Existing Water Line | | | | |
| 6.7.10 | | Tie into existing 500 dia. pipe | Sum | 1 | | |
| 6.7.11 | | Tie into existing 600 dia. pipe | Sum | 2 | | |
| 6.7.12 | 8.2.12 | Raising or lowering of existing manholes | No | 4 | | |
| | | Building Pipes into Brickwork | | | | |
| | 8.4 | SUPPLYING AND BUILDING HDPE OR uPVC PIPES AS SPECIFIED INTO BRICKWORK (FOR CABLE SLEEVES OR PIPE SLEEVES) | | | | |
| 6.7.13 | | 50 mm dia. uPVC Tee piece | No. | 2 | | |
| 6.7.14 | | 110 mm dia. uPVC Tee piece | No. | 2 | | |
| 6.7.15 | | 160 mm dia. uPVC Tee piece | No. | 6 | | |
| 6.8 | | MISCELANIOUS | | | | |
| 6.8.1 | | Expose, disconnect and remove existing 600mm dia. Steel Pipe | m | 18 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



SECTION 6: INTERCONNECTING PIPEWORK

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|------------------------------------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----|------|--------|
| | | brought forward | | | | |
| 6.8.2 | | Cut existing 600mm dia. Steel Pipe to correct size weld on flange and apply corrosion protection | No. | 2 | | |
| 6.8.3 | | Soil Resistivity Survey | sum | 1 | | |
| 6.8.4 | | Stray Current Survey for Cathodic Protection Design | sum | 1 | | |
| 6.8.5 | | Design of Cathodic Protection System for Inlet and Outlet Piping by sub-consultant (including Construction Drawings Review, Coating Integrity Survey, Commissioning and O&M Manual) | sum | 1 | | |
| 6.8.6 | | Installation of Cathodic Protection System to Inlet and Outlet Piping according to approved Design by sub-consultant | sum | 1 | | |
| TOTAL FOR SECTION 6 (Carried to Summary) | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------|--------------------|------|------|--------|
| 7.1 | SANS 1200 D | SECTION 7: GUARD HOUSE | | | | |
| | | EARTHWORKS | | | | |
| | | Restricted Excavation | | | | |
| | 8.3.3 | Excavate for restricted foundations, footings and pipe trenches in all materials and use for backfill or embankment or dispose | | | | |
| 7.1.1 | | Strip Footings | m ³ | 12 | | |
| 7.1.1b | | Apron Slab | m ³ | 2 | | |
| | PSD 8.3.3 (b) | Extra-over items for excavating in | | | | |
| 7.1.2 | | Intermediate material | m ³ | 213 | | |
| 7.1.3 | | Hard rock material | m ³ | 213 | | |
| 7.1.4 | | Extra over items 7.1.2 to 7.1.4 for additional excavations required by the Engineer after excavation has been completed | m ³ | 90 | | |
| 7.1.5 | 8.3.6 | Overhaul | m ³ .km | 250 | | |
| 7.2 | SANS 1200G | CONCRETE (STRUCTURAL) | | | | |
| | 8.2 | Formwork | | | | |
| | 8.2.1 | Rough Formwork | | | | |
| | | Plane Vertical | | | | |
| 7.2.1 | | Sides of Footings | m ² | 9 | | |
| | 8.2.2 | Smooth Formwork | | | | |
| | 8.2.5 | Narrow width (up to 300mm wide) | | | | |
| 7.2.2 | | Edge of roof slab | m | 16 | | |
| 7.2.3 | | Edge of apron slab (80mm thick) | m | 20 | | |
| | 8.2.2 | Plane Horizontal | | | | |
| 7.2.4 | | Soffit of Roof slab | m ² | 20 | | |
| | PSG 8.3 | Reinforcement | | | | |
| 7.2.5 | | High tensile steel bars | t | 0.22 | | |
| 7.2.6 | | Mild steel bars | t | 0.1 | | |
| | | High Tensile Welded Mesh | | | | |
| 7.2.7 | | Ref. 311 for roof slab | m ² | 19 | | |
| 7.2.8 | | Ref. 193 for floor slabs | m ² | 25 | | |
| | 8.1.3 | Concrete | | | | |
| | 8.4.2 | Blinding Layer in Grade 15/19 concrete with 50mm thickness | | | | |
| 7.2.9 | | Underneath footing | m ² | 12 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----|------|--------|
| | | brought forward | | | | |
| | | Strength Concrete 25/19 | | | | |
| 7.2.10 | | Strip footing (600 mm wide, 250 mm thick) | m ³ | 3 | | |
| 7.2.11 | | Floor slab 125mm thick | m ³ | 2 | | |
| 7.2.12 | | Apron Slabs (80mm thick) | m ³ | 2 | | |
| 7.2.13 | | Roof Slab | m ³ | 3 | | |
| | 8.4.4 a) | Wood float finish for upper surfaces of: | | | | |
| 7.2.14 | | Top of floors | m ² | 25 | | |
| 7.2.15 | | Top of apron slabs | m ² | 25 | | |
| 7.2.16 | | Top of roof slab | m ² | 25 | | |
| | 8.5 | Joints | | | | |
| | 8.5.2 | Filled Joints | | | | |
| | | Joint filler consisting of closed cell expanded polyethylene with density not less than 120kg/m ³ including bullnose finish to both sides of joint and tear off strip | | | | |
| 7.2.17 | | 10 mm wide between 100 mm concrete apron | m | 1 | | |
| 7.2.18 | | 20 mm wide between concrete and brickwork | m | 40 | | |
| | 8.5.3 | Sealed Joints | | | | |
| | | Joint sealer (20 x 15 mm) consisting of a two component polyether based polyurethane sealing compound on visible face of joint including primer and bond breaker | | | | |
| 7.2.19 | | 20 mm joint between brick and concrete | m | 39 | | |
| | PSU | Building Work | | | | |
| 7.3 | PSU 8.8 | IRONMONGERY | | | | |
| | | Doors and Windows | | | | |
| | | Steel doors, frames and windows (as per schedule on drawing 13214-73-04-003) | | | | |
| 7.3.1 | PSU 8.8.1 (b) | 1000mm x 2000mm High Single Panel Steel Combination Door & Frame | No. | 1 | | |
| 7.3.2 | PSU 8.8.3 | 1000mm x 2000mm High Single Panel Steel Security Gate. | No. | 1 | | |
| 7.3.3 | | 800mm x 2100mm High standard semi-solid door to be supplied with frame, cabin hook and a level 3 lock set complete with two keys. All fittings, door restraints and hinges solid brass | No. | 1 | | |
| 7.3.4 | | 1020mm x 950mm Windows SSF43 with burglar proofing | No. | 3 | | |
| 7.3.5 | | 410mm x 610mm - M fixed with trim. Including 12mm diameter MS | No. | 1 | | |
| 7.3.6 | PSU 8.15 (b) | Painting of doors and windows | No. | 2 | | |
| 7.3.7 | PSU 8.15 (c) | Painting of windows | No. | 3 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|-------------------------------------------------|----------------|--------------------------------------------------------------------------------------------------------|----------------|-----|------|--------|
| | | brought forward | | | | |
| 7.4 | PSLE | POLYETHYLENE SHEETING | | | | |
| 7.4.1 | 8.2.18 | 250micron polyethylene underneath strip footing and floor slab including ANT poison to SANS 618 | m ² | 10 | | |
| | | Brickwork | | | | |
| 7.4.2 | PSU 8.1 (b) | 230mm thick, both faces, 14 MPa face brick Exterior wall including brick force | m ² | 45 | | |
| 7.4.3 | PSU 8.1 (c) | 115mm thick, 14 MPa face brick Interior Wall including brick force | m ² | 5 | | |
| 7.5 | | GENERAL - FIXTURES | | | | |
| 7.5.1 | | Installation of Wall Mounted Wash basin with Basin Taps | No. | 1 | | |
| 7.5.2 | | Installation of Front Flush Toilet Suite | No. | 1 | | |
| | | EXISTING SERVICES | | | | |
| 7.5.3 | | Water supply to guard house | Sum | 1 | | |
| 7.5.4 | | Provision (supply & install) of a 2500 litres Linear low-density polyethylene (LLDPE) conservancy tank | Sum | 1 | | |
| TOTAL FOR SECTION 7 (Carried to Summary) | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----|------|--------|
| SECTION 8: TELEMETRY HUT | | | | | | |
| 8.1 | SANS1200D | EARTHWORKS | | | | |
| | 8.3.3 | Restricted Excavation | | | | |
| | 8.3.3 a) | Excavate for restricted foundations, footings and pipe trenches in all materials and use for backfill or embankment or dispose | | | | |
| 8.1.1 | | Footings | m ³ | 8 | | |
| 8.1.2 | | Apron Slab | m ³ | 2 | | |
| | PSD 8.3.3 (b) | Extra-over items for excavating in | | | | |
| 8.1.3 | | Intermediate material | m ³ | 8 | | |
| 8.1.4 | | Hard rock material | m ³ | 6 | | |
| 8.1.5 | | Extra over items 8.1.1 to 8.1.3 for additional excavations required by the Engineer after excavation has been completed | m ³ | 6 | | |
| 8.1.6 | 8.3.6 | Overhaul | m ³ .km | 250 | | |
| 8.2 | SANS 1200G | CONCRETE (STRUCTURAL) | | | | |
| | 8.2 | Formwork | | | | |
| | 8.2.1 | Rough Formwork | | | | |
| | | Plane Vertical | | | | |
| 8.2.1 | | Sides of Footings | m ² | 7 | | |
| 8.2.2 | | Edge of apron slab (80mm thick) | m ² | 3 | | |
| | | Plane Horizontal | | | | |
| 8.2.3 | | Soffit of Roof slab | m ² | 17 | | |
| | 8.2.5 | Narrow width (up to 300mm wide) | | | | |
| 8.2.4 | | Sides of floor slabs | m | 25 | | |
| 8.2.5 | | Sides of roof slab | m | 17 | | |
| | PSG 8.2.6 | Box Out Holes/Form Voids | | | | |
| | PSG 8.2.6 (a) | Cylindrical Openings with Volume | | | | |
| | | Over and up to and Including | | | | |
| 8.2.6 | | (ii) 0,01-0,05 m ³ | No. | 4 | | |
| | PSG 8.2.7 | Chamfers larger than 20mm x 20mm | | | | |
| 8.2.7 | | 25 mm along edge of roof | m | 25 | | |
| | PSG 8.3 | Reinforcement | | | | |
| 8.2.8 | | High tensile steel bars | t | 0.2 | | |
| 8.2.9 | | Mild steel bars | t | 0.1 | | |
| | 8.3.2 | High Tensile Welded Mesh | | | | |
| 8.2.10 | | Ref. 311 for roof slab | m ² | 20 | | |
| 8.2.11 | | Ref. 193 for floor and apron slabs | m ² | 25 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|-------------------------------------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----|------|--------|
| | | brought forward | | | | |
| | 8.1.3 | Concrete | | | | |
| | PSG 8.4.3 | Strength of Concrete: 15/19 | | | | |
| 8.2.12 | 8.4.2 | Blinding layer 50mm thick under footing (horizontal) | m ² | 10 | | |
| | | Strength Concrete : 25/19 | | | | |
| 8.2.13 | | Strip footing (650 mm wide, 250 mm thick) | m ³ | 2 | | |
| 8.2.14 | | Apron Slabs (80mm thick) | m ³ | 1 | | |
| 8.2.15 | | Floor slab | m ³ | 1 | | |
| 8.2.16 | | Roof | m ³ | 3 | | |
| | 8.4.4 a) | Wood float finish for upper surfaces of: | | | | |
| 8.2.17 | | Floor Slab | m ² | 10 | | |
| 8.2.18 | | Apron Slab | m ² | 17 | | |
| 8.2.19 | | Roof Slab | m ² | 17 | | |
| | PSG 8.5 | Joints | | | | |
| 8.2.20 | | 10 mm Joint with approved polysulphide sealant as per drawing 13214-73-005-001 | m | 10 | | |
| | 8.5.2 | Filled Joints | | | | |
| | | Joint filler consisting of closed cell expanded polyethylene with density not less than 120kg/m ³ including bullnose finish to both sides of joint and tear off strip | | | | |
| 8.2.21 | | 20 mm wide between concrete members | m | 5 | | |
| 8.2.22 | | 20 mm wide between concrete and brickwork | m | 35 | | |
| | 8.5.3 | Sealed Joints | | | | |
| | | Joint sealer (20 x 15 mm) consisting of a two component polyether based polyurethane sealing compound on visible face of joint including primer and bond breaker | | | | |
| 8.2.23 | | 20 mm joint between brick and concrete | m | 32 | | |
| | | Building Work | | | | |
| 8.3 | PSLE | POLYETHYLENE SHEETING | | | | |
| 8.3.1 | 8.2.18 | 250 micron polyethylene underneath strip footing and floor slab including ANT poison to SANS 618 | m ² | 10 | | |
| 8.3.2 | | DPC as specified by the employer's agent | m ² | 5 | | |
| 8.4 | PSU | BRICKWORK | | | | |
| 8.4.1 | PSU 8.1 (b) | 230mm thick, both faces, 14 MPa face brick including brick force | m ² | 46 | | |
| | PSU 8.8 | Ironmongery | | | | |
| | PSU 8.8.1 | Doors and Windows | | | | |
| | | Steel doors, frames and windows (as per schedule on drawings 13214-73-05-001: Doors) | | | | |
| 8.4.2 | PSU 8.8.1 (b) | 900mm x 2100mm High Single Panel Steel Combination Door & Frame | No. | 1 | | |
| 8.4.3 | PSU 8.8.3 | 1000mm x 2000mm High Single Panel Steel Security Gate. | No. | 1 | | |
| TOTAL FOR SECTION 8 (Carried to Summary) | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----|------|--------|
| | | SECTION 9: VALVE BUILDING | | | | |
| 9.1 | SANS1200D | EARTHWORKS | | | | |
| | PSD 8.3.3 | Restricted Excavation | | | | |
| | PSD 8.3.3 (a) | Excavate for restricted foundations, footings and pipe trenches in all materials and use for backfill or embankment or dispose | | | | |
| 9.1.1 | | 0 to 2m deep | m ³ | 320 | | |
| 9.1.2 | | 2m to 4m deep | m ³ | 265 | | |
| | PSD 8.3.3 (b) | Extra over items 9.1.1 to 9.1.2 for | | | | |
| 9.1.3 | | Soft material | m ³ | 280 | | |
| 9.1.4 | | Intermediate material | m ³ | 123 | | |
| 9.1.5 | | Hard rock material | m ³ | 133 | | |
| 9.1.6 | | Extra over items 9.1.3 to 9.1.5 for additional excavations required by the Engineer after excavation has been completed | | | | |
| 9.1.7 | 8.3.3.4 | Overhaul | m ³ .km | 250 | | |
| | PSLD | Building Pipes into Concrete Work | | | | |
| | 8.3(a) | Pipes Supplied and Installed by the Contractor (Irrespective of type) | | | | |
| 9.1.8 | | 500mm Stainless Steel Inlet | No | 2 | | |
| 9.1.9 | | 600mm Stainless Steel Outlet | No | 2 | | |
| | SANS 1200L | PIPEWORK | | | | |
| | PSL 8.2.5 | Pipe Specials | | | | |
| 9.1.10 | | Supply, testing and installation of pipework, fittings and specials brought forward from the Pipe Schedule for the Valve Building (building in of pipes measured elsewhere) | Sum | 1 | | |
| 9.2 | SANS 1200G | CONCRETE (STRUCTURAL) | | | | |
| | 8.2 | Formwork | | | | |
| | | Smooth Formwork | | | | |
| | 8.2.5 | Narrow width (up to 300mm wide) | | | | |
| 9.2.1 | | Edge of floor slab | m | 53 | | |
| 9.2.2 | | Edge of concrete roof | m | 66 | | |
| | 8.2.2 | Plane Vertical | | | | |
| 9.2.3 | | Internal & External Sump walls | m ² | 8 | | |
| 9.2.4 | | Internal & External valve building walls | m ² | 302 | | |
| 9.2.5 | | Edge of walkway | m ² | 8 | | |
| 9.2.6 | | Sides of stairs | m ² | 5 | | |
| 9.2.7 | | Risers of stairs | m ² | 5 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
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| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|----------------|---------------------------------------------------|----------------|-----|------|--------|
| | | brought forward | | | | |
| 9.2.8 | | Columns | m ² | 85 | | |
| 9.2.9 | | Ring beam | m ² | 81 | | |
| 9.2.10 | | Support beam | m ² | 231 | | |
| 9.2.11 | | Pipe supports | m ² | 14 | | |
| | | Plane Horizontal | | | | |
| 9.2.12 | | Soffit of walkway | m ² | 42 | | |
| 9.2.13 | | Soffit of ring beams | m ² | 15 | | |
| 9.2.14 | | Soffit of support beams | m ² | 49 | | |
| 9.2.15 | | Soffit of roof | m ² | 240 | | |
| | | Plane Sloping | | | | |
| 9.2.16 | | Soffit of staircase | m ² | 7 | | |
| | PSG 8.2.7 | Chamfers larger than 20mm x 20mm | | | | |
| 9.2.17 | | 25 mm along edge of roof | m | 125 | | |
| | 8.4 | Concrete | | | | |
| | 8.4.3 | Strength of Concrete: 15/19 | | | | |
| 9.2.18 | | Screed on top of floor | m ² | 160 | | |
| | 8.4.3 | Strength of Concrete: 15/19 | | | | |
| 9.2.19 | | Blinding layer 50mm thick | m ² | 160 | | |
| | | Strength of Concrete: 25/19 | | | | |
| 9.2.20 | | Apron | m ³ | 6 | | |
| | 8.4.3 | Strength of Concrete: 35/19 | | | | |
| 9.2.21 | | Floor | m ³ | 50 | | |
| 9.2.22 | | Walls | m ³ | 43 | | |
| 9.2.23 | | Pipe supports | m ³ | 2 | | |
| 9.2.24 | | Walkway | m ³ | 10 | | |
| 9.2.25 | | Stairs | m ³ | 2 | | |
| 9.2.26 | | Columns | m ³ | 9 | | |
| 9.2.27 | | Ring beams | m ³ | 10 | | |
| 9.2.28 | | Support beams | m ³ | 21 | | |
| 9.2.29 | | Roof | m ³ | 72 | | |
| 9.2.30 | | Concrete Sump | m ³ | 1 | | |
| 9.2.31 | 8.3 | Reinforcement | | | | |
| 9.2.32 | 8.3.1 | High Tensile Reinforced Bars | t | 44 | | |
| 9.2.33 | | Mild Steel Reinforced to Structural Concrete Work | t | 2 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----|------|--------|
| | | brought forward | | | | |
| | 8.4.4 | Unformed Surface Finishes | | | | |
| | 8.4.4 (a) | Wood Floated Finish | | | | |
| 9.2.34 | | Top of floor | m ² | 160 | | |
| 9.2.35 | | Top of walkway | m ² | 30 | | |
| 9.2.36 | | Treads of stairs | m ² | 5 | | |
| | 8.5 | Joints | | | | |
| | 8.5.2 | Filled Joints (Including Formwork) | | | | |
| | | Joint Filler Consisting of Closed Cell Expanded Polyethylene with Density not less than 120 kg/m ³ including Bullnose Finish to both sides of Joint. | | | | |
| 9.2.37 | | 20 mm wide between 100 mm concrete apron | m | 14 | | |
| 9.3 | SANS 1200HA | STRUCTURAL STEELWORK (SUNDRY ITEMS) | | | | |
| | 8.3.1 | Crawl Beam | | | | |
| | | Supply and Installation of 254x146x31 kg/m Galvanized M.S I-Beam complete with stops ends, etc. All as shown on drawing 13214-73-05-006, including testing and a certificate proving compliance with the requirements of the department of labour | | | | |
| 9.3.1 | | 14 700 mm long | No. | 2 | | |
| 9.3.2 | | M20 galvanized cast in U-bolts complete with spacers, washers and nuts and M20 anchor bars for fixing of crawl beam | No. | 32 | | |
| | PSHA 8.3.2(b) | Handrail Assembly Complete | | | | |
| 9.3.3 | | Supply and installation of complete 3CR12 stainless steel handrail assembly | m | 35 | | |
| 9.4 | PSU | BUILDING WORK | | | | |
| | 8.1 | Brickwork | | | | |
| 9.4.1 | PSU 8.1 (b) | 230mm thick, both faces, 7MPa face brick including brick force and damp proofing | m ² | 208 | | |
| | | Air Bricks | | | | |
| 9.4.2 | | 170 mm x 170 mm Standard vermin proof air bricks | No. | 4 | | |
| 9.5 | PSU 8.6 | WATERPROOFING OF CONCRETE ROOFS | | | | |
| 9.5.1 | | Valve Building | Sum | 1 | | |
| 9.6 | PSU 8.8 | IRONMONGREY | | | | |
| | PSU 8.8.1 | Steel doors, frames and windows (as per schedule on drawings 13214-73-05-005) | | | | |
| 9.6.1 | PSU 8.8.1 (b) | D2 standard single steel door and frame (940 wide x 2134 mm high) | No. | 1 | | |
| 9.6.2 | PSU 8.8.1 (c) | Windows SS43 with burglar proofing | No. | 10 | | |
| 9.6.3 | | Industrial Type Roller shutter door (3m wide x 3m high) | No. | 1 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



SECTION 9: VALVE BUILDING

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|-------------------------------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------|------|-----|------|--------|
| | | brought forward | | | | |
| 9.7 | | WATER SAMPLING POINT | | | | |
| 9.7.1 | | Lockable sample box to be fixed to building as per drawing 13214-73-05-006 (700mm wide x 1200mm long x 1200mm high from 4.5mm 304 SS) | No. | 1 | | |
| 9.8 | | MECHANICAL EQUIPMENT | | | | |
| 9.8.1 | | Underhung overhead crane to fit onto the two fixed crawl beams (item 9.3.1) 10.17m apart (motorised) | No. | 1 | | |
| 9.8.2 | | Submersible pump to deliver 3 l/s at a head of 10m including 40mm dia. GMS piping inside the building | No. | 1 | | |
| 9.8.3 | | Submersible pump to deliver 3 l/s at a head of 10m including 20m long 40mm dia. Flexible pipe | No. | 1 | | |
| TOTAL FOR SECTION 9 (Carried to Summary) | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SECTION 10: ELECTRICAL AND C&I

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----|------|--------|
| 10.1 | PSY 1.2 | SECTION 10: ELECTRICAL AND C&I | | | | |
| | | ELECTRICAL CALBLE RACKS | | | | |
| | | Rate to include for the Supply only of the following Plant And Equipment Including Delivery, Storage, Quality Assurance and All Necessary Insurance | | | | |
| | | Supply and Deliver Cable Ladder | | | | |
| 10.1.1 | | 100mm wide x 76mm | m | 30 | | |
| | | Supply and Deliver of Horizontal Bends | | | | |
| 10.1.2 | | 100mm wide x 76mm | ea | 4 | | |
| | | Supply and Deliver of Vertical Bends | | | | |
| 10.1.3 | | 100mm wide x 76mm | ea | 4 | | |
| | | Supply and Deliver of Internal Bends | | | | |
| 10.1.4 | | 100mm wide x 76mm | ea | 4 | | |
| | | Supply and Deliver of External Bends | | | | |
| 10.1.5 | | 100mm wide x 76mm | ea | 3 | | |
| | | Supply and Deliver of Tee-Pieces | | | | |
| 10.1.6 | | 100mm wide x 76mm | ea | 3 | | |
| | | Supply and Deliver of Cable Ladder Support Struts Material | | | | |
| 10.1.7 | | P1000 (41x41 x 2.5mm thickness) | m | 6 | | |
| 10.1.8 | | P1000T (41x41 x 2.5mm thickness, slot 25x11 @50centers) | m | 18 | | |
| | | Supply and Deliver of Cable Ladder Support Cantilever Arms P1000 arm | | | | |
| 10.1.9 | | 150mm | ea | 4 | | |
| 10.1.10 | | 200mm | ea | 8 | | |
| 10.1.11 | | 250mm | ea | 2 | | |
| 10.2 | PSY 1.2 | Rate to include only for Installation, Commissioning, Testing And Adjusting The Following Plant and Equipment as a Completely Separate Operation Sometime after the Completion and/or Erection and Installation, Including Transportation And Accommodation for Personnel | | | | |
| | E02.8 | Installation of Cable Ladder | | | | |
| 10.2.1 | | 100mm wide x 76mm | m | 30 | | |
| | E02.8 | Installation of Horizontal Bends | | | | |
| 10.2.2 | | 100mm wide x 76mm | ea | 4 | | |
| | E02.8 | Installation of Vertical Bends | | | | |
| 10.2.3 | | 100mm wide x 76mm | ea | 4 | | |
| | E02.8 | Installation of Internal Bends | | | | |
| 10.2.4 | | 100mm wide x 76mm | ea | 4 | | |
| | E02.8 | Installation of External Bends | | | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



SECTION 10: ELECTRICAL AND C&I

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|-----------|--------------|
| 10.2.5 | | brought forward 100mm wide x 76mm | ea | 3 | | |
| 10.2.6 | E02.8 | Installation of Tee-Pieces 100mm wide x 76mm | ea | 3 | | |
| 10.2.7 | E02.8 | Installation of Cable Ladder Support Struts Material P1000 (41x41 x 2.5mm thickness) | m | 6 | | |
| 10.2.8 | | P1000T (41x41 x 2.5mm thickness, slot 25x11 @50centers) | m | 18 | | |
| 10.2.9 | E02.8 | Installation of Cable Ladder Support Cantilever Arms P1000 arm 150mm | ea | 4 | | |
| 10.2.10 | | 200mm | ea | 8 | | |
| 10.2.11 | | 250mm | ea | 2 | | |
| 10.3 | Vol3 | SCADA System Rate to include for the Supply only of the following Plant and Equipment Including Delivery, Storage, Quality Assurance and all Necessary Insurances | | | | |
| 10.3.1 | | PC Amount for SCADA Software | Prov. Sum | 1 | R 950 000 | R 950 000.00 |
| 10.3.2 | | % Markup on SCADA Software | % | R 950 000 | 15% | R 142 500.00 |
| 10.3.3 | | PC Amount for SCADA Programing | Prov. Sum | 1 | R 555 000 | R 555 000.00 |
| 10.3.4 | | % Markup on SCADA Programing | % | R 555 000 | 15% | R 83 250.00 |
| 10.4 | | ELECTRICAL DISTRIBUTION SYSTEM Rate to include for the Supply only of the following Plant and Equipment Including Delivery, Storage, Quality Assurance and all Necessary Insurances | | | | |
| 10.4.1 | PSX 2 | Level sensor and kiosk at Carlsward Reservoir | No. | 1 | | |
| 10.4.2 | PSX 3 | Flow meter installation and kiosk at Reservoir Inlet | Sum | 1 | | |
| 10.4.3 | PSX 3 | Flow meter installation and kiosk at Reservoir Outlet | Sum | 1 | | |
| 10.4.4 | | Notices at all Buildings | Sum | 1 | | |
| 10.4.5 | PSY 6 | Lightning protection of Carlsward Reservoir | Sum | 1 | | |
| 10.4.6 | PSX 8.1 | Main Distrubution Board in Valve Building | Sum | 1 | | |
| 10.5 | | Rate to include only for Handling including Double Handling if Stored, Transportation and Handling on site, Erection, Quality Assurance and Installation of The Following Plant and Equipment | | | | |
| 10.5.1 | PSX 2 | Level sensor and kiosk at New Carlsward Reservoir | No. | 1 | | |
| 10.5.2 | PSX 3 | Flow meter installation and kiosk at Reservoir Inlet | Sum | 1 | | |
| 10.5.3 | PSX 3 | Flow meter installation and kiosk at Reservoir Outlet | Sum | 1 | | |
| 10.5.4 | | Notices at all Buildings | Sum | 1 | | |
| 10.5.5 | PSY 6 | Lightning protection of New Carlsward Reservoir | Sum | 1 | | |
| 10.5.6 | PSX 8.1 | Main Distrubution Board in Valve Building | Sum | 1 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SECTION 10: ELECTRICAL AND C&I

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|---------------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----|------|--------|
| 10.6 | | brought forward Rate to include only for Installation, Commissioning, Testing And Adjusting The Following Plant and Equipment as a Completely Separate Operation Sometime after the Completion and/or Erection and Installation, Including Transportation And Accommodation for Personnel | | | | |
| 10.6.1 | PSX 2 | Level sensor and kiosk at New Carlsward Reservoir | No. | 1 | | |
| 10.6.2 | PSX 3 | Flow meter installation and kiosk at Reservoir Inlet | Sum | 1 | | |
| 10.6.3 | PSX 3 | Flow meter installation and kiosk at Reservoir Outlet | Sum | 1 | | |
| 10.6.4 | | Notices at all Buildings | Sum | 1 | | |
| 10.6.5 | PSY 6 | Lightning protection of New Carlsward Reservoir | Sum | 1 | | |
| 10.6.6 | PSX 8.1 | Main Distribution Board in Valve Building | Sum | 1 | | |
| 10.7 | | ELECTRICAL INSTALLATION IN BUILDINGS AND ON STRUCTURES Rate to include for the Supply only of the following Plant and Equipment Including Delivery, Storage, Quality Assurance and all Necessary Insurance | | | | |
| 10.7.1 | PSY 8.2 | Complete electrical installation in new Carlsward valve building DB-01 | Sum | 1 | | |
| 10.7.2 | DRW's | Type A Light Fitting | No. | 3 | | |
| 10.7.3 | DRW's | Type B Light Fitting | No. | 3 | | |
| 10.7.4 | DRW's | Type C Light Fitting | No. | 4 | | |
| 10.7.5 | PSY 4.2 | Area Lighting Fitting | No. | 8 | | |
| 10.7.6 | PSY 4.3 | Aviation Light Fitting on the Reservoir | No. | 4 | | |
| 10.7.7 | PSY 8.3 | Area Light Fitting on the Reservoir | No. | 6 | | |
| 10.7.8 | PSY 8.3 | Complete electrical installation in new Carlsward Reservoir Reservoir Telemetry Hut DB-02 | Sum | 1 | | |
| 10.7.9 | DRW's | Type A Light Fitting | No. | 1 | | |
| 10.7.10 | PSY 4 | Area Lighting Fitting | No. | 4 | | |
| 10.7.11 | PSY 8.3 | Complete electrical installation in new Carlsward Reservoir Guard Hut DB-03 | Sum | 1 | | |
| 10.7.12 | DRW's | Type A Light Fitting | No. | 1 | | |
| 10.7.13 | DRW's | Type B Light Fitting | No. | 1 | | |
| 10.7.14 | PSY 4 | Area Lighting Fitting | No. | 4 | | |
| | PSY 4 | Lighting installation on Carlsward Reservoir Site | | | | |
| 10.7.15 | PSY 4.1 | 15m Highmast pole with 3X208W LED type Flood lights for area lighting | No. | 2 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SECTION 10: ELECTRICAL AND C&I

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----|------|--------|
| | | brought forward | | | | |
| 10.8 | | Rate to include only for Handling including Double Handling if Stored, Transportation and Handling on site, Erection, Quality Assurance and Installation of The Following Plant and Equipment | | | | |
| 10.8.1 | PSY 8.2 | Complete electrical installation in new Carsward valve buiding DB-01 | Sum | 1 | | |
| 10.8.2 | DRW's | Type A Light Fitting | No. | 3 | | |
| 10.8.3 | DRW's | Type B Light Fitting | No. | 3 | | |
| 10.8.4 | DRW's | Type C Light Fitting | No. | 4 | | |
| 10.8.5 | PSY 4.2 | Area Lighting Fitting | No. | 8 | | |
| 10.8.6 | PSY 4.3 | Aviation Light Fitting on the Reservoir | No. | 4 | | |
| 10.8.7 | PSY 8.3 | Area Light Fitting on the Reservoir | No. | 6 | | |
| 10.8.8 | PSY 8.3 | Complete electrical installation in new Carsward Reservoir Reservoir Telemetry Hut DB-02 | Sum | 1 | | |
| 10.8.9 | DRW's | Type A Light Fitting | No. | 1 | | |
| 10.8.10 | PSY 4 | Area Lighting Fitting | No. | 4 | | |
| 10.8.11 | PSY 8.3 | Complete electrical installation in new Carsward Reservoir Guard Hut DB-03 | Sum | 1 | | |
| 10.8.12 | DRW's | Type A Light Fitting | No. | 1 | | |
| 10.8.13 | DRW's | Type B Light Fitting | No. | 1 | | |
| 10.8.14 | PSY 4 | Area Lighting Fitting | No. | 4 | | |
| | PSY 4 | Lighting installation on Carsward Reservoir Site | | | | |
| 10.8.15 | PSY 4.1 | 15m Highmast pole with 3X208W LED type Flood lights for area lighting | No. | 2 | | |
| 10.9 | | Rate to include only for Installation, Commissioning, Testing And Adjusting The Following Plant and Equipment as a Completely Separate Operation Sometime after the Completion and/or Erection and Installation, Including Transportation And Accommodation for Personnel | | | | |
| 10.9.1 | PSY 8.2 | Complete electrical installation in new Carsward valve buiding DB-01 | Sum | 1 | | |
| 10.9.2 | DRW's | Type A Light Fitting | No. | 3 | | |
| 10.9.3 | DRW's | Type B Light Fitting | No. | 3 | | |
| 10.9.4 | DRW's | Type C Light Fitting | No. | 4 | | |
| 10.9.5 | PSY 4.2 | Area Lighting Fitting | No. | 8 | | |
| 10.9.6 | PSY 4.3 | Aviation Light Fitting on the Reservoir | No. | 4 | | |
| 10.9.7 | PSY 8.3 | Area Light Fitting on the Reservoir | No. | 6 | | |
| 10.9.8 | PSY 8.3 | Complete electrical installation in new Carsward Reservoir Reservoir Telemetry Hut DB-02 | Sum | 1 | | |
| 10.9.9 | DRW's | Type A Light Fitting | No. | 1 | | |
| 10.9.10 | PSY 4 | Area Lighting Fitting | No. | 4 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SECTION 10: ELECTRICAL AND C&I

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----|--------------|--------------|
| | | brought forward | | | | |
| 10.9.11 | PSY 8.3 | Complete electrical installation in new Carswardl Reservoir Guard Hut DB-03 | Sum | 1 | | |
| 10.9.12 | DRW's | Type A Light Fitting | No. | 1 | | |
| 10.9.13 | DRW's | Type B Light Fitting | No. | 1 | | |
| 10.9.14 | PSY 4 | Area Lighting Fitting | No. | 4 | | |
| | PSY 4 | Lighting installation on Carswardl Reservoir Site | | | | |
| 10.9.15 | PSY 4.1 | 15m Highmast pole with 3X208W LED type Flood lights for area lighting | No. | 2 | | |
| | PSX 5 | TELEMETRY SYSTEM | | | | |
| 10.10 | | Rate to include for the Supply only of the following Plant And Equipment Including Delivery, Storage, Quality Assurance and all Necessary Insurances | | | | |
| 10.10.1 | | Changes to existing SCADA system at JW Control Room to add I/O for the new site as per new telemetry system below | Prov. Sum | 1 | R 100 000.00 | R 100 000.00 |
| 10.10.2 | | New telemetry system at Carlswardl Reservoir | Prov. Sum | 1 | R 295 000.00 | R 295 000.00 |
| 10.10.3 | | 5kW, standby power Solar System. (Complete with 6kWp tier 1 Solar panels, mounted on the reservoir roof, a top end 5kW Hybrid Inverter and 2x5kWh or 1x10 kWh LiFePo4 Batteries) | Sum | 1 | | |
| 10.11 | | Rate to include only for Handling including Double Handling if Stored, Transportation and Handling on site, Erection, Quality Assurance and Installation of The Following Plant and Equipment | | | | |
| 10.11.1 | | Changes to existing SCADA system at JW Control Room to add I/O for the new site as per new telemetry system below | Prov. Sum | 1 | R 35 000.00 | R 35 000.00 |
| 10.11.2 | | New telemetry system at Carlswardl Reservoir | Prov. Sum | 1 | R 69 860.00 | R 69 860.00 |
| 10.11.3 | | New Standby Power Solar sytem as per 10.10.3 | Sum | 1 | | |
| 10.12 | | Rate to include only for Installation, Commissioning, Testing and Adjusting the following Plant and Equipment as a Completely Separate Operation Sometime after the Completion and/or Erection and Installation, Including Transportation and Accommodation for personnel | | | | |
| 10.12.1 | | Changes to existing SCADA system at JW Control Room to add I/O for the new site as per new telemetry system below | Sum | 1 | | |
| 10.12.2 | | New telemetry system at Carlswardl Reservoir | Sum | 1 | | |
| 10.12.3 | | New Standby Power Solar sytem as per 10.11.3 | Sum | 1 | | |
| 10.13 | PSY 1.7 & PSY 1.9 | MULTICORE CABLES AND EARTHWIRES | | | | |
| | | Rate to include for the Supply only of the following Plant and Equipment Including Delivery, Storage, Quality Assurance and all Necessary Insurance | | | | |
| 10.13.1 | a | 2.5mm ² 3 - Core Cable | m | 280 | | |
| 10.13.2 | b | 70mm ² Bare Copper Earth Wire | m | 300 | | |
| 10.13.3 | c | 16mm ² 3 - Core Cable | m | 655 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SECTION 10: ELECTRICAL AND C&I

| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|----------------------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----|------|--------|
| | | brought forward | | | | |
| 10.13.4 | d | 16mm ² Bare Copper Cable | m | 265 | | |
| 10.13.5 | e | 16mm ² 4-Core Cable | m | 75 | | |
| 10.13.6 | E06.4.17 | Cable route markers | No. | 12 | | |
| 10.13.7 | E06.4.1 | Concrete cable slabs (200 x 400 x 40) | No. | 220 | | |
| 10.13.8 | E06.9 | Cable name tags | Sum | 1 | | |
| 10.13.9 | E06.3.6 | Cable supports | Sum | 1 | | |
| 10.13.10 | | Pump set sensor termination cubicle | No. | 1 | | |
| 10.13.11 | | Core drilling 100mm diameter holes through 250mm concrete | No. | 5 | | |
| 10.14 | PSY 1.7 | Rate to include only for Installation, Commissioning, Testing and Adjusting the following Plant and Equipment as a Completely Separate Operation Sometime after the Completion and/or Erection and Installation, Including Transportation and Accommodation for personnel | | | | |
| 10.14.1 | a | 2.5mm ² 3 - Core Cable | m | 280 | | |
| 10.14.2 | b | 70mm ² Bare Copper Earth Wire | m | 300 | | |
| 10.14.3 | c | 16mm ² 3 - Core Cable | m | 655 | | |
| 10.14.4 | d | 16mm ² Bare Copper Cable | m | 265 | | |
| 10.14.5 | e | 16mm ² 4-Core Cable | m | 75 | | |
| | E16 | POWER SUPPLY UNITS | | | | |
| 10.15 | | The tendered rate shall include full compensation for the manufacture, supply, testing and delivery of the UPS incorporating all options/extras as detailed in the detail specification. | | | | |
| 10.15.1 | E16.10 | Supply and deliver UPS | No. | 2 | | |
| 10.15.2 | E16.10 | Supply and deliver 1kVA hybrid inverter with 4x100Ah batteries for Aviation lights. | No. | 2 | | |
| 10.16 | | The tendered rate shall include full compensation for the installation, site testing and commissioning plus the 12 months maintenance of the UPS incorporating all options/extras as detailed in the detail specification. | | | | |
| 10.16.1 | E16.10 | Install standby UPS | No. | 2 | | |
| 10.16.2 | E16.10 | Supply and deliver 1kVA hybrid inverter with 4x100Ah batteries for Aviation lights | No. | 2 | | |
| 10.17 | | The tendered rate shall include full compensation for the manufacture, supply, testing and delivery of the support platform/stand for UPS as detailed in the detail specification. | | | | |
| 10.17.1 | E16.10 | Supply and deliver support platform/stand for UPS | No. | 2 | | |
| 10.17.2 | E16.10 | Supply and deliver 1kVA hybrid inverter with 4x100Ah batteries for Aviation lights | No. | 2 | | |
| 10.18 | | The tendered rate shall include full compensation for the installation of the support platform/stand as detailed in the detail specification. | | | | |
| 10.18.1 | E16.10 | Install support platform/stand for UPS | No. | 2 | | |
| SUB-TOTAL CARRIED FORWARD | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

SECTION 10: ELECTRICAL AND C&I

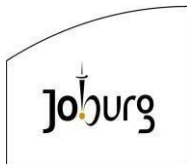
| ITEM NO | PAYMENT CLAUSE | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|--------------------------------------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------|--------------|----------------|
| | | brought forward | | | | |
| 10.18.2 | E16.10 | Supply and deliver 1kVA hybrid inverter with 4x100Ah batteries for Aviation lights | No. | 2 | | |
| 10.19 | | ACCESS CONTROL AND CCTV SYSTEM | | | | |
| | | Rate to include for the Supply only of the following Plant and Equipment Including Delivery, Storage, Quality Assurance and all Necessary Insurance | | | | |
| 10.19.1 | | PC Amount for Access control system | Prov. Sum | 1 | R 350 000.00 | R 350 000.00 |
| 10.19.2 | | % Markup on Acces control system | % | R 350 000 | 15% | R 52 500.00 |
| 10.19.3 | | PC Amount for CCTV system | Prov. Sum | 1 | R 2 000 000 | R 2 000 000.00 |
| 10.19.4 | | % Markup on CCTV System | % | R 2 000 000 | 15% | R 300 000.00 |
| | | BULK ELECTRICAL CONNECTION | | | | |
| | | Rate to include the supply of the following Plant and Equipment including Delivery, Storage, Quality Assurance and all necessary insurance. | | | | |
| 10.20 | | | | | | |
| 10.20.1 | | PC Amount for 60A 3 Phase Connection from Eskom | Prov. Sum | 1 | R 55 000.00 | R 55 000.00 |
| 10.20.2 | | % Markup on 3Phase connection from Eskom | % | R 55 000 | 15% | R 8 250.00 |
| 10.20.3 | | PC Amount for Infrastructure to get Bulk Connection | Prov. Sum | 1 | R 75 000.00 | R 75 000.00 |
| 10.20.4 | | % Markup on Item above | % | R 75 000 | 15% | R 11 250.00 |
| | | EARTHING AND LIGHTING PROTECTION | | | | |
| | | Rate to include the supply of the following Plant and Equipment including Delivery, Storage, Quality Assurance and all necessary insurance. | | | | |
| 10.21 | PSY1.6 | | | | | |
| 10.21.1 | E11.17 | Earth resistivity tests | No | 1 | | |
| 10.21.2 | E11.17 | Design of a Lightning Protection System (LPS) .. | No | 1 | | |
| 10.21.3 | PSY 1.6 | Installation of a structure LPS | Sum | 1 | | |
| 10.21.4 | E11.17 | Extra over for the supply and installation of additional 6m rod type earth electrodes including welding/clamps for the connection of earth-termination conductors | No | 20 | | |
| 10.21.5 | E11.17 | Provision for additional earthing as required | Prov. Sum | 1 | R 35 000 | R 35 000.00 |
| 10.21.6 | E11.17 | Testing of a LPS. | Sum | 1 | | |
| 10.22 | PSY3 | ELECTRIC FENCE | | | | |
| 10.22.1 | PSY3 | Supply, Installation and Commissioning of Energiser, Batteries, Cabeling from Guard House to Fence including Control Unit all as specified | Sum | 1 | | |
| 10.22.2 | PSY3 | Supply, Installation and Commissioning of Electric Fence to be installed on top of Z-Shaped Fence Brick Wall consisting of 8- strand, on 1200mm x 20mm x 20mm square tube pole, all as specified | m | 550 | | |
| TOTAL FOR SECTION 10 (Carried to Summary) | | | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

C2.2.1 Summary of Bill of Quantities

| SECTION | DESCRIPTION | AMOUNT |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1 | Preliminary and General | |
| 2 | Site Preparation and Fencing | |
| 3 | Roads & Stormwater | |
| 4 | Reservoir | |
| 5 | Chambers & Boxes | |
| 6 | Interconnecting Pipework | |
| 7 | Guard House | |
| 8 | Telemetry Building | |
| 9 | Valve Building | |
| 10 | Electrical and C&I | |
| | | |
| | Sub-Total 1 | |
| PSA 8.10.1 | <p>The above prices are Not Firm.</p> <p>In respect of the total value of work done by approved SMME's at 30% of Sub Total 1 (This total shall include all amounts payable to SMME's, including P&G's)</p> <p>= R (A)</p> <p>Allowance as a percentage (maximum 15%) for appointing and handling work done by approved SMME's</p> <p>.....% (B)</p> | |
| | Sub-Total 2 [Handling fees for subcontracting = (A) x (B)] | |
| | | |
| | Sub-Total 3 = Sub Total 1 + Sub Total 2 | |
| | | |
| ADD | 10% Escalation | |
| | Sub-Total 4 | |
| ADD | 10% Contingency | |
| | Sub-Total 5 | |
| ADD | VAT @ 15% | |
| | | |
| | TOTAL CARRIED TO FORM OF OFFER | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Johannesburg Water SOC Ltd

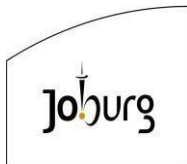


**CONSTRUCTION OF 20ML REINFORCED CONCRETE CARLSWALD
RESERVOIR**

VOLUME 2

PART 3: SCOPE OF WORK

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



C3: SCOPE OF WORK

Portion 1: Project Specifications

PS 1 DESCRIPTION OF THE WORKS

PS 1.1 Employer's Objectives

The Employer's objective is to provide a new 20ML reservoir to augment the supply system for Johannesburg Water's current and future supply requirements in the Carlswald area. Currently, the region, which is zoned as predominately agricultural holdings, does not have enough capacity to allow the proposed developments in the area.

PS 1.2 Overview of the Works

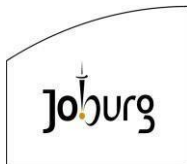
The project involves the construction of a new 20ML domed roof, concrete reservoir and ancillary structures. These works will comprise Civil, Structural, Mechanical and Electrical Engineering elements.

PS 1.3 Extent of the Works

The above works include the following:

- Construction of new 20Ml domed roof, reinforced concrete Reservoir.
- Tie-in of Inlet and Outlet piping with existing pipeline.
- Installation of Inlet and Outlet Piping from Tie-In Chamber to Reservoir.
- Construction of a scour chamber & 12 concrete leak detection chambers.
- Installation of all scour, overflow, drainage & leak detection pipework from the reservoir to the scour box.
- Installation of a stormwater pipeline from the scour box to the existing stormwater network.
- Construction of a new Valve Building which will house all the inlet & outlet valves, as well as the main bypass lines. This will include all the necessary control systems.
- Construction of a new Telemetry Building.
- Construction of a new Guard House, including a new potable water & sewer conservancy tank.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



- Installation of a power supply to the new valve building, telemetry hut & guard house as well as installation of a standby solar power system and lightning protection.
- Installation of instrumentation cabling between the Reservoir and the Telemetry Building and all required control and instrumentation to communicate with the JW.
- Installation of a security fence, site surveillance and a motorised gate.

PS 1.4 Location of the Works

The Works are located on Walton Road in Carlswald, Midrand, Gauteng Province. Refer to the locality plan included in Volume 3 of this Contract Document.

PS 1.5 Temporary Works

No temporary works are envisaged under this contract. No equipment intended for permanent installation shall be operated for temporary purpose without the written consent of, and in complete agreement with stipulations as set forth by the Employer's Agent.

PS 2 ENGINEERING

PS 2.1 Employer's Design

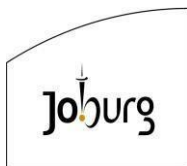
When and where specific reference is made or preference given to specified equipment, should the Contractor fail to comply with these requirements, this may lead to the disqualification of the tender submitted.

Contractors are free to propose alternative equipment (provided a main offer is submitted to specification) to that proposed by the Employer's Agent and, provided that drawings with details of each alternative proposal are submitted with the Tender, such alternative proposals will be considered in the adjudication of each Tender.

Any alternative equipment offered shall include all the necessary civil, mechanical, electrical and instrumentation costs necessary for a complete working system.

The cost of any changes to the Engineer's design will be for the Contractor's account where full details of the changes were not submitted with the tender.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Contractors shall satisfy themselves that the layouts as proposed by the Employer's Agent suit in all respects the equipment proposed by the Employer's Agent or by the Contractor as the case may be. Where equipment other than that proposed by the Employer's Agent is accepted, it will be the sole responsibility of the Contractor to ensure that the associated equipment including pipe work is compatible with the accepted material and proposed structures.

In the case of the Employer's Agent's acceptance of an alternative proposal, the Contractor shall submit in triplicate to the Employer's Agent for his approval, detailed working drawings of the Contractor's alternative design proposal before any related work is executed.

An extension of Time for Completion of the Contract due to time spent on the alteration of the tender drawings to suit the Contractor's alternative proposals or, due to time spent in obtaining the Employer's Agent's approval of such alternatives, shall not be considered.

Acceptance of an alternative proposal or offer shall not relieve the Contractor of any of his obligations in terms of the Contract. The Contractor's cost of preparation and submission of an alternative proposal shall be deemed to be included in the rates tendered for the execution of the Work.

PS 2.2 Drawings

PS 2.2.1 Tender Drawings in Volume 3

With reference to PS 2.1 above, the drawings submitted will comprise a component of the Employer's proposed design. Drawings shall be read and understood in sufficient detail to understand the scope of the works required to be performed. If there are areas that appear unclear or if the Contractor deems there to be material errors in the design, he shall bring it to the immediate attention of the employer prior to the close of tenders. The Contractor is expected to address by letter any clarifications he may require in understanding the tender document and drawings, such that he may sufficiently price the document to complete all of the specified works.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



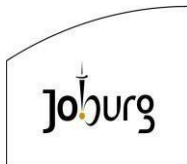
The drawings, forming part of this Tender, are bound into Volume 3 of this document and are listed below. All tender Drawings must be returned at the time of tendering together with the tender documents. If the Contractor deems there to be drawings missing, he shall inform the Employer immediately for clarification.

The drawings included in these tender documents are intended for tender purposes only and shall not be used for construction purposes.

Only working Drawings which have been approved by the Employer's Agent and marked accordingly as follows: "This Drawing approved for construction by": and which have been signed and dated by him and officially issued to the Contractor for construction, shall be used on the Works.

The drawings that are issued for tender purposes are listed below:

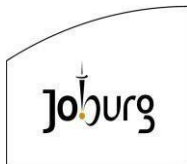
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



CIVIL ENGINEERING DRAWINGS

| DRAWING NUMBER | DESCRIPTION |
|--------------------------------------------------------------------|----------------------------------------------------------------------------|
| SECTION 01 - GENERAL ARRANGEMENT | |
| 13214-73-01-001 | LAYOUT OF EXISTING SERVICES & PROPOSED NEW INFRASTRUCTURE |
| 13214-73-01-002 | SETTING OUT INFORMATION FOR THE NEW INFRASTRUCTURE |
| 13214-73-01-003 | JW CONSTRUCTION NAME BOARD |
| SECTION 02 - TERRACING, STORMWATER & RESERVOIR PIPEWORK | |
| 13214-73-02-001 | TERRACING, INTERCONNECTING PIPEWORK, ACCESS ROAD & SETTING OUT INFORMATION |
| 13214-73-02-002 | LEAK DETECTION, SCOUR PIPING & ACCESS ROAD LONG SECTIONS |
| 13214-73-02-003 | INLET, OUTLET PIPING & TERRACE LONG SECTIONS |
| 13214-73-02-004 | FENCE LAYOUT & DETAILS |
| SECTION 04 - RESERVOIR | |
| 13214-73-04-001 | GENERAL ARRANGEMENT & DETAILS |
| 13214-73-04-002 | LEAK DETECTION, CAT LADDERS & ACCESS HATCH DETAILS |
| 13214-73-04-003 | RESERVOIR PIPING (INLET, OUTLET, OVERFLOW, SCOUR & DRAIN) DETAILS |
| 13214-73-04-004 | FLOWMETER CHAMBERS - 3D VIEWS |
| 13214-73-04-005 | FLOWMETER CHAMBERS - LAYOUT, SECTIONS & DETAILS |
| 13214-73-04-006 | VALVE CHAMBER - 3D VIEWS |
| 13214-73-04-007 | VALVE CHAMBER - LAYOUT, SECTIONS & DETAILS |
| 13214-73-04-010 | SCOUR BOX- 3D VIEWS |
| 13214-73-04-011 | SCOUR BOX - LAYOUT & SECTIONS |
| 13214-73-04-012 | INTERCONNECTING PIPING LAYOUT |
| 13214-73-04-013 | PIPE AND VALVE SCHEDULE (SHEET 1 OF 2) |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



| DRAWING NUMBER | DESCRIPTION |
|-------------------------------|------------------------------------------------------------------------------|
| 13214-73-04-013 | PIPE AND VALVE SCHEDULE (SHEET 2 OF 2) |
| 13214-73-04-017 | TIE-IN BOX 3D VIEWS |
| 13214-73-04-018 | TIE-IN BOX LAYOUT, SECTIONS & DETAILS |
| SECTION 04 - BUILDINGS | |
| 13214-73-05-001 | TELEMETRY BUILDING LAYOUTS, ELEVATIONS, SECTIONS AND DETAILS |
| 13214-73-05-002 | GUARD HOUSE 3D VIEWS |
| 13214-73-05-003 | GUARDHOUSE LAYOUTS, ELEVATIONS, SECTIONS AND DETAILS |
| 13214-73-05-004 | VALVE BUILDING - 3D VIEWS |
| 13214-73-05-005 | VALVE BUILDING - LAYOUT, DOOR & WINDOW SCHEDULE |
| 13214-73-05-006 | VALVE BUILDING - SECTIONS & DETAILS |
| 13214-73-05-007 | GUARDHOUSE LAYOUTS, ELEVATIONS, SECTIONS AND DETAILS - ARCHITECTURAL |
| 13214-73-05-008 | TELEMETRY BUILDING LAYOUTS, ELEVATIONS, SECTIONS AND DETAILS - ARCHITECTURAL |

ELECTRICAL DRAWINGS

| DRAWING NUMBER | DESCRIPTION |
|--------------------------------|-----------------------------------------------|
| SECTION 06 – ELECTRICAL | |
| 13214-73-06-001 | ELECTRICAL CABLE ROUTE |
| 13214-73-06-002 | EARTHING LAYOUT |
| 13214-73-06-003 | SINGLE LINE DIAGRAM |
| 13214-73-06-004 | TYPICAL LOOP DIAGRAM LEVEL SENSOR |
| 13214-73-06-005 | TYPICAL LOOP DIAGRAM CLAMP-ON TYPE FLOW METER |
| 13214-73-06-006 | TYPICAL LOOP DIAGRAM OPEN/CLOSE ACTUATOR |
| 13214-73-06-007 | TYPICAL LOOP DIAGRAM MODULATING ACTUATOR |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



| DRAWING NUMBER | DESCRIPTION |
|-----------------|----------------------------------------|
| 13214-73-06-008 | GUARD HUT POWER AND LIGHTING LAYOUT |
| 13214-73-06-009 | TELEMETRY HUT |
| 13214-73-06-010 | TYPICAL FIELD JB'S |
| 13214-73-06-011 | TYPICAL FIELD PLC |
| 13214-73-06-012 | EARTHING AND LIGHTNING SYMBOLS |
| 13214-73-06-013 | EXTERIOR LIGHTING LAYOUT |
| 13214-73-06-014 | VALVE BUILDING POWER & LIGHTING LAYOUT |

PS 2.2.2 Construction Drawings

Upon receiving the instruction to commence with construction, the Contractor shall receive 3 sets of construction drawings, of which 1 set shall be designated for as-built records and updated by the Contractor on a daily basis. The drawings shall be submitted to the Employer's Agent with the Contractor's request for issue of the Practical Completion Certificate.

PS 2.2.3 Shop Drawings

Where an item to be supplied in conformance with this Contract Specification has not been designed by the Employer's Agent or Employer, the Contractor shall be required to supply the Employer's Agent with 3 copies of detailed shop drawings prior to delivery of materials, including an electronic copy in drawing format that is compatible with the software packages (AutoCAD or .dxf) used by the Employer's Agent and/or Employer. Only on approval of such shop drawings or an amended version thereof, shall the Contractor proceed with the manufacturing, supply and installation of the designed item.

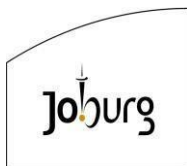
PS 3 PROCUREMENT

PS 3.1 Preferential Procurement Procedures

The Contractor's attention is drawn to the following returnable schedules contained in Part T2:

- Empowerment and Preferential Procurement (JW10); and

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



- b. Enterprise Declaration Affidavit (to be endorsed by a Commissioner of Oaths) (JW11).

These schedules contain all requirements about preferential procurement.

PS 3.2 Sub-Contracting

PS 3.2.1 Definitions

a. Start-up Enterprises

An enterprise that has been in existence and operating for less than two years.

b. Small Enterprises

An enterprise that has a CIDB grading designation of 1 or 2.

c. Micro Enterprises

An enterprise that has a CIDB grading designation of 3.

d. Locally based SMMEs

Enterprises that have their operational base in the ward in which the project is to be executed or, alternatively, the members of the enterprise are residents in the particular ward. Should a suitable locally based SMME as defined above not be available in the particular ward, then they shall be sourced from adjacent wards.

a. Contract Participation

Contract Participation in terms of this contract is a process by which the Employer implements the Government's objectives by setting a target relating to small Contractor development which the Contractor shall achieve as a minimum.

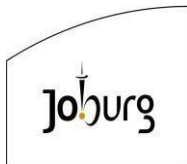
b. Contract Participation Goal (CPG)

Contract Participation Goal is the monetary value of the target set by the Employer in the Contract Participation process.

c. Contract Participation Performance (CPP)

Contract Participation Performance is the measure of the Contractor's progress in achieving the CPG.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



The commitment of the Employer to Government Policy concerning the empowerment of the SMMEs shall be noted and adhered to by the Contractor. It is against this background that Johannesburg Water has made provisions under this contract to ensure that the Contractor imparts skills to the SMME within the project area during the project implementation.

The onus is upon the Contractor to handle and manage the procurement process of the Sub-Contractors and once appointed, should be dealt with in accordance with the provisions of Clause 4.4 of the General Conditions of Contract 2015.

The Contractor shall not cede or assign the Contract or any part thereof without the prior written approval of the Employer's Agent.

The Contractor shall obtain the written approval of the Employer's Agent before appointing any Sub-Contractor. The Contractor shall be solely responsible for the supervision of and payments to such a Sub-Contractor(s) and the approval of a Sub-Contractor by the Employer's Agent shall not indemnify the Contractor from any of his liabilities in terms of the Contract.

Approval given in terms of subcontracting shall not relieve the Contractor of any responsibility, duty or obligation imposed upon him by the Contract, and the Contractor shall in particular be and remain solely liable and responsible for all acts, omissions, negligence or breaches of contract on the part of the assignee or any of his employees, and for all acts, omissions or negligence of any sub-Contractor or any of his employees.

PS 3.2.2 Applicable Legislation

The following Acts, as amended from time to time, are predominant amongst those which apply to the construction industry and are listed here for reference purposes only:

- The Constitution of South Africa.
- Preferential Procurement Policy Framework Act No. 5 of 2000.
- Construction Industry Development Board Act No. 38 of 2000.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



- Broad-Based Black Economic Empowerment Act No. 53 of 2003.

PS 3.2.3 Scope

The City of Johannesburg has identified job creation and access to procurement opportunities by Start-ups, Small and Micro enterprises (SMMEs) as an essential requirement towards building an economically viable City.

This tender is subject to the sub-contracting conditions as described in the Contract Data, and must be adhered to by the main contractor.

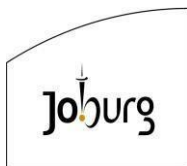
NB: all sub-contractors appointed on this contract must comply with the Central Supplier Database (CSD) requirements, i.e. they must be registered on the CSD.

It is a condition of this contract that the Contractor is required to sub-contract a minimum value of work to SMME equal to 30% of the Contract Sum.

The Contractor is to allow for fortnightly certificates from the SMMEs and for payment to the SMMEs to be effected within 7 days of certification. To achieve the goals of this policy and to ensure that the SMMEs are treated fairly and given every opportunity to advance their business whilst delivering a successful project, the Contractor is to note the following and provide for any cost that may be associated therewith:

- a. The Contractor will be expected to have clearly specified the programme dates to the SMME and these dates are to be included in the contractual agreement between the two parties. The Contractor is to monitor the SMME's progress against the programme and hold progress meetings with the SMME contractors where minutes are to be kept and signed off by both parties.
- b. Before site establishment, the Contractor will provide each appointment letter and contractual agreement that the Contractor engages with for each SMME on this Project. The Agreement must include agreed work values agreed upon with the Contractor and SMME.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



- c. Before site establishment, the Contractor will provide the following for all SMMEs:
- SMME company registration
 - SMME CIDB proof of registration.
- a. The Contractor is to assess the skills of the SMME and provide the relevant support and training for the SMME to complete the works to programme, budget and specification. The Contractor will be expected to provide training to the SMME that will ensure that the SMME's staff is suitably trained to execute the works and that they receive sufficient relevant experience on the project.
- b. The Contractor is responsible for safety compliance on the project and will assist the SMME Contractors in all aspects to achieve safety compliance, that will include:
- Assisting the SMME with developing their safety files, legal appointments, etc.
 - Assisting the SMME with achieving safety on site.
 - Having toolbox talks with the SMME Contractor's employees on a daily basis.
 - Providing all safety equipment and signage.
 - Providing safety training where necessary.
- a. The Contractor is to provide all the necessary equipment for the timeous monitoring and the checking of the quality of works as carried out by the SMME. The Contractor will be expected to monitor the SMME's works for quality compliance and provide all the necessary support to the SMME in order to achieve quality requirements. The Contractor is to ensure that if the SMME's quality of works does not achieve specification, the Contractor will assist the SMME to achieve specification and not allow the works to continue until the quality requirements are achieved.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



- b. The Contractor is to generate monthly reports for the Johannesburg Water SOC. which includes the following:
- Per SMME: resources on the site, i.e. supervisors, labour, plant tools and equipment
 - Per SMME: progress of works on site.
 - Per SMME: quality control on site.
 - SMME expenditure on the project versus target expenditure including payment progress
 - Copies of minutes of the SMME and Contractor progress meetings.
 - Concerns and improvements to be made.
 - Items listed in PS 5.10
- a. In the execution of the Subcontract Work, the Contractor shall ensure that the Sub-Contractor(s) comply with all relevant legislation and regulations including, but not confined to, the Occupational Health and Safety Act. The Contractor hereby indemnifies the Employer against any loss, damage, or claim for Subcontract Works set out for the construction of the Carlswald Reservoir as well as the new pump station arising out of the former's failure to comply with instructions issued to him in regard to these requirements.
- b. The Contractor shall be required to adopt labour intensive construction techniques through the allocated work in the Bill of Quantities, with the proviso that the Employer's specific objectives regarding time and quality are not compromised. Maximisation of employment shall be the aim on this contract.
- c. Together with their tenders, all Contractors are required to submit a comprehensive implementation plan clearly stating the labour content and number of jobs that shall be created. The employment of labour shall be reflected in a programme in sufficient details to enable the Project Manager to monitor and compare it with the implementation plan.
- d. The Contractor shall be required to submit employment data on a monthly basis to the Employer's Agent.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



- e. Contractors are to also note that it is an explicit condition of this Contract that all unskilled labourers on the project are to be employed from the local community. The Contractor shall, in general, maximise the involvement of the local community.
- f. TRAINING OF SMMEs: The sum shall be in full compensation for the provision of training to SMMEs, to complete the works as per specifications

Unit: Sum

PS 3.2.4 Supply & Delivery of Equipment

A delivery period of 14 weeks, within which all materials and equipment must be delivered to site, is envisaged. If the Tenderer considers the delivery time of 14 weeks inadequate for particular items, he must specify the delivery period required for each item in the covering letter to the Tender Document.

The term "supply and deliver" of materials and equipment includes the purchase thereof from commercial sources, manufacturing thereof, factory corrosion protection, factory testing, provision of test certificates certifying compliance of the goods in accordance the Specifications, provision of drawings and details, provision of special tools and keys, the handling thereof and delivery to Site.

Tender rates must provide for all the costs by the Contractor to "supply and deliver".

No other payment for materials and equipment will be considered other than that under the "supply and deliver" items in the Schedule of Quantities.

PS 3.2.5 Purchasing of Equipment

The Contractor is required to purchase the materials and equipment necessary for the Contract at the earliest possible date thus limiting the effect of inflation. The Contractor must strive to keep the number of suppliers to a minimum.

Payment for materials and equipment will only be effected if the Contractor can prove ownership of the items.

In the case that off-site storage is agreed by the Employer's Agent and Johannesburg Water then payment will only be effected if the Contractor can prove

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| Employer: | | Contractor: | |
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ownership and that cession of ownership from the Contractor to Johannesburg Water has taken place.

NOTE - It will be the Contractor's responsibility to ensure that the necessary warranties from the equipment suppliers is negotiated such that it only comes into effect on commissioning of the equipment.

PS 3.2.6 Guarantee of Equipment

It is an express condition of this Contract that the guarantee period on all equipment given by the suppliers to the Contractor shall only commence once the Works is in operation. This stage will be reached once the Certificate of Completion has been issued.

PS 3.2.7 Particulars of Equipment Offered

The Tenderer must include comprehensive information covering every item of equipment offered with his Tender. The Employer's Agent must be able to determine, without reference to the suppliers, any information regarding delivery, power consumption, efficiency, accuracy, etc. applicable under the specified range of operation conditions.

Technical information regarding equipment offered must also be supplied.

Failure to comply with the above requirement may lead to the disqualification of the Tender submitted.

PS 3.2.8 Bill of Quantities

The prices quoted in the Bill of Quantities shall cover the cost of all work required for the execution of the Contract and each price shall be considered as the full value of the work described in each item and as covering all contingent expenses.

PS 3.2.9 Bonds & Guarantees

Security in the amount equal to ten (10) per cent of the contract price shall be provided by the Contractor for the due and faithful performance by him of all the duties and obligations resting upon and assumed by him in terms of the Contract.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

Such security shall be in the form of a deed through lodging a bond of suretyship furnished by an approved bank, insurance or guarantee corporation in such form as may be prescribed by Johannesburg Water, provided however that the Employer's Agent may, upon written application by the Contractor, return to the Contractor the whole or part of such security held by Johannesburg Water. The Employer's Agent will, subject to his sole discretion, consider what he deems sufficient for the protection of Johannesburg Water, and is entitled to hold all or a portion of the security until the completion of the Contract and the expiry of the Defects Liability and Defects Liability Period.

PS 4 COMPLETION OF THE WORKS

The Time for Completion as stated in the Contract Data is 15 months. If the Contractor considers the completion time of 15 months inadequate, he must specify the completion period required in his covering letter to his Tender.

PS 5 CONSTRUCTION

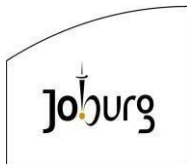
PS 5.1 APPLICABLE STANDARDS

PS 5.1.1 National Standards (Civil)

The Standardised Specifications for all associated civil work applicable to this Contract shall be:

| Civil Works | |
|--------------------|-------------------------------------|
| SANS 1200 A | General |
| SANS 1200 AB | Employer's Agent's office |
| SANS 1200 C | Site clearance |
| SANS 1200 D | Earthworks |
| SANS 1200 DB | Earthworks (pipe trenches) |
| SANS 1200 DM | Earthworks (roads, subgrade) |
| SANS 1200 G | Concrete (Structural) |
| SANS 1200 GA | Concrete (Small Works) |
| SANS 1200 H | Structural steel work |
| SANS 1200 HA | Structural Steelwork (Sundry Items) |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



| Civil Works | |
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| SANS 1200 L | Medium Pressure Pipelines |
| SANS 1200 LB | Bedding (Pipes) |
| SANS 1200 LD | Sewers |
| SANS 1200 LE | Stormwater Drainage |
| SANS 1200 ME | Subbase |
| SANS 1200 MF | Stabilisation |
| SANS 1200 MJ | Segmented Paving |
| SANS 1200 MK | Kerbing and channelling |
| SANS 1200 MM | Ancillary Roadworks |

PS 5.1.2 National Standards (Mechanical, Electrical and C&I)

The Standard Specifications for all associated electrical and instrumentation work applicable to this Contract shall be SANS 10142-1:2003.

These Specifications are not issued with this volume but are available at the Contractor's expense from: South African National Standards. The Contractor shall be in possession of these Technical Specifications and shall keep a hard copy of the specifications on site for reference by him and the Employer's Agent for the duration of the Contract.

Office Address:
1 Dr Lategan Road,
Groenkloof, Pretoria

Postal Address:
Private Bag X191,
Pretoria, 0001

Telephone:
National: (012) 428-6883
International: + 27 12 428 6883
428 6928
Email: sales@sabs.co.za

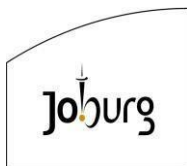
Telefax:
National: + 2712 428-6928
International: + 27 12

PS 5.1.3 Other Standards

Other Standard Specifications applicable water tank design, to this Contract shall be:

- BS8007:1987 Code of Practice for Water Retaining Structures
- BS5337:1976 Code of Practice for Water Retaining Structures
- BS8110:1997 Code of Practice for Reinforced Concrete design

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| Employer: | | Contractor: | |
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PS 5.1.4 Particular Generic Specifications

Civil

Refer to Portion 2: Variations and Additions to the Standardized Specifications.

Mechanical

Refer to Portion 3: Particular Specifications of Volume 3.

| Mechanical Works | |
|------------------|--------------------------------------------|
| M20 | Mechanical Valves – Manufacture and Supply |
| M21 | Mechanical Pressure Pipework |

Electrical and C&I

The following Particular Generic Specifications (refer to Portion 3) forming part of the Contract have been written to cover phases or items of work involving a specialist type of operations or material to be encountered on this Contract and that are not adequately covered by the general specifications.

| Electrical Works (Automation and Control Design Standards) | |
|------------------------------------------------------------|----------------------------------|
| Volume 3 | PLC Panels |
| Volume 5 | Clean Power and Surge Protection |
| Volume 6 | Cabling |
| Volume 7 | Networking |
| Volume 8 | Flow Measurement |
| Volume 9 | Level Measurement |
| Volume 19 | Field Junction Boxes and Panels |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



| Electrical Works | |
|------------------|---------------------------------------------------------------|
| E01 | Electrical Motors |
| E02 | Electrical Cable Racks |
| E04 | Electrical Low Voltage Switchboards and Motor Control Centres |
| E07 | Electrical Industrial Plugs, couplers and socket outlets |
| E08 | Electrical Wiring |
| E09 | Building Installations |
| E11 | Earthing and Lightning Protection |

| Painting Specification | |
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| G01 | Colour Coding of Equipment |
| G02 | Corrosion Protection |

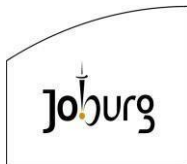
PS 5.2 Plant & Materials

All materials intended for the purpose of this Contract shall bear the approval of the relevant SANS specifications. Any deviations there from shall be recorded and reported by the Contractor for approval by the Employer's Agent.

Johannesburg Water shall have the right to refuse acceptance of any material or workmanship which is found to be unsound, damaged or contrary to the specification, or which is found during the Defects Liability Period or during tests in situ to be defective or in any way contrary to the specification due to causes within the Contractor's control or responsibility. All material or construction rejected by the Employer's Agent shall be replaced or repaired by the Contractor at his own expense to the satisfaction of the Employer's Agent, whose decision with regard to this matter shall be binding on the Contractor.

All materials used shall be the best of their respective kinds and shall be suitable for working at the pressures and temperatures involved under all working conditions, without distortion or deterioration or the setting up of undue stresses in any part and without impairing the efficiency or reliability of the plant and the strength of its

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



component parts. No welding, burning, filling or plugging of defective castings will be permitted without the Employer's Agent's approval in writing.

Materials to be supplied "Free Issue" to the Contractor will be indicated as such in the Bill of Quantities.

PS 5.3 Construction Equipment

In addition to GCC (2015) Clause 7, no plant will be supplied by the Employer, however the Employer does reserve the opportunity to negotiate with the Contractor that different plant be used of another origin for whatever purpose that may become apparent at the time.

In so doing the Contractor shall supply and use suitable and sufficient construction plant, tools, equipment and material as may be required to carry out the Works efficiently. Only the construction plant, tools, equipment and material which are required for this purpose shall be brought onto the Site and shall be stored, stacked or erected in such a way as not to interfere with other work or traffic. The Contractor shall furnish statements showing details of construction plant, tools, equipment and material employed or used on the Works on a day to day basis, the Daily Site Diary indicating types, numbers, quantities, hours worked, idle time, etc. all as stipulated in the Project Specification or as directed by the Employer's Agent.

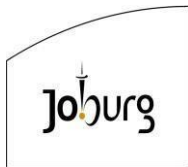
Construction equipment shall be suited for the onsite intended use and shall conform to all relevant safety aspects required by the OHS Act Purchasing of Equipment.

PS 5.4 Existing Services

The Contractor shall make himself acquainted with all existing works. Under no circumstances shall the Contractor alter or in any way interfere with existing works or underground services unless authorised by the Employer's Agent.

Where existing works are of such a nature that the Employer's Agent may require them to be moved by the Contractor, the cost of such work will be paid for at scheduled rates or on dayworks, plant and materials basis. The Contractor will be

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



held responsible for damages to any existing works and any damages caused shall be made good at his own cost without delay.

The Contractor is to exercise care when the proposed work is to cross an existing service, or work is to be performed close to an existing service. Prior to commencement of the relevant portion of the proposed works the Contractor with the Employer's Agent or his duly appointed representative shall also perform a visual inspection of the area in question. This inspection will not waive the Contractor of his obligations with respect care of the works referenced in GCC (2015), Clause 8.2.

PS 5.4.1 Service Providers

Organizations, which have special conditions for crossing of services, are:

- a. Johannesburg Water
- b. Eskom
- c. Telkom
- d. Fibre Providers
- e. Johannesburg Roads Agency

For crossing or working in close vicinity of a service under the control of any of the above organisations, the organisation shall be notified and its general and specific requirements for each crossing or operation shall be carefully observed.

PS 5.4.2 Priorities

Services are labelled Priority 1 (P1), Priority 2 (P2) or Priority 3 (P3) on construction Drawings according to the procedure to be observed.

- Priority 1. Indicates an extremely important service.
- Priority 2. Indicates a less important main service.
- Priority 3. Indicates minor services and leadings

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PS 5.4.3 Procedures

Procedure for Priority 1 Services

These services are extremely important.

Once the Contractor is appointed for the Contract, he shall immediately inform the respective service providers of his appointment in writing. He shall also obtain current copies of the Drawings with details of each of the services from the service providers.

The Contractor shall then arrange a meeting with the service provider and the Employer's Agent, to discuss the proposed work. Immediately after the meeting, the Contractor shall confirm in writing the content of this meeting.

At least seven days prior to the anticipated service crossing, the Contractor shall request the service provider to either expose the service or to supervise the exposure of the service. The service provider will nominate a representative, who will remain on site for the duration of all works in the vicinity of the service. No work whatsoever closer than 1,5 meters from the outer extremities of the service shall be carried out in the absence of this service representative. This representative shall have full authority to protect the safety of the service being crossed, including the power to halt and revise the Contractors work methods should he feel his service is in danger of being damaged.

Backfilling around and above the service will either be done by the service provider or under his supervision to the contract specification.

All instructions shall be in writing, acknowledged by signature of the party receiving the instruction. On completion of the work at a service crossing, the service provider will confirm in writing that his service is undamaged.

Procedure for Priority 2 Services

These are less important main services.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Once the Contractor is appointed for the project, he shall immediately inform the respective service providers of his appointment in writing. He shall also obtain current copies of the drawings with details of each of the services from the service providers.

Prior to working close to a service marked P2, the Contractor must discuss the service crossing with the Employer's Agent.

It is the responsibility of the Contractor to locate the existing service before the anticipated crossing by hand excavation. Excavation must be done by shovel only. If this is impossible, work must be discontinued and the problem reported to the Employer's Agent for further instructions. Any damage, however small, must be reported immediately.

On exposing the services, the Contractor must notify the Employer's Agent that such service has been exposed and must arrange for a site visit by the Employer's Agent to inspect the service for any possible damage. When services have been located, no machine excavation may be done within one metre on either side of such service.

In the event of the indicated service not being located, the Contractor shall inform the Employer's Agent, who will in turn request the service provider for assistance.

Backfilling may only be carried out in the presence of the representative of the service owner who will provide a written clearance indicating that the work has been completed without damage to the original service.

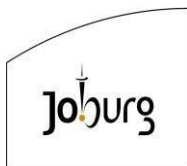
Procedure for Priority 3 Services

These are minor services.

It is seldom possible to indicate the position of these minor services and leadings on a drawing and the initiative of the Contractor is relied upon to locate it.

Exposure of these services is the responsibility of the Contractor, and must be done with caution, by hand. Any damage shall be reported to the Employer's Agent

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



immediately. No machine excavation is to take place within one meter on either side of the exposed service.

Before backfilling is done, the service shall be inspected by the Employer's Agent's Representative who will give the service provider the option of inspecting his service.

PS 5.4.4 Damage to Existing Services

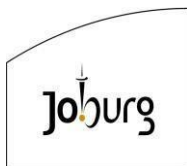
In addition to GCC (2015), Clause 8.2, should an existing service be damaged, the procedure as set out below is to be followed. The Contractor must:

1. Take immediate steps to minimize:
 - Damage and loss to property of the service provider and the public e.g. arrange to close down valves, shut off pumps etc.
 - Inconvenience to the public.
 - Further damage to the already damaged service.
 - Damage to other services.
2. Ascertain if an important service is in the vicinity of the problem by carrying out the following checks on available drawings:
 - Eskom power line.
 - Johannesburg Water potable water lines
 - Johannesburg Road Agency stormwater lines
 - Fibre Providers

If any of the above are present, the Employer's Agent must be informed.

3. The Contractor must contact the Works Manager and inform him/her of the problem.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



4. The Contractor shall then contact the relevant organisation and arrange for site or other suitable representation by the organisation whose service may be affected. Failing co-operation, he should refer the matter to the Employer's Agent, who must repeat the request for co-operation and record the reaction.
5. The Contractor shall not allow any machine excavation at the site of the problem unless:
 - No other services are in the vicinity.
 - All affected organizations are represented on site.
 - Any organization not represented has given written permission for machine excavation.
 - All other services are made visible and adequately protected.
6. The machine shall not work closer than one metre from any undamaged service.
7. All excavation work shall preferably be done by hand using shovels only.
8. On completion of repair work, all representatives of other organizations must be requested to inspect their respective services and give written confirmation that their service is undamaged before backfilling takes place.

PS 5.4.5 Procedures When Dealing with Existing Electrical Services

The following procedures are to be followed when a proposed service is to cross an existing electrical service or work is to be performed in close proximity to an existing service.

Procedure for P1 Service

These are highly important services.

Once the Contractor is appointed for the project, he shall immediately inform the respective service providers of his appointment in writing. He shall also obtain current copies of the drawings with details of each of the services from the service providers.

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| Witness: | | Witness: | |



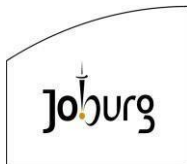
The Contractor shall then arrange a meeting with the service provider and the Employer's Agent to discuss the proposed work. Immediately after the meeting, the Contractor shall confirm in writing the content of this meeting.

1. The Electrical Engineer must be informed in writing, a minimum of seven (7) working days before work commences at or near the site in question and work shall not commence until this has been acknowledged.

The following special conditions shall be complied with:

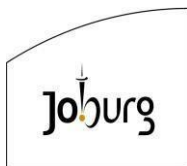
- No excavation work is done within three (3) metres of the centre line of the cable/s or any of its ancillary equipment, other than for the purpose of crossing the service.
- Should it be necessary to cross the cable/s at any point, no excavation work by means of earthmoving machinery may be done. The necessary material to support the cable or to protect it from any damage whatsoever shall be supplied free of charge or supplied by the Electrical Engineer and the costs recovered from, the Contractor. Should the Electrical Engineer decide that the Contractor may do the work it shall be under the constant supervision of the Electrical Engineer.
- The crossings are so designed as to ensure a minimum distance of one (1) metre between the cable/s and any object. If the said minimum distance cannot be maintained an approved reinforced type concrete culvert shall be installed over the service by the Works at the cost of the Contractor.
- The necessary liaison is arranged with the Electrical Engineer during installation of any object in order to ensure that the equipment of the Works is not damaged in any way.
- The crossing of the service is made only under the strict supervision of the Electrical Engineer.
- No blasting work is done in close proximity to the service and that all blasting work required is approved by the Electrical Engineer.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



- Full details of the exact location of the service and its ancillary equipment, as well as any other information required must be obtained from the Electrical Engineer.
 - The accompanying form acknowledging all of the above shall be signed.
2. During the duration of the operation the Works Manager will make certain that the service is protected and reserves the right to stop work should he feel that the work being performed could endanger the service. The matter will then be referred to the Electrical Engineer.
 3. Should any damage be caused to the Works service the costs of repairs will be for the Contractor's account.
 4. The Electrical Engineer will close and make good the excavations.
 5. The written agreement mentioned above will be signed off by both parties.
 6. The costs incurred in all of the above will be to the account of the Contractor.
 7. Should the Cable Surface Right be affected the following additional procedures shall apply:
 - No excavation work, storage and parking of motor vehicle is done within two (2) metres of the cable or any of its ancillary equipment such as oil pressure tanks, joint bays and link boxes, other than for the purpose of crossing the cable.
 - Should it be necessary to cross the cable at any point, no excavation work by means of earthmoving machinery is done, proper cable supports to the satisfaction of the Electrical Engineer are installed and the crossings are so designed as to ensure a minimum distance of one (1) metre between the cable and any object. For this purpose it must be noted that the cable has been laid at an average depth of 1 m.
 - No crossing, structure, fence or any other object shall be constructed over any of the existing cable joints.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



- Cable crossing be made only under the strict supervision of the Electrical Engineer.
- No blasting work is done in close proximity to the cable and that all blasting work required is approved by the Electrical Engineer.
- Access be provided at all times (24 hours a day 7 days a week) where the Employer's surface right permit is to be crossed during and after construction.
- No trees and/or shrubs may be removed or planted except by or with permission from the Employer's Agent.
- Where vehicular crossing is required such crossing shall conform to the requirements of the Electrical Engineer.
- Before work in the vicinity of the Employer's surface right commences the Electrical Engineer shall be informed and his permission obtained to proceed.

Procedure P2

These are services of secondary importance.

Once the Contractor is appointed for the project, he shall immediately inform the respective service providers of his appointment in writing. He shall also obtain current copies of the drawings with details of each of the services from the service providers. Prior to working close to a service marked P2, the Contractor must discuss the service crossing with the Employer's Agent.

1. The Electrical Engineer must be informed in writing two (2) working days before work commences and such work shall not commence until this has been acknowledged.
 - The top 300 mm of soil above the service may be removed by pick and shovel.
 - The remainder of the cover shall be removed carefully by shovel only. If any damage, however small, is caused to the cable it must be reported immediately. The costs of repairs will be for the Contractor's account.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



- When the cable is exposed, the Electrical Engineer or his representative must be informed in order that it may be inspected. No machine excavation within a one-meter radius of the exposed cable is permitted.
2. When the work is completed the excavations may be backfilled until the cable is just exposed when the Electrical Engineer's representative shall inspect once again for possible damage.

Backfilling will then proceed in the presence of the Electrical Engineer's representative who will provide a written clearance when the job is completed.

PS 5.5 Site Establishment, Facilities Available and Required

PS 5.5.1 Water Supply for Construction Purposes

The Contractor is responsible for sourcing a constant supply of clean potable water for the duration of the Contract. All costs for the provision of water shall be priced in full under the relevant scheduled items.

PS 5.5.2 Power Supply for Construction Purposes

The Contractor is responsible for sourcing electricity for the duration of the Contract. All costs for the provision of electricity shall be provided in full under the relevant scheduled items by the Contractor.

PS 5.5.3 Site Office, Store and Housing

The Contractor will be permitted to establish a stores yard and to erect presentable temporary buildings for the storage of materials and for offices and latrines, all of which shall be neatly fenced. The fence must be sturdy, as indicated on the drawings, and must be fitted with a lockable vehicle entrance gate and shall be at least 2 m in height.

The Contractor shall employ security staff to provide security services to his site camp and other storage areas. The Contractor will not be allowed to cut down any trees or to make any excavations on the sites for the storage yard and temporary buildings without the written permission of the Employer's Agent.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



No housing for the Contractor's employees on site is permitted under any circumstances. The Contractor shall make his own arrangements to house and transport contracting staff. On completion of the Works, or when ordered by the Employer's Agent, the Contractor shall remove all temporary buildings and latrines and restore the Site to a clean and sanitary condition to the satisfaction of the Employer's Agent. He shall rehabilitate the area in accordance with the EMP.

Upon completion of the work in terms of this Contract, the site must be cleared of all structures, concrete slabs and waste. The area is to be rehabilitated according to the Specification.

The tendered sums for as scheduled by the Employer's Agent, whether grouped or individually, shall include all costs for the installation, maintenance and removal of the fencing as specified, in addition to all other facilities specified and as required by the Contractor for his own purposes.

PS 5.5.4 Crane and Lifting Equipment

Crane and lifting equipment is not available on the site.

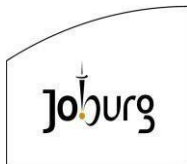
PS 5.5.5 Telephone Facilities

The Contractor will be responsible for arranging his own telephone facilities and will be responsible for all costs relating thereto.

PS 5.5.6 Ablution Facilities

Ablution facilities are not available on site. The Contractor shall therefore make the necessary arrangement to provide these facilities. Chemical serviced toilets shall be the minimum acceptable standard as indicated in the Environmental Specifications. These must be placed in a position to be approved by the Employer's Agent. The facilities must be to the Employer's Agent's approval and must be maintained in a clean and sanitary condition.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PS 5.5.7 Storage Facilities

Storage are not available on site. The Contractor shall therefore make the necessary arrangement to provide these facilities. The facilities must be to the Employer's Agent's approval and must be maintained in a clean and sanitary condition.

The Contractor shall make his own arrangements to secure the facilities.

PS 5.6 Site Facilities Required

PS 5.6.1 Facilities for the Employer's Agent

No special facilities are required by the Employer's Agent. However, the conservancy tank will be required to be emptied on a regular basis by the Contractor. A BoQ item has been provided for this work.

PS 5.6.2 Name boards

Two name boards shall be erected and the boards shall comply with the format and size as directed by the Employer's Agent. The Name boards shall be erected within a month of the Letter of Award.

No other name board other than those stated above shall be allowed. The Contractor shall remove the boards from the Site of Works on completion of the Contract.

PS 5.6.3 Protective Clothing

The Contractor is not obligated to provide Personal Protective Equipment for the Employer's Agent.

PS 5.6.4 Facilities for the Contractor

The Contractor will be permitted to establish a stores yard and to erect presentable temporary buildings for the storage of materials and for offices and latrines, all of which shall be neatly fenced. The fence must be sturdy, covered with diamond mesh wire and fitted with a lockable vehicle entrance gate and shall be at least 2 m in height.

The Contractor shall make his own arrangements to secure the facilities provided.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



The Contractor will not be allowed to cut down any trees or to make any excavations on the sites for the storage yard and temporary buildings without the written permission of the Employer's Agent.

Upon completion of the work in terms of this Contract, the site must be cleared of all structures, concrete slabs and waste. The area is to be rehabilitated according to the Specification.

The tendered sums for as scheduled by the Employer's Agent, whether grouped or individually, shall include all costs for the installation, maintenance and removal of the fencing as specified, in addition to all other facilities specified and as required by the Contractor for his own purposes.

PS 5.6.5 Waste Disposal Sites

The Contractor shall make his own arrangements for solid and liquid waste disposal. Disposal shall take place at an approved site.

PS 5.7 Site Usage

Access to the Site can be obtained via Walton Road or Whisken Avenue. No restriction on access to the Site of Works will be placed on persons or vehicles involved with the execution of the Works. All traffic on Site shall be restricted to the maximum speed of 40 km/h and vehicles must be driven by licensed drivers with extreme caution.

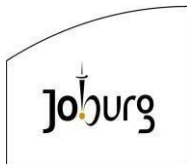
The Contractor shall be required to report daily to the Employer's Agent's personnel on the Works.

The Contractor's staff shall be identified by either clothing or an identification tag, which shall be displayed when entering the Site of Works.

Access is to be made available to Johannesburg Water's employees to any portion of the Site whenever required.

The Contractor shall be responsible for the closing of all gates on roads and tracks used by him or his employees.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PS 5.8 Permits and Wayleaves

All required permits & wayleaves must be obtained by the Contractor before work in affected areas may commence.

PS 5.9 Alterations, Additions, Extensions and Modifications to Existing Works

The existing operational JW bulk water pipeline located on Walton Road must remain operational for the duration of the contract and can only be taken out of operation for a maximum period of 4 hours. This will be done to enable the Contractor to tie the new inlet and outlet lines from the Carlswald Reservoir into existing pipeline. The number of interruptions in operation shall be limited to the minimum as far as possible.

PS 5.10 Water and Electricity for Construction Purposes

The responsibility lies with the Contractor to negotiate all costs and necessary connections that might be required during the execution of the works as set out in Clause PSA 4.2 of Portion 2. All connections will conform to the requirements of Johannesburg Water and costs applicable will be paid by the Contractor.

PS 5.11 Survey Control and Setting out of the Works

The Contractor shall be responsible for the construction of survey beacons and the setting out of the Works in accordance with the co-ordinates indicated on the construction drawings.

PS 5.12 Accommodation and Care of Employees

No employees, apart from a security guard, may be housed on the Site of Works. The Contractor shall make his own arrangements to secure the facilities provided for under the Contract.

PS 5.13 Marking

All plant including steel piping and specials delivered under this Contract shall have painted or marked thereon or on the container the relative item number given in the Bill of Quantities.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PS 5.14 Off-Loading, Stacking and Liability for Breakages

The Contractor will be required at his own expense to make all arrangements for off-loading and carefully stacking all plant delivered under this Contract at the Site of the Works. The off-loading and stacking shall be carried out strictly in accordance with the requirements of the Employer's Agent so as to permit a thorough and careful examination and testing of all items for breakages, fractures, etc. and any routine maintenance during storage.

The Contractor shall be fully responsible for the protection of all plant delivered by him to Site but still in storage, against damage by water, weather, fire and any other interference until such time as it is erected and installed, put into satisfactory operation and accepted by the Employer as complete.

PS 5.15 Storage

Johannesburg Water has no storage facilities available for use by the Contractor who must make his own arrangements in this regard.

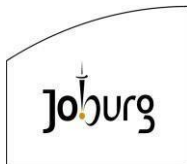
The Contractor will be permitted to establish a stores yard and to erect presentable temporary buildings for the storage of materials and for offices and latrines, all of which shall be neatly fenced. The fence must be sturdy, covered with diamond mesh wire and fitted with a lockable vehicle entrance gate and shall be at least 2 m in height.

The Contractor shall make his own arrangements to secure the facilities provided.

The Contractor will not be allowed to cut down any trees or to make any excavations on the sites for the storage yard and temporary buildings without the written permission of the Employer's Agent.

Upon completion of the work in terms of this Contract, the site must be cleared of all structures, concrete slabs and waste. The area is to be rehabilitated according to the Specification.

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| Employer: | | Contractor: | |
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The tendered sums for as scheduled by the Employer's Agent, whether grouped or individually, shall include all costs for the installation, maintenance and removal of the fencing as specified, in addition to all other facilities specified and as required by the Contractor for his own purposes.

PS 5.16 Inspection at Site

All plant will be carefully examined upon delivery at the Site by the Employer's Agent's representative and all items showing defects or damage of any description shall be laid aside as not being in accordance with the requirements of the Contract and these shall be removed and replaced by the Contractor at his own cost.

PS 5.17 Temporary Housing, Stores, etc.

The Contractor shall provide and maintain at his own cost all sheds of a temporary nature necessary for the accommodation and proper protection of plant from damage or loss. These are to be erected only on sites which shall have been approved by the Employer's Agent and they shall be removed as soon as their necessity ceases and the site thereof restored to its original condition and the ground left clean and sanitary.

PS 5.18 Management Meetings

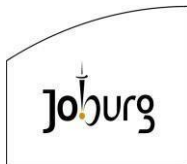
Meetings will be held every month with the first meeting called the site handover meeting. The Contractor will be supplied with an appropriate agenda for the management meetings and meetings will be chaired by the Employer's Agent or his duly appointed representative. The Employer's Agent or his duly appointed representative will be responsible for issuing of the minutes.

PS 6 MANAGEMENT OF THE WORKS

PS 6.1 Applicable SANS 1921 Standards

Although not bound in or issued with this document, the following SANS 1921 Construction and Management Requirements for Works Contracts as approved by the Council of the South African Bureau of Standards shall apply to this Contract. The Contractor shall be in possession of these Standards and

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



shall keep a copy of it on site for reference by him and the Employer's Agent for the duration of the Contract.

PS 6.2 Planning and Programming

An initial programme in terms of the Clause 5.6 of the GCC (2015), complete with a cash flow budget for the execution of the works must be made available to the Employer's Agent for approval within 21 days after the receipt of the Letter of Award. Aspects that will require co-ordination with the Employer must be indicated clearly and provision must be made for it in the programme.

The programme shall be in the form of a gant chart and shall clearly show the anticipated quantities of work to be performed each month, together with the manner in which the listed plant is to be used, as well as the cash flow for the various sections of work. The Contractor must take cognisance of the following when developing the programme:

1. Sequence of the works for the relevant works area.
2. Target dates for the tasks identified in sequence of the works for the relevant working areas.
3. Materials requirements.
4. Construction Plant to be used.
5. Services affecting construction.
6. Any factors that could affect construction progress after commencement.

No deviation from the approved sequence of construction shall be accepted without prior written approval.

No work of a permanent nature may be executed before the programme has been approved by the Employer's Agent.

All method statements shall be approved by the Employer's Agent before commencement of construction. In order to minimize the impact on traffic,

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



pedestrians and business the Contractor will be required to segment the works in such a manner that no portion of the works is more than one day ahead of the following position i.e. trenches cannot be excavated more than one day ahead of pipe laying, pipes more than one day in advance of manhole construction and finishing off etc. These segments of the works shall be clearly defined in the Contractor's method statement for each work area.

If, during the progress of the work, the quantities of work performed per month fall below those shown on the programme, or if the sequence of operations is altered, or if the program is deviated from in any other way, the Contractor shall, within one week after being notified by the Employer's Agent, submit a revised programme.

If the programme is to be revised by reason of the Contractor falling behind his programme, he shall produce a revised programme showing the modifications to the original programme that are necessary to ensure completion of the Works or any part thereof within the time for completion. Any proposal to increase the rate of work shall be accompanied by positive steps to increase production by providing more labour and plant on the Site, or by using the available labour and plant in a more efficient manner.

Failure on the part of the Contractor to submit or to work according to the programme or revised programme shall be sufficient reason for the Employer to take steps as provided for in the GCC (2015).

The approval by the Employer's Agent of any programme shall have no contractual significance other than that the Employer's Agent would be satisfied if the work is carried out in accordance to such programme and that the Contractor undertakes to carry out the work in accordance with the programme. It shall not limit the right of the Employer's Agent to instruct the Contractor to vary the programme should circumstances make this necessary.

Where the Contractor's programme indicates completion beyond the official contract completion date, and the programme is accepted by the Employer's Agent, such acceptance shall in no way whatsoever indicate the Employer's

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| Employer: | | Contractor: | |
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Agent's acceptance of an extension to the contract period. Nor shall it be acceptable in terms of Clause 5.6.5 of the GCC (2015) as notification of an intention to claim. It shall, however, indicate that the Contractor has taken due cognizance of the completion date and of the consequent possible application of penalties.

PS 6.3 Planning

The Contractor shall ensure that he delivers goods and services timeously, to not unnecessarily delay other contractors, service providers and suppliers.

PS 6.4 Programming

It will be an explicit requirement of the contract that this programme is updated monthly and submitted to the Employer's Agent at least two working days prior to the monthly site progress meeting. The programme shall at minimum contain:

PS 6.4.1 Time Scale Minimum

1. Days, where the period does not exceed three months.
2. Weeks, where the project period exceeds three months.
3. Months, where the period does not exceed one year.
4. Years, where the project period exceeds one year.

PS 6.4.2 Tasks

Where phases or stages are anticipated, this shall be the highest level of division and all tasks related to the successful accomplishment of that phase of the area shall be grouped. Resources allocation and task dependency shall be indicated.

PS 6.4.3 Start and Finish Dates

All tasks shall have specific start and finish dates.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PS 6.4.4 Critical Path

All tasks forming the programme line that will establish any delays in the overall Contract Period shall be clearly indicated and an indication of their sensitivity characteristics shall be provided.

PS 6.4.5 Progress Tracking

The Contractor shall be required to periodically indicate progress per task graphically and on a percentage basis.

PS 6.4.6 Non-working Time

South African public holidays, weekends and the local traditional annual builder's break shall be incorporated in the programme.

PS 6.4.7 Sequence of the works

The Contractor shall supply his proposed sequence of work together with the initial programme & the sequence of works to be executed shall be agreed between the Employer's Agent and the Contractor.

PS 6.4.8 Software Application for Programming

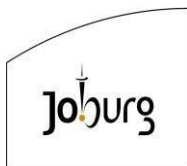
The construction programme shall be completed in Microsoft Office Project Professional 2010 or compatible software. It shall show the activities planned start dates, planned end dates and planned durations. The construction programme and updated versions thereof shall be made electronically available to the Employer's Agent.

The programme shall be costed in accordance with the Bill of Quantities and resourced accordingly.

PS 6.5 Methods and Procedures

The methods and procedures for the execution of the works shall be in accordance with the standard specifications and the variations and additions thereto.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



The Contractor will advise in his tender the methods and procedures that he proposes in performing the Works. These methods and procedures shall not be deemed as terms of the Contract. The Contractor is also allowed to change his methods and procedures as he sees fit subject to the change being approved by the Employer's Agent. Methods and procedures will not vary the specification and cannot be used to provide qualifications to the proposed agreement. The intention of the method statement is to provide the Employer's Agent and the Employer with information as how he proposes to perform the said works.

PS 6.6 Quality Plans and Control

In addition to guidelines set out in GCC 2015 Clause 7, the Contractor will furnish the Employer's Agent with a Quality Assurance and Control Plan that incorporates all of the requirements of this specification within three weeks of the Letter of Award of the contract. The onus to produce work that conforms in quality and accuracy of detail to the requirements of the specifications and drawings rests with the Contractor, and the Contractor shall, at his own expense, institute a quality-control system and provide experienced personnel, together with all transport, instruments and equipment to ensure adequate supervision and positive control of the works at all times.

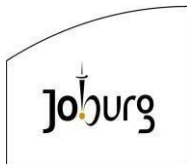
All material, plant and equipment shall be of the best quality available and shall, where applicable, comply with the relevant standard specifications of the SANS. In cases where no specification of the SANS exists, the relevant British, German or American specifications will be applicable as determined by the Employer's Agent. The latest amendments of these specifications shall apply.

The Contractor shall submit for the approval of the Employer's Agent and before any orders are placed, the names of the firms from which he proposed to obtain his supplies of materials and manufactured articles.

He shall also supply samples as and when required by the Employer's Agent.

The Employer's Agent may also, in exercising the powers vested in him, order the Contractor to remove all or any of the material and equipment which, in his

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| Employer: | | Contractor: | |
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opinion, is of an inferior quality and to replace them with proper materials or equipment at his own expense.

The cost of supervision and process control will be deemed to be included in the rates tendered for the related items of work.

On completion and submission of every part of the Works to the Employer's Agent for examination, the Contractor shall furnish the Employer's Agent with proof of quality in the form of a data pack containing measurements and levels to indicate compliance with the scope of work.

Notwithstanding anything contained in this document, nor any examination of the Works by the Employer's Agent, nor any tests carried out, nor any approvals granted (verbally or in writing), nor any consent that may have been given, either directly or implied, nor anything that may be construed to the contrary, the Contractor shall remain fully and solely accountable for correctly setting out, founding and constructing the Works, and for compliance with the specifications and the drawings.

PS 6.7 Accommodation of Traffic on Public Roads Occupied by the Contractor

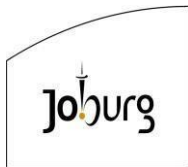
The Contractor is responsible for pricing traffic accommodation in his tender if applicable. The Contractor, in understanding his site operations, may require traffic accommodation and therefore will have to comply with prevailing local and /or national guidelines in this regard. The Contractor shall make applications to the relevant authorities for such permissions. The timing and contractual risk of such applications shall be for the Contractors account. The Employer's Agent, without prejudice, may assist in this regard.

PS 6.8 Other Contractors on Site

During the course of the contract, other contractors may be involved in construction projects within and in the vicinity of the site, which may be inter-related to the work being undertaken on this contract.

The Contractor shall cooperate with other such contractors and shall provide them with all reasonable access to enable them to carry out their work. Access

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| Employer: | | Contractor: | |
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may be required, from time to time, by these contractors and the Contractor shall take all reasonable steps to accommodate such requirements.

No claims, related to works being carried out by other contractors, will be entertained by the Employer.

PS 6.9 Testing, Completion, Commissioning and Correction of Defects

PS 6.9.1 General

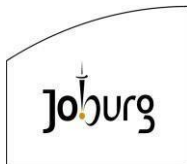
The onus is on the Contractor to produce work that will conform in quality and in accuracy of detail to the requirements hereinafter specified. The Contractor shall clearly understand that it is not a duty of the Employer's Agent or his representative to act as foreman or surveyor on the Works.

The Contractor shall, at his own expense, provide an experienced Site Agent, foremen and surveyors together with all transport, instruments and equipment for supervising, checking and controlling the work.

The act of passing any completed work for payment by the Employer's Agent shall not be construed as signifying approval or acceptance thereof. Failure on the part of the Employer's Agent to reject any defective work or material shall not in any way relieve the Contractor of his obligations under the Contract, nor prevent later rejection when such work or material is discovered. In this regard, it is emphasised that notwithstanding anything contained in this document, any tests that may have been carried out, any consent that may have been given, either directly or implied, and anything that may be construed to the contrary, the Contractor shall remain fully and solely accountable for the Works and for compliance with the specifications and the drawings.

The Contractor shall, when submitting any work to the Employer's Agent for examination, satisfy himself by testing, measurement and otherwise as may be necessary that the work does in fact meet the requirements of the Specifications. This information shall be submitted with the Contractor's request for examination and the Employer's Agent shall decide on the number and type of tests, measurements, etc. required to enable him to judge the quality of the work. The submission of this information shall in no way diminish

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



the authority of the Employer's Agent to conduct such tests as he may consider necessary in order to determine the quality of the work performed by the Contractor, nor will he be bound to take account of the Contractor's tests, measurements, etc. should he consider these to be either incorrect or not representative.

Quality control and completion tests shall be in accordance with the relevant standard and amended specifications and additional specifications.

The tendered rates shall include the cost of all control testing, and no additional claims shall be entertained in this respect. This includes the supply of all necessary equipment required for these tests and/or inspections by the Employer's Agent.

Should the control testing performed or arranged by the Contractor not meet the requirements of the specification, the Employer's Agent shall have the right to conduct all such testing at the Contractor's expense.

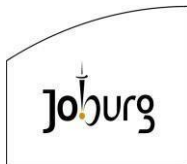
In such a case, the Employer's Agent shall be given at least 72 hours' notice when testing is required. No claims, however, shall be considered in respect of delays resulting from such testing.

Whenever the Employer's Agent conducts control testing on behalf of the Contractor, charges shall be levied. The Employer's Agent may, from time to time, carry out his own check tests on the work performed by the Contractor. Should such check tests show the Contractor's control testing to be such that the quality of the Contractor's work can be called into question, then the Employer's Agent may order further check tests to be carried out on work already completed by the Contractor.

All costs associated with such check tests shall be for the Contractor's account as shall the costs of any other check test whose results do not comply with the specification.

Where the Employer's Agent is required to witness certain control tests, such as the pressure testing of pipelines, and the results of such tests do not comply

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



with the specifications, then charges will be levied against payments to the Contractor in order to recover the costs of the Employer's Agent's presence at the test.

The requirements of the Local Authority, insofar as their witnessing of tests, shall be adhered to.

PS 6.9.2 Performance Tests

General

The Contractor shall carry out all tests required to satisfy the Employer's Agent that the plant is capable of performing the duties prescribed in the Specification, and shall allow for this in his Tender. Any defects detected during the testing operation shall be made good by and at the expense of the Contractor, including all additional costs incurred by the Employer and his representatives and the Employer's Agent. These tests shall be carried out to certify that the plant, as installed on Site is operating in accordance with the specified and guaranteed hydraulic, mechanical and electrical performance of the equipment and must be witnessed by the Employer's Agent. Three copies of reports on all tests shall be submitted within one week after the tests have been carried out.

The Employer's Agent will be entitled to be present at such test and the Contractor shall give the Employer's Agent reasonable notice of the dates of the test.

PS 6.9.3 Factory Tests

The Contractor shall carry out tests in accordance with the requirements of the recognised SANS, IEC or BS standards. Comprehensive details of the standards used and to which equipment the tests will be applicable shall be supplied. Such additional tests in the manufacturer's "Works", which in the opinion of the Employer's Agent are necessary to determine that the Contract work complies with the requirements of the Specification, whether under test conditions or in normal service, may be called for at no additional cost to the Employer.

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PS 6.9.4 Tests on Site

All Site tests shall normally be carried out in the presence of, but always to the satisfaction of the Employer's Agent and at such times as he may reasonably require. The Contractor shall provide all the relevant test equipment and bear the costs of all testing to be done. All equipment must be tested to ascertain whether it performs its intended duties in a manner as specified.

PS 6.9.5 Accepted Laboratories

Unless otherwise stated in a specification that forms part of this Contract, only the testing laboratories of the South African Bureau of Standards, the Council of Scientific and Industrial Research, the relevant Government Departments and Local Authorities will be accepted as approved laboratories in which tests or design work required in terms of a specification may be carried out.

PS 6.9.6 Methods of Testing

Unless otherwise prescribed in a specification that forms part of this Contract, all testing shall be carried out and interpreted in strict accordance with the methods specified in relevant SANS, IE or BS Specification(s).

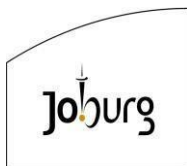
PS 6.9.7 Inspection of Works by Local Authority

The Contractor shall afford inspectors from the Local Authority reasonable access to all parts of the site. The Employer's Agent in the presence of representatives of the Local Authority will generally undertake testing of the works. Accordingly, the Contractor shall notify the Employer's Agent at least 24 hours in advance as to when the various sections of work will be available for testing. The Employer's Agent may require the Contractor to submit a weekly schedule of times, based on his programme, that he envisages work to be available for testing.

PS 6.9.8 Commissioning of Equipment

Before starting up any section of the mechanical plant or filling tanks and sumps with liquid, the Contractor shall clean out the tanks or structures or, if necessary, arrange with the Main Contractor to remove any building rubble from the structures, check that all nuts are tightened correctly, that all

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| Employer: | | Contractor: | |
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equipment is complete and ready for start-up, that the plant has been installed correctly and that three copies of the operating manuals have been handed over.

PS 6.9.9 Servicing and Defects Liability Period

Without limiting in any way, the obligations or responsibilities of the Contractor for maintenance, the Contractor shall make regular quarterly visits to the reservoir during the Defects Liability Period to supervise the maintenance of the equipment. During these visits, he shall make all adjustments and do everything necessary to ensure the proper running of the plant. After each supervising visit to the Site, the Contractor shall submit to the Employer's Agent a report on:

- a. The condition of the equipment and the servicing work carried out, and
- b. Any adjustments which may have been made.

The last servicing visit shall be carried out during the last week of the Defects Liability Period during which visit the Contractor's representative shall carry out full checks on the equipment to ensure that the alignment, clearances and any other setting are correct, and he shall carry out any adjustments necessary. The Defects Liability Period will not terminate until the Employer's Agent is satisfied that the Contractor has finally checked the adjusted equipment.

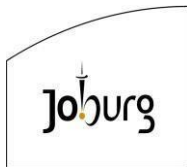
Servicing will be measured as scheduled by the number of visits.

The dates for the service visits shall be agreed with the Employer's Agent during the final inspection prior to issue of the certificate of completion.

PS 6.9.10 Operating and Maintenance Instructions

Before completion of the testing of the plant, the Contractor shall provide the Employer with adequate and complete working, operating and maintenance instructions in triplicate, with the necessary drawings and diagrams clarifying the instructions.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



The Contractor must compile and provide three copies of a complete operation manual for the equipment provided. This manual shall contain comprehensive information as set out hereafter.

- a. Drawings of the equipment detailing all part numbers and materials.
- b. A complete spare list.
- c. A lubrication and maintenance schedule showing all maintenance and lubrication operations, their recommended frequency and the grades of lubricant required.
- d. A maintenance brochure describing all maintenance, adjustment and replacement procedures.
- e. Operating manual describing the operation of the equipment with performance curves where applicable.
- f. A manual detailing all dismantling and reassembly procedures.
- g. Maintenance procedure for corrosion protection painting systems.
- h. Complete Data book of the equipment on completion of the Contract.

The Contractor shall amplify and amend such drafts until the Employer's Agent is satisfied that they will fulfil the purpose of ensuring that the Employer's staff is adequately instructed to operate and maintain the works. Once the drafts have been approved by the Employer's Agent, the Contractor shall prepare three suitably bound copies and deliver them to the Employer's Agent.

The manual must be specific for the plant supplied and all extraneous material not connected with the relevant plant shall be deleted, leaving the manual as a comprehensive coherent document, bound in a professional way such that it may be used frequently without falling apart. Standard pamphlets may be supplied as addenda, bound separately in a good quality file to serve as a reference but will not be allowed as part of the main manual. The Contractor

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| Employer: | | Contractor: | |
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shall allow in his tender price for the supply of these operating and maintenance instructions.

In addition to the above, the Contractor, and where necessary the suppliers of equipment, will be required to instruct the works personnel in the proper and correct operation of the equipment installed for a maximum period of 14 days. The timing of this training will be determined in consultation with the Employer and the Employer's Agent.

The manuals shall be drawn up in English.

PS 6.9.11 Completion, Commissioning and Correction of Defects

The tendered rates shall include the cost of all activities and tests that may be required in ensuring proper completion and commissioning of the Works, and no additional claims shall be entertained in this respect. This includes the supply of all necessary equipment required for such and / or for inspections by the Employer's Agent and any other relevant authority.

Any defect in the Works shall be corrected to the satisfaction of the Employer's Agent.

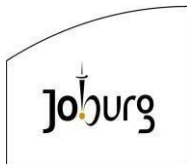
PS 6.10 Recording of Weather and Abnormal Rainfall

If during the time for completion of the works or any extension thereof, abnormal rainfall or wet conditions shall occur, then an extension of time in accordance with Clause 5.12 in GCC 2015 hereof shall be granted by the Employer calculated in accordance with the formula given below for each calendar month or part thereof.

$$V = (Nw Nn) + ((Rw Rn)/X)$$

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| V | Extension of time in calendar days in respect of the calendar month under consideration. |
| Nw | Actual number of days during the calendar month on which a rainfall of Y mm or more has been recorded. |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



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| Nn | Average number of days, as derived from existing rainfall records, on which a rainfall of Y mm or more has been recorded for the calendar month. |
| Rw | Actual rainfall in mm recorded for the calendar month under consideration. |
| Rn | Average rainfall in mm for the calendar month as derived from existing rainfall records. |

For purposes of the contract Nn, Rn, X and Y shall have those values assigned to them in the Contract Data and/or the Specification.

The total extension of time shall be the algebraic sum of all monthly totals for the period under consideration, but if the total is negative the time for completion shall not be reduced due to subnormal rainfall. Extensions of time for part of a month to be calculated using pro rata values of Nn and Rn.

This formula does not take account of flood damage that could cause further or concurrent delays and will be treated separately as far as extension of time is concerned.

The factor $(Nw - Nn)$ shall be considered to represent a fair allowance for variations from the average number of days during which rainfall exceeds Y mm. The factor $(Rw - Rn)/X$ shall be considered to represent a fair allowance for variations from the average in the number of days during which the rainfall did not exceed Y mm but wet conditions prevented or disrupted work.

The following average rainfall figures are applicable:

Information Source: South African Weather Service,
Pretoria, Tel.: 012 367 6014

Y = 10 mm/24-hour day

X = 20 mm

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| STATISTICAL INFORMATION: MIDRAND: LATEST | | |
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| Month | RAINFALL | |
| | N_n | R_n |
| | <i>Actual number of days during the calendar months in which a rainfall of more than Y mm has been received</i> | <i>Average monthly rainfall</i> |
| January | 2.4 | 140.7 |
| February | 1.3 | 69.4 |
| March | 0.9 | 45.4 |
| April | 0.2 | 32.6 |
| May | 0.3 | 15.9 |
| June | 0.0 | 6.0 |
| July | 0.0 | 0.8 |
| August | 0.0 | 3.2 |
| September | 0.1 | 5.4 |
| October | 1.3 | 48.9 |
| November | 1.2 | 63.7 |
| December | 1.9 | 107.1 |
| TOTAL | 9.5 | 539.1 |

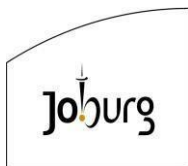
The Contractor shall be permitted to take his own rainfall measurements on site subject to the Employer's Agent's approval, but access to the measuring gauge(s) shall be under the Employer's Agent's control. The Contractor is to provide and install all the necessary equipment for accurately measuring the rainfall as well as to provide, erect and maintain a security fence plus gate, padlock and keys at each measuring station, all at his own cost.

PS 6.11 Format of Communications

All communication shall be in writing and any verbal agreements shall only be binding once confirmed and agreed to in writing. Communication by registered post, email or facsimile is acceptable.

The Contractor and the Employer shall follow the correct communication protocol applicable to a normal civil engineering contract. The Contractor shall

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| Employer: | | Contractor: | |
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not put into effect any instructions received by him, other than through such protocol.

Should the Contractor be unclear in this regard, he shall obtain a ruling from the Employer's Agent.

Contractor to provide the following reporting on a monthly basis, Local resources reporting shall include but not be limited to;

- a. Number (labourers, SMMEs and suppliers)
- b. Labour:
 - Process of recruitment, selection and appointment
 - Name and surname
 - Gender and age
 - Certified copies of ID not validated older than three months.
 - Proof of Compliance with COIDA Act, which will be valid for the duration of the Construction period.
 - Contact details (address, telephone numbers and ward number)
 - Contract signed
 - Duration of appointment
 - Commencement date
 - Termination date
 - Activity performed
 - Classification (Skilled, semi-skilled or unskilled (labourer))
 - Time or task rate
 - Allocated Supervisor/foreman
 - Health and Safety induction undergone
 - Training provided:

| | | | |
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Trainer details

Type of training

Duration of training

Cost of training

Attendance register

- Performance rating (good, fair, poor):

For training

Work execution

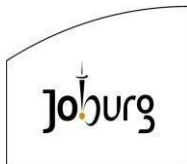
Health and safety awareness

- Additional training or supervision to be provided
- Proof of Monthly and cumulative payments, including salaries or wages
- UIF Returns
- Certified copy of the contractual agreement not validated older than three months.

c. SMMEs

- Process of recruitment, selection and appointment
- Company name
- Company contact details (address, telephone numbers and ward number)
- Company registration (also VAT and TAX)
- Company age (months or years)
- Type of company
- Company size (number of permanent employees)

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



- Name and surname of owner
- Owner contact details (address and telephone numbers and ward number)
- Gender, age and PDI status
- Contract signed
- Certified copies of ID
- Proof of Compliance with COID Act, which will be valid for the duration of the Construction period.
- Duration of appointment:

Commencement date

Termination date

- Resources provided (labour and/or plant and/or materials)
- Activity performed
- Classification
- Time or task rate
- Allocated Contractor Supervisor/foreman
- Health and Safety induction undergone
- Training provided:

Trainer details

Type of training

Duration of training

Cost of training

Attendance register

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



- Performance rating (good, fair, poor):

For training

Work execution

Health and safety awareness

- Additional training or supervision to be provided
- Proof of Monthly and cumulative payments , including salaries or wages
- UIF returns
- Certified copy of the contractual agreement not validated older than three months

d. Suppliers

- Process of recruitment, selection and appointment
- Company name
- Company contact details (address, telephone numbers and ward number)
- Company registration (also VAT and TAX)
- Company age (months or years)
- Type of company
- Company size (number of permanent employees)
- Name and surname of owner
- Owner contact details (address and telephone numbers and ward number)
- Gender, age and PDI status

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



- Contract signed
- Duration of appointment:
 - Commencement date
 - Termination date
- Resources provided (plant and/or materials)
- Activity performed
- Allocated liaison
- Health and Safety induction undergone
- Performance rating (good, fair, poor)
- Monthly and cumulative payments

The report format may be amended from time to time by the Employer's Agent. However, the initial format shall be finalised by the Employer's Agent in association with the Contractor.

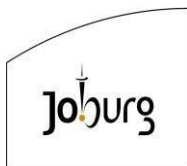
A Daily Site Diary shall be used by the Contractor for recording day by day the state of the weather, the work done each day and full details of any circumstance which may affect the progress of the works. One original sheet and two copies shall be used for each day. The original sheet of each set of 3 pages will be retained by the Employer's Agent or his representative. The Contractor may remove the second sheet, but the third sheet shall be retained on the site until completion of the Works, when it shall be handed over to the Employer's Agent.

PS 6.12 Key Personnel

The Contractor is deemed to have in making his offer, all personnel available to perform the works entirely in the contracted time and cost. In addition, he shall comply with the prevailing Act 85 of 1993, Occupational Health and Safety Act.

The Contractor is to provide the Curricula Vitae of key personnel to be employed on the project as well as the person's position and responsibilities

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



within the project team. The Contractor shall provide the following minimum key staff:

- a. Contracts Manager
- b. Site Agent
- c. Quality Manager/Auditor/Controller
- d. Health and Safety Officer/s; and
- e. Foremen
- f. SMME supervisor

PS 6.13 Management Meetings

The Employer's Agent shall hold regular site meetings with representatives of the Contractor, and the Employer. Minutes of such site meetings shall be kept and distributed by the Employer's Agent. Senior Contractor management staff attendance shall be compulsory.

The Contractor shall be required to provide reporting with regard to project progress, resources (human, plant and equipment), community issues, environmental and health and safety aspects.

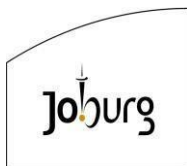
PS 6.14 Forms for Contract Administration

The Contractor shall maintain a file which shall contain project information related to project progress, resources (human, plant and equipment), community issues, environmental, health and safety aspects, penalties imposed, claims lodged and outcomes, disputes and resolutions, payment and variations.

PS 6.15 Daily Records

In addition to records on rainfall and weather, labour, plant, and materials, a site diary, site instruction book (both in triplicate) and safety documents are to be provided and maintained by the Contractor on site and updated daily.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



These shall be submitted to the Employer's Agent on completion of the contract.

PS 6.16 Bonds and Guarantees

The Contractor shall within the period stated in the Contract Specific Data, of this document, provide the Employer with a Surety Bond in the form of a Bank Guarantee, Bank Transfer or a Guarantee from an approved Insurance Company to the satisfaction of the Employer in the form included in the Tender Documents. The Bank Guarantee shall be for an amount equal to ten per cent (10%) of the Tender Sum, for the due and punctual fulfilment and completion of all the Contractor's obligations under the Contract. No Extension of Time or any variation of the Contract nor the termination of the Contract by the Employer in terms of GCC 2015 hereof shall in any way impair, diminish or terminate any liability to the Employer under and by virtue of such Surety Bond. The cost of the Surety Bond to be so entered into, shall be at the expense in all respects of the Contractor; the Surety Bond to be released upon issue of the Employer's Agent's Certificate of Completion of the Works, unless otherwise stated in the Contract Data.

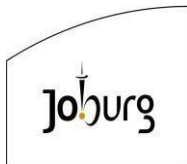
Should the Contractor, when notified of the acceptance of his offer, fail to provide an approved Surety Bond within the stated period, then the Employer may, at his sole discretion:

- a. Grant the Contractor a further reasonable period in which to provide the bond; or
- b. Withdraw his acceptance of the tender, in which case the Contract shall be deemed to be void, but without prejudice to the Employer's rights to recover whatever damages he may have suffered by virtue of the Contractor's failure to fulfil his obligations.

PS 6.17 Payment Certificates

Monthly payment certificates shall be submitted by the Contractor in the format approved by the Employer's Agent. Once agreement has been reached with the Employer's Agent on the value of the certificate, the Contractor shall submit

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



an original invoice on which payment will be made. The format will be discussed in the month preceding the first claim and will be resolved before the first payment is made.

Payment for particular items scheduled shall conform to the applicable payment clauses of the Pricing Data, Project Specifications and the Particular Specifications.

Where retention money is applicable to a Contract, the retention money shall be deducted on the invoice from the total amount for work done and then the Value Added Tax (VAT) added to calculate the total amount payable on the invoice.

If penalties are payable, they will be deducted prior to the addition of (VAT) but after the calculation of retention.

Tax invoices shall be submitted for each interim payment claim. The Contractor shall submit a provisional invoice with his payment claim as soon as possible after the date of measurement.

The tendered rates or sums shall cover the cost of drawings and instructions for anything not specially mentioned but obviously required, (e.g. all ancillaries, including all bolts, fastenings and brackets, safety guards and any work or material required for the proper installation of such equipment in complete working order), to enable the equipment as described to be installed and/or function safely and correctly as specified.

If any material on site is claimed, proof of ownership shall be provided, either by means of receipts, or by means of letters from the suppliers, stating that ownership has been transferred to the Contractor.

No claims whatever for extras will be allowed on the grounds that a necessary piece of equipment or a part thereof is not specifically mentioned in the Schedule of Quantities.

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| Employer: | | Contractor: | |
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Payment for "supply and delivery", "install and commission", "servicing" and "tools and spares" is respectively defined in PS 3.2, PS 5.9.3, and PS 5.9.4.

Before becoming entitled to any of the above payments, the Contractor shall lodge with the Employer's Agent three copies of a detailed invoice showing the amount claimed as well as a claim form in triplicate complete by item as scheduled in a format approved by the Employer's Agent.

Payment Certificates shall be delivered to the Employer's Agent by the 15th of each month.

PS 6.18 Foreign Exchange Risk

The provision of forward cover against foreign exchange fluctuations on the imported content of all equipment required under the contract might be required. In his Tender, the Tenderer must state the value of the imported content of each item and the applicable currencies and the exchange rates on which his tender was based.

The successful Tenderer might be required to take out forward cover on all foreign exchange transactions required in his tender for this contract, the rate applied shall be that ruling at the date of commencement of the Contract that is stated in the Letter of Acceptance.

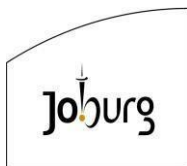
Amounts tendered will be adjusted for foreign exchange variations up to the date of commencement of the Contract; any fluctuations after this date will be for the Contractor's account.

PS 7 FEATURES REQUIRING SPECIAL ATTENTION

PS 7.1 General Conditions of Contract (GCC)

The Contract Document is compiled in accordance with the General Conditions of Contract for Construction Works, Third Edition (2015) and Tenderers are therefore required to price the Tender accordingly.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PS 7.2 Security

The Contractor shall be responsible to provide his own security on site, as he deems necessary. The Employer shall not be held responsible for any loss or damage suffered by the Contractor, his plant, equipment, materials, Sub-Contractor or employees as a result of a security incident of any nature.

PS 7.3 Operation of Valves

Only employees of Johannesburg Water SOC. are permitted to operate existing water valves.

Requests for isolation of any section of such reticulation shall be made to the relevant section of the local authority at least 4 working days in advance of the requirement for isolation. The Employer's Agent shall be advised of the requirement and will monitor the implementation of the request.

PS 7.4 Work Outside Normal Working Hours

The Contractor is permitted to work outside of normal working hours (07:00 to 17:00) only upon obtaining written permission from the Employer's Agent.

Should the Contractor choose to work outside normal working hours without having been ordered to do so by the Employer's Agent, permission will not be unreasonably denied but all additional costs arising out of such work shall be entirely to the Contractor's account.

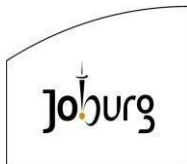
PS 7.5 Contract Award

The Contract shall be awarded to one main Contractor. It is an explicit requirement of this Contract that the work of the various disciplines be executed by competent staff and/or Sub-contractors. The Contractor will be responsible for the coordination of his own work and that of any sub-contractors.

PS 7.6 Additional Meetings

The cost of all additional meetings or inspections over and above the normal that takes place because of the Contractor not keeping to his program or because of the quality of his work will be for the account of the Contractor and

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



will be deducted from the following payment certificate. An amount of R 5 00.00 per meeting will be paid by the Contractor to compensate for the travelling cost, time, etc. of both the Employer's Agent and the Employer.

PS 7.7 Community Liaison and Community Relations

For the purpose of this project, a community liaison officers will be required to inform the community regarding the Contractor's activities on this project.

PS 7.8 Sanitary Facilities

The Contractor shall provide his own sanitary facilities. See Clause 5.19 of the Occupational Health and Safety Specification forming part of Volume 2.

PS 7.9 Control of Pipe Manufacturing

The Contractor shall inform the Employer's Agent and the inspection authority timeously of his program and place of manufacturing so that the necessary inspections can be arranged for. Copies of all test records must be delivered to the Employer's Agent before a Certificate of Completion will be issued.

PS 7.10 Waterproofing

Where any work pierces waterproofing, installation shall be as approved. Supply all necessary sleeves, caulking and flashing required to make openings absolutely watertight. The cost of complying with these requirements shall be deemed to be included in the unit rates tendered for the items affecting the waterproofing.

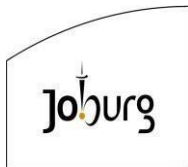
PS 7.11 Local Labour

The Contractor's attention is drawn to Clause 1.4(d) of the Environmental Management Plan (Volume 2) regarding the preferential employment from local communities of labourers and where available skilled artisans.

The Contractor's shall pay Local Labour rates in accordance with the following:

GOVERNMENT GAZETTE, 17 December 2021, No. 45645. DEPARTMENT OF EMPLOYMENT AND LABOUR NO. R. 1605, LABOUR RELATIONS ACT,

| | | | |
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



1995, BARGAINING COUNCIL FOR THE CIVIL ENGINEERING INDUSTRY (BCCEI): RENEWAL OF PERIOD OF OPERATION OF THE WAGE AND TASK GRADE COLLECTIVE AGREEMENT.

and any subsequent update to the BCCEI Collective Bargaining Agreement, that may be gazetted by the Department of Employment and Labour or the BCCEI during the execution of this Contract.

It is expressly noted that the rates contained in the aforementioned Gazette or Collective Bargaining Agreement will apply to the Contractor or subcontractor(s) irrespective of whether the Contractor or subcontractor(s) is a member of the employer's organisations listed in the Gazette, or not.

It is equally noted that the rates contained in the aforementioned Gazette or Collective Bargaining Agreement will apply to all employees employed for the purposes of executing the Contract (and specifically those defined as local labour) irrespective of whether those employees are members of the trade unions listed in the gazette, or not.

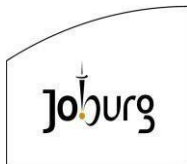
PS 8

HEALTH AND SAFETY SPECIFICATION FOR CONSTRUCTION WORK

Contractors are to prepare Health and Safety Plans in accordance with Johannesburg Water's Health and Safety Specification (refer to Volume 4: Occupational Health and Safety Specification and Environmental Management Plan for Capital Investment Projects). The legal imperatives for this requirement stem from the Construction Regulations (2014), and more specifically the following:

Regulation 4(1)(a): An Employer shall prepare a documented health and safety specification for the construction work, and provide any principal Contractor who is making a bid or appointed to perform construction work for the Employer with the same.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Regulation 4(1)(d): An Employer shall take reasonable steps to ensure that each principal contractor's health and safety plan is implemented and maintained on the construction site.

Regulation 4(2): An Employer shall discuss and negotiate with the principal Contractor the contents of the health and safety plan and thereafter finally approve the health and safety plan for implementation.

Regulation 5(1): A principal Contractor shall provide and demonstrate to the Employer a suitable and sufficiently documented health and safety plan, based on the Employer's documented health and safety specification.

Regulation 5(1)(a): A client shall prepare a baseline risk assessment for an intended construction work project.

Regulation 5(1)(b): A client shall prepare a suitable, sufficiently documented and coherent site-specific health and safety specification for the intended construction work based on the baseline risk assessment contemplated in regulation 5(1)(a).

Regulation 5(1)(l): A client shall discuss and negotiate with the principle contractor the contents of the principle contractor's health and safety plan contemplated in regulation 7(1), and must thereafter finally approve that plan for implementation.

Regulation 5(1)(n): A client shall take reasonable steps to ensure that each contractor's health and safety plan contemplated in regulation 7(1)(a) is implemented and maintained.

Regulation 7(1)(a): A principal 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

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

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 and which must be reviewed and updated by the principal contractor as work progresses.

PS 8.1 Project-Related Occupational Health and Safety Risks

According to the Construction Regulations (2014), a Health and Safety Plan “means a documented plan which addresses hazards identified and includes safe work procedures to mitigate, reduce or control the hazards identified”. Apart from complying with the Health and Safety Specification (Volume 2), specific attention is drawn to the identification and assessment of risks. The tendering Contractors are required to consider inter alia the following risks (where applicable):

- Excavation and safeguarding of trenches
- Collapse of the excavation walls
- Workers or onlookers falling into the excavations
- Safeguarding of deep excavations
- Working in elevated positions
- Scaffolding
- Traffic control (heavy machinery)
- Plant and machinery operation
- Working around heavy machinery
- Existing services
- Offloading of material
- Electrical Distribution boards
- Electrical Installation

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

- Making of steel items
- Laying of pipes
- Placing concrete
- Machine operator
- Third party exposures
- Use of portable electrical tools
- Location of site camp
- Storage and handling of material
- Storage of hazardous material
- Fire prevention and protection
- Refuelling vehicles/plant
- Welding
- Handling of compressed gas cylinders

Safe work and emergency procedures need to be prepared to address the abovementioned risks.

PS 8.2 Guide to Risk Assessments

PS 8.2.1 Nine Steps to Effective Risk Assessments

- Step 1:** Identifying the current as well as emerging hazard, risks or exposures.
- Step 2:** Aim to identify major hazards, don't waste time on the minor and detail except if such hazard has the potential to repeat itself on a frequent basis.
- Step 3:** Involve as many people as possible in the ongoing risk assessment process especially those at risk.
- Step 4:** Gather all the information and analyse it.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

- Step 5:** Look at what actually could or has occurred including non-routine operations.
- Step 6:** Use a systematic approach to ensure all hazards are adequately addressed.
- Step 7:** Assess the risks identified or the risk has occurred by taking into account the effectiveness of current as well as controls under consideration.
- Step 8:** Ensure the process is practical, realistic, cost and business effective.
- Step 9:** Always record the assessment in writing including i.e. assumptions, date and why a particular decision has been made.

PS 8.2.2 How Serious Is It?

| Probability | | Consequences |
|-------------|------------------------|-------------------------------------|
| A | Common | 1 Fatality or permanent disability. |
| B | Has Happened | 2 Major injury. |
| C | Could Happen | 3 Average Lost Time Injury. |
| D | Not Likely | 4 Minor Injury. |
| E | Practically impossible | 5 Medical Treatment or less. |

| | | Probability | | | | |
|--------------------|---|------------------------------------|---|---|---|---|
| | | A | B | C | D | E |
| Consequence | 1 | 1 | 2 | 3 | 4 | 5 |
| | 2 | 2 | 3 | 4 | 5 | 6 |
| | 3 | 3 | 4 | 5 | 6 | 7 |
| | 4 | 4 | 5 | 6 | 7 | 8 |
| | 5 | 5 | 6 | 7 | 8 | 9 |
| Risk rating | | Action | | | | |
| 1 - 3 = | | Serious Immediate (within 1 week). | | | | |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

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| 4 - 5 = | High | Within 1 month. |
| 6 - 7 = | Moderate | > 4 weeks. |
| 8 - 9 = | Acceptable | No action but will consider from time to time. |

PS 9

ENVIRONMENTAL MANAGEMENT PLAN

Contractors are to adhere to the mitigation measures listed in the Environmental Management Plan (EMP) (refer to Volume 4: Occupational Health and Safety Specification and Environmental Management Plan for Capital Investment Projects). Environmental mitigation measures are actions needed to align a project implementation phase with environmental control principles, where potential impacts to the natural and social environment are prevented, minimised or remediated. Environmental safeguarding is governed by various sets of legislation, with the most noteworthy for this project constituting the National Environmental Management Act (No. 107 of 1998) and the National Water Act (No. 36 of 1998).

Cost incurred due to the above shall be included in the scheduled rates in the Pricing Data.

PS 10

HEALTH AND SAFETY AGENT AND ENVIRONMENTAL CONSULTANT

The contact details for the Health and Safety Agent and for the Environmental Consultant are:

| Health & Safety Agent | Environmental Consultant |
|---------------------------------|---------------------------------|
| Company: Johannesburg Water SOC | Company: Johannesburg Water SOC |
| Name: Mpho Mosia | Name: Joyce Ngobele |
| Contact details: 011 688 1476 | Contact details: 011 688 1443 |

PS 11

GENERAL SECTION PAYMENT LIMITATION

The gross sum of items 8.3 and 8.4, as per SANS 1200A, may not exceed 15% of the total contract amount excluding contingencies and VAT. If the amount tendered for these items exceeds the above, the tender will be altered to the reduced amount by reducing these specific items.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

PS 12 EMPLOYMENT OF LABOUR

PS 12.1 Interpretations

PS 12.1.1 Supporting documents

The Tendered Rules, Conditions of Contract, Standard, Supplementary and Specific Specifications and Construction Specifications and drawings shall inter alia be read in conjunction with this specification.

PS 12.2 Application

The provisions of this specification shall apply in respect of all workers and small, medium and micro enterprises other than the Contractor's key personnel, who are engaged on the execution of the works.

PS 12.3 Community Liaison Officer

The Project Steering Committee will identify a Community Liaison Officer (CLO) to act as a liaison between the Contractor and the community. The CLO will, amongst other things, ensure that the employment of local labour proceeds smoothly.

All decisions regarding identification and hiring of labour, relieving labour of their duties, local problems and any other matters of local importance related to the Contract, will be made in consultation with the CLO.

PS 12.4 Appointment, Office and Replacement of CLO

The CLO will be appointed for the duration of the construction phase of this Contract.

The CLO will occupy his own office in the Contractor's camp from where he will fulfil his duties to identify, screen and nominate labour from the community in accordance with the Contractor's requirements.

The CLO will communicate with the Contractor daily regarding labour requirements.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Should it become apparent that the appointed CLO fails to meet his duties, he may be relieved from his duties and replaced by a new CLO in consultation and approval with the Employer's Agent.

PS 12.5 Duties of the CLO

- They will be available on site daily between the hours of 07:30 and 18:30, and at other times as the need arises.
- They will consult with the Contractor and the Employer's Agent daily to determine the labour requirements regarding number and skills, to identify possible labour disputes, and to inform local labourers timeously when they will be relieved.
- They will be responsible for screening of candidates, informing them of their conditions of temporary employment and to ensuring their timeous availability.
- They will ensure that all workers who are involved in activities where productivity rates have been agreed, are fully informed regarding the expected level of productivity for the given tasks to be assigned as part of this Contract.
- They will attend disciplinary proceedings to ascertain that hearings are fair and reasonable.
- In consultation with the Contractor, They will determine the needs of the local labour for relevant technical training, and will be responsible for the identification of suitable trainees. They will also be required to attend some of the training sessions.
- They will keep a daily written record of his interviews and community liaison.
- They will attend the monthly Contractual site meetings to report about the local community labour involvement as well as any other relevant issues that need attention.

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| Employer: | | Contractor: | |
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- They will act as a liaison officer between the Contractors on site and the local community through the project committee.
- They will be involved in all SMME related matters (Contracts, terminations etc.)

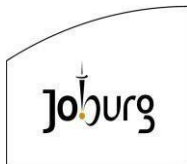
PS 12.6 Scheduled Item

PS.12.6.1a Community Liaison Officers

Unit: Provisional Sum

The tendered sum shall include full compensation for the provisions of the CLO including salary (market related), provision of an office, transport costs, the cost of typing, printing and distributing notices, and for all other obligations to perform their job.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PORTION 2: VARIATIONS & ADDITIONS TO THE STANDARDISED SPECIFICATIONS

SANS 1200A: CIVIL ENGINEERING CONSTRUCTION: PRELIMINARY AND GENERAL

This portion of the specification covers variations and additions to the SANS 1200 Standardised Specifications. The clause numbers hereunder consist of a prefix, such as "PSA" indicating an amendment to SANS 1200 A and a number that represents the number of the clause in SANS 1200.

PSA 3 MATERIALS

PSA 3.3 Materials Supplied by Others

Where materials are supplied by others, the Contractor shall take delivery of such materials on site and shall be responsible for the safekeeping of the same from the time of taking delivery to the time of building into the Works or the time of return to the supplier. The Contractor shall return to the supplier any materials not used on the Contract.

PSA 3.4 Name Boards

The numbers of name boards noted in the Bill of Quantities are to be provided under this contract.

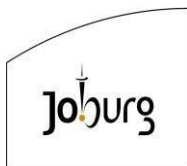
No other name boards other than stated above shall be allowed. The Contractor shall erect the name boards at locations indicated by the while establishing himself on Site, but not later than 14 days after the start of the Contract.

The name boards shall comply with the requirements as stipulated by the Employer's Agent.

On completion of the works, the Contractor shall obliterate all particulars on the name board and remove the board from the site, prior to the release of retention money.

PSA 3.5 Site Office

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Replace this Sub-Clause with the following:

PSA 3.5.1 Specification for Office & Meeting Room Furniture

In addition to the furniture supplied by the Employer, the following items shall be provided under this Contract:

- a. One (1) office desk each with a surface area of at least 1.5m² with lockable drawers with keys.
- b. One (1) drawing rack for A0 drawings. The hangers shall be of the “Barhold” type with ten hangers per drawing rack.
- c. One (1) drawing table with an inclined surface area of at least 3m² and a smooth top constructed to the dimensions as directed by the Employer’s Agent’s Representative.
- d. Two (2) sturdy and comfortable chairs fitted with padded seats and backrests.
- e. Venetian blinds or roller blinds, opaque type fitted to all the Employer’s Agent’s offices.
- f. One (1) large meeting table to accommodate approximately 15 people.
- g. Fifteen (15) plastic chairs with metal frames; and
- h. One (1) plastic rubbish bin.
- i. Laptop with the following minimum specifications: Core I5-1135G7 processor, 8 Gig DDR4 RAM, 500GB SSD hard drive, 19.5 inch external monitor, security cable, carry case, mouse and Windows 10 operating system, Microsoft Office Business Suite 2019 and 20 Gigs of Data.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



- j. Software – One (1) Microsoft Office Business Suite 2010 (Word, Excel, Outlook, Powerpoint), One (1) Autocad 2021, One (1) Civil 3d 2021, three (3) MS Project 2010 and Four (4) Voloview (drawing viewer).

PSA 3.5.2 Employer's Agent's Meeting Room and Employer's Office

The Contractor shall provide one prefabricated site meeting room and one office similar to the existing meeting room and offices of approved dimensions with at least 35m² in floor area for the meeting room and 18m² in floor area for the Employer's Office. The rooms shall be completed, furnished and ready for use not later than three weeks after the commencement date of the Contract.

The timber floor of the office shall be at least 300mm above the surrounding ground level. Doors shall be provided at each end of the meeting room and each shall be provided with a suitable 3 lever lock and two keys.

Windows shall be provided, with a minimum glazed area of 15% of the floor area. At least half of this area must be able to open and shall be fitted with burglar bars and all the windows shall be fitted with venetian or other approved blinds.

The meeting room will be equipped with furniture supplied under PSAB 3.2.1.

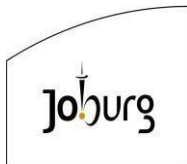
Two (2) air conditioning units shall be supplied with the meeting room with capacity for the air volume of the room as per PSAB 3.2.6 and one (1) air conditioning unit shall be supplied for the Employer's Office.

Adequate electric fluorescent lighting and four (4) 15-amp power points.

PSA 3.5.3 Car Ports

Carports shall be so constructed as to protect the vehicles parked under them at all times against rain, hail and sun. Shade netting will not be permitted for the carports. Preference is for corrugated iron sheeting for the roof and sides. The carports shall each be at least 15 m² in area and their floors shall consist

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



of a layer of broken stone or concrete to minimise dusty and muddy conditions. Seven car ports are required.

PSA 3.5.4 Areas Surrounding Offices

The access and other roads and parking areas surrounding the existing offices shall be treated and maintained to make them dust free either by using crushed stone or bituminous surfacing. They shall be well drained and kept trafficable and free from mud and weeds at all times. They shall also be maintained and kept clean and tidy at all times.

PSA 3.5.5 Air-conditioning Units and Heaters

The Contractor shall provide and install air-conditioning units and heaters as specified. The air-conditioning units shall be electrically operated compressor type with closed circuit, and not an evaporation type. The capacity of the air-conditioning units shall be at least 2,2 kW. The heaters shall preferably be of the space-heating type without exposed elements and shall have a capacity of not less than 1,5 kW.

PSA 3.5.6 Ablution units

Ablution facilities for the sole use of the Employer's Agent's staff and visitors must be provided.

PSA 3.6 Services

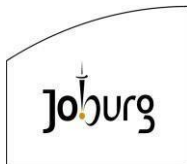
PSA 3.6.1 Sanitary arrangements

The Contractor shall be responsible for providing all sanitary services on the site.

The Contractor shall also make provision for the removal of all domestic rubbish on a regular basis.

PSA 3.6.2 Water and Electricity

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



The Contractor shall provide a constant supply of clean potable water suitable for human consumption.

The cost of all water & electricity required for the Employer's Agent's purposes shall be borne by the Contractor. All buildings supplied shall include the provision of 220 V electricity.

PSA 3.6.3 Maintenance

The Contractor shall provide all labour, equipment and material which may be necessary to keep all accommodation in a neat and clean condition, and repairs shall be done without undue delay.

PSA 3.7 General

- a. The Contractor shall not order any materials, equipment or fittings on the basis of their having been specified or scheduled without the written confirmation of the Employer's Agent having been obtained. No building shall be erected without the Employer's Agent's written instructions as to the exact position and orientation of the building.
- b. Unless otherwise agreed upon, the meeting room shall be erected in close proximity to the Employer's Agent's offices.
- c. The required facilities shall be completed, ready for occupation as specified, not later than three (3) weeks after the commencement date of the contract.
- d. The ownership of the meeting room and Employer's Office shall remain the property of the Employer at the end of the Contract.
- e. The ownership of the furniture in PSAB 3.2.1 and PSAB 3.2.3 shall remain the property of the Employer.
- f. The Contractor shall take all reasonable precautions to prevent unauthorised entry to the offices and to ensure the general security of the offices and meeting rooms.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



- g. No accommodation shall be erected without the prior approval of the Drawings by all local or Government authorities requiring such prior approval.

PSA 4

PLANT

PSA 4.2

Contractor's Offices, Stores and Services

Add the following:

The Contractor shall make the necessary arrangements with the relevant authority for the provision of services such as telephone and water for domestic and/or construction purposes.

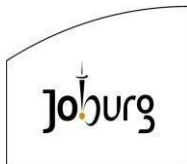
The electrical wiring of all buildings shall be carried out by registered and licensed electricians in accordance with the requirements of SANS 0142 and the regulations of the local authority.

The Contractor shall not be obliged to make use of local water and electricity services and shall be at liberty to obtain them from approved alternative sources.

Should the Contractor make use of local services, he shall make arrangements, where applicable, for connections to be made, complete with meters, from these services for use at the Site. All costs incurred in respect of these connections and the meters, pipes, cables, etc. from the connections to his facilities, the cost of the water consumed, the cost of the removal of sewage (not chemical toilets), and the cost for finally disconnecting and removing the services shall be paid by the Contractor, who shall include full compensation for such costs in his tendered rates for the various items of work requiring the use of one or more of the services. The Contractor shall furnish the Employer's Agent with documentary proof that proper notice has been given to the relevant authority for termination of the services.

The Contractor's camp shall be kept neat and clean at all times and all surplus or rejected material shall be removed from site immediately.

| | | | |
|------------------|--|--------------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



The Contractor under this Contract shall supply his own distribution board for distributing the power to his facilities. He shall be responsible for distribution of power and water supply to other mechanical and electrical Contractors on the Site. Payment for these services to other Contractors shall be arranged between the Contractor under this Contract and the other Contractors. The Employer will not be involved in any arrangements in this regard.

The Contractor shall deliver to the Employer's Agent a detailed drawing of the proposed layout of his offices, stores and services before erecting same.

Sufficient backup services shall be provided to ensure the uninterrupted execution of the Works such as storage tanks for water for use in the mixing of concrete, standby electrical power for work at night and for electrical plant and equipment used on Site.

PSA 4.3 Plant and Equipment

Add the following to this sub-clause:

The Contractor is required to provide all plant and materials necessary to carry out the works as required. No additional allowances other than those already specified in the Bill of Quantities shall be allowed for with respect to plant and materials.

Add the following to this sub-clause:

The Contractor is required to provide all equipment necessary to carry out the works as required. No additional allowances other than those already specified in the Bill of Quantities shall be allowed for with respect to equipment.

Construction equipment shall be suited for the onsite intended use and shall comply with all relevant safety aspects required by the OHS Act.

PSA 5 CONSTRUCTION

PSA 5.1 Survey

PSA 5.1.1 Setting Out of The Works

| | | | |
|------------------|--|--------------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Delete this sub-clause and replace with the following:

The Contractor shall set out the works and maintain their correct position, not only according to the Contract Documents but also according to any drawings or orders that he may receive from time to time from the Employer's Agent. The Contractor shall:

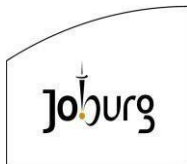
- a. be held responsible for the accuracy of the setting out for the full period of the Contract.
- b. use equipment and instruments that can ensure the necessary accuracy.
- c. be held responsible for the correction of any error at his own expense and
- d. update the plans, which are kept on site so that all the changes approved by the Employer's Agent are reflected on the drawings. These drawings will represent record drawings and must consequently reflect the Works as they are actually built. The cost for this shall be deemed to have been included in all works construction rates. The Contractor must check drawings periodically and after completion of the Contract they shall be handed over to the Employer's Agent.
- e. confirm the levels and coordinates of all benchmarks prior to commencing with construction.

Add the following to this sub-clause:

PSA 5.1.3 Alterations, Additions, Extensions and Modifications to Existing Works

The Contractor is required to verify the accuracy of all drawings and levels provided by the Employer's Agent prior to commencing with any construction activities.

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Where the Works require that alterations, additions, extensions and / or modifications be carried out to existing works or facilities, these shall be carried out strictly in accordance with the requirements of the relevant authorities.

PSA 5.2 Watching, Barricading, Lighting and Traffic Crossings

Replace the words "traffic crossings" in the heading and in text of this sub-clause with the words "accommodation of traffic"

Add the following:

PSA 5.2.1 General Accommodation of Traffic

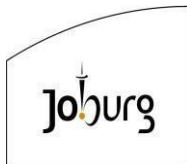
The Contractor shall be responsible for the safe and easy passage of vehicular and pedestrian traffic over, past or alongside the works.

PSA 5.2.2 Traffic control

Wherever the Contractor's activities on site affect or have the potential to affect the normal flow or safety of traffic during the construction, he shall be responsible for all aspects of traffic control, including flagmen, warning devices, signs, channelisation devices, layout of detours and by-passes, sign sequences and layouts, and all the requirements of the Chief Traffic Officer of the Local Authority.

Only warning devices, signs and channelisation devices included in the latest Road Traffic Ordinance of the province concerned (hereinafter referred to in this clause as the "Ordinance") shall be used. The standard patterns of the traffic control devices and signs, and the traffic-control procedures and methods prescribed in the Ordinance shall be applied. The dimensions and other properties of all signs and devices and the sign and device sequences, layouts and spacing shall be in accordance with the provisions of the Ordinance unless otherwise specified. In addition, signs and devices shall be placed at the positions shown on the Drawings. In cases not covered by the Ordinance, the signs, speed limits, devices, sequences, layouts and spacing shall comply

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



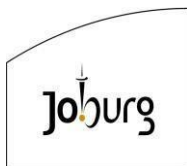
with the requirements of The South African Road Traffic Signs Manual, the Chief Traffic Officer of the relevant authority, and the Employer's Agent.

The Contractor shall ensure the safe accommodation of traffic at all areas where the Works may impact on traffic, and shall provide all drums, watching, lighting, signs and barricades required by the road authorities, and in accordance with the South African Road Traffic Signs Manual. In this regard, the following references have been extracted from the SARTSM Volume 2, Chapter 13:

| Item | Page No. |
|----------------------------------------|----------|
| General | 13.10.1 |
| Urban Roadworks | 13.10.1 |
| Temporary Traffic Signals | 13.10.2 |
| Sidewalk Deviation | 13.10.4 |
| Localised Work Site – Good Visibility | 13.10.6 |
| Lane Closed Beyond a Junction | 13.10.8 |
| Work within a Junction | 13.10.10 |
| Work in a One-way Street | 13.10.12 |
| Road Closure - CBD | 13.10.14 |
| Road Closure – Dual Carriageway Street | 13.10.16 |
| Road Closure - Detour | 13.10.18 |
| Freeway/Dual Carriageway: Lane Closure | 13.11.3 |

Where applicable, the Contractor shall be responsible for traffic-control at night and adequate warning lights and flashing lights shall be provided.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PSA 5.3 Protection of Structures

Add the following:

PSA 5.3.1 Inspection of Adjoining Properties

The Contractor shall carry out inspections and evidence collection, as he deems appropriate, of properties adjoining the works to ensure that, in the event of a claim arising from any of the owners of the adjoining properties for damage to property and the like, the Contractor has substantial evidence to support or refute such claims. The Contractor accepts full liability and responsibility for damage that he causes to adjoining properties as well as any costs involved in refuting or processing of such claims.

PSA 5.4 Protection of Overhead and Underground Services

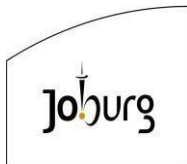
Add the following:

Timely written notice shall be given by the Contractor to the Employer's Agent and to the authority or department concerned of the Contractor's intention to work across or near any existing works or services and such work shall not commence until the necessary permission has been received. The Contractor will not be entitled to claim for any delay in the construction programme caused by compliance with the requirements of this clause. Work across or near any existing works or services shall be carried out in compliance with the requirements of the relevant authority or department.

Whilst every effort will be made to ensure that any information relating to underground services is correct, the Employer and Employer's Agent takes no responsibility for the accuracy, or for the completeness of the information. The Contractor will be held responsible for any damage to services and shall be liable for the cost of making good the damage. All such costs incurred by the Employer will be deducted from monies due to the Contractor.

Manhole covers; valve boxes, hydrants, etc. shall not be covered over and shall be accessible at all times.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



After an existing service has been passed in laying the service pipe, but before backfilling has been started, the Employer's Agent or relevant authority shall be informed in order that they may certify in writing that the service has not been damaged.

Add the following:

PSA 5.4.1 Permits and Way leaves

The Contractor will be required to obtain permits from all the applicable service providers within the jurisdiction of the City of Johannesburg. It is the Contractors responsibility to obtain final permit approval according to applicable procedures and specifications. Permits and associated costs shall be deemed to have been included in the schedule rates for Way leaves and Permits.

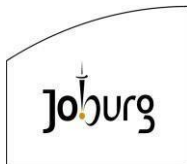
Add the following:

PSA 5.4.2 Responsibilities

The Contractor:

- a. Shall make provision for the possible existence of numerous services (e.g.: Stormwater, Water, Sewers, Eskom, City Power, Egoli Gas, Sasol Gas, Rand Water, Telkom, and the like) within and in close proximity to the work areas.
- b. Shall obtain way leaves indicating the location of existing services from all affected service providers prior to the commencement of construction. The Contractor is to comply with the conditions of the way leaves received from the various service providers.
- c. Shall ensure the protection and integrity of all existing services exposed and encountered through the course of construction activities. Adequacy in terms of protection of existing services shall be at the

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



discretion of the Employer's Agent. The Contractor is to make good the protection of and any breakages to existing services. The Contractor is to record on the As-Built drawings the location of existing services or services which have been relocated during the Contract Period.

- d. Shall inform the relevant service provider immediately (within 2 hours of the incident) such that procedures for the reinstatement of the service can be effected, should he damage or break an existing service (whether known or unknown).
- e. Is responsible to provide their own equipment in order to determine the location of existing services.

Add the following:

PSA 5.4.3 Locating Existing Services

Existing known services, both underground and overhead, are indicated on the drawings, but the positions of existing services on the drawings are not guaranteed nor does the Employer, nor the Employer's Agent, accept any liability in this regard. The Contractor shall liaise with all relevant local authorities to satisfy himself that all relevant services have been located.

At the commencement of the Contract, the Contractor shall hand excavate a distance 0.5 m on each side of the located service to expose it. The exposed service shall be identified and recorded on a drawing.

A copy of the drawing with all known services shall be submitted to the Employer's Agent before construction can commence in any road reserve.

Once the exposed service is identified and recorded the excavation shall immediately be backfilled. Re-excavation by hand at construction stage will not be measured in addition to normal trench excavation.

The Contractor shall retain full responsibility for establishing the exact positions of the various services in advance of any construction work. No allowance for

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



delays or disruption shall be entertained unless the Contractor complies fully with the provisions of this clause regarding the establishment of the exact positions of the various services in advance of any construction work

PSA 5.5 Dealing with Water

Add the following paragraph:

"The Contractor shall be deemed to have acquainted himself during tender stage with the groundwater and surface water conditions."

PSA 5.6 Pollution

Add the following:

Precaution against Pollution and Nuisance

The Contractor's attention is drawn to the fact that operations will be conducted in urban areas and in the presence of passing traffic. The Contractor shall take all necessary steps and precautions to prevent pollution of the surrounding area by his employees in any way.

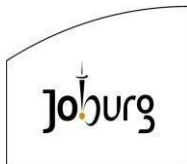
Wherever excavated and/or loaded material is liable to form a dust nuisance, an effective method of spraying water over the cut area and loaded material shall be installed. Tarpaulins shall be provided to cover trucks and prevent dust blowing from loads during transport.

Any material or debris falling from trucks on the roads in use by the public shall be immediately removed. Precautions shall be taken to prevent fouling of public roads or completed construction by trucks transporting muddy material. The Employer's Agent may order the Contractor to continuously broom off and clean where the mud tracking of vehicle or falling debris may constitute a danger to the public making use of roads.

PSA 5.7 SAFETY

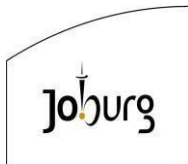
Add the following:

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



1. The Contractor shall at all times observe adequate safety precautions on Site to ensure the safety of his own staff as well as that of the public and other persons engaged in or about the Works. In this respect he shall observe all laws, ordinances and regulations pertaining to his work.
2. The Contractor's attention is specifically drawn to the following Acts, and particularly to the relevant regulations under each Act, copies of which shall at all times be kept by him on the Site:
 - The Factories, Machinery and Building Work Act (Act 22 of 1941)
 - The Explosives Act (Act 26 of 1956)
 - The Mines and Works Act (Act 27 of 1956)
 - The Occupational Health and Safety Act (Act 85 of 1993)
3. The Contractor is also required to comply with the safety precautions set out in the following publications, copies of which shall also be kept by him on the Site:
 - The Code of Practice relating to the safety of men working in civil Engineering inspection pits and small diameter vertical shafts. (Transactions of the South African Institution of Civil Engineers, Vol. 2, No. 11, November 1960, obtainable from the Secretary, S.A. Institution of Civil Engineers, Private Bag X200, Halfway House, 1685).
 - The Operator's Handbook on Sewage Purification (1965) Chapter 26. Safety Precautions published by the Institute of Water Pollution Control (Southern African Branch).
4. The Contractor shall provide suitable and safe access by way of ladders, gangways, etc. to all parts of the Works as may be required for construction purposes or for inspection by the Employer's Agent or the authorised Inspectors in terms of the above-mentioned Acts.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



5. All precautions shall be taken to protect workmen against falling material and/or objects and other dangers whilst they are carrying out their duties. Shaft and trenches shall in every way be made and kept safe for persons working therein.
6. All persons working, inspecting or supervising in places where falling material and/or objects could be encountered shall be provided by the Contractor with hard hats of a type approved by the Inspector of Mines, the use of which shall be strictly enforced.
7. The Contractor shall provide a properly equipped first aid box, which shall be accessible at all times.
8. Where adequate safety precautions are not being observed, the Employer's Agent may order the Contractor to comply with minimum safety requirements at the latter's expense. Compliance with such order will not absolve the Contractor from any of his responsibilities and obligations under the Contract.
9. The Contractor shall display on a prominent place the following emergency information:
 - **Local Police:** Telephone number
 - **Local Ambulance:** Telephone number
 - **Local Fire Brigade:** Telephone number
 - **Nearest Doctor:** Name
Telephone number (office hours)
Telephone number (after hours)
Consulting room street address

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PSA 8 MEASUREMENT AND PAYMENT

PSA 8.1.2.3 Contractor to Price all Items

Add the following paragraph;

"The grouping of payment items under one all-inclusive rate is prohibited. Each payment item shall have its own rate. Where the Contractor elects not to insert a rate for any particular item, then it shall be deemed to be zero".

PSA 8.2 Payment

PSA 8.2.2 Time-related Items

In the event that the net total extension of time granted in terms of the Contract and/or delay in the anticipated date of award of the Contract results in the official date for completion extending into or past a Christmas Builders Holiday period which did not fall within the tendered period for completion based on the anticipated date of award, and extension of time equivalent to the number of normal working days falling within that holiday period shall reduce to 25% of that applicable in terms of the above. It should be noted that time-related charges for the Christmas Builders Holiday period falling within the tendered period for completions based on the anticipated date of award of the Contract will be paid for at the full rate since such holidays are to be included in the tendered period for completion.

The anticipated date of award referred to above shall be the date stated in the Contract Documents. If the date is not stated it shall be considered to be any date within the period of validity of the Tender.

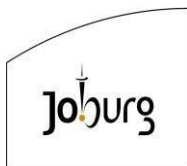
Delete the last four lines of this sub-clause, i.e. the paragraph commencing with the word "Note..."

PSA 8.3 Scheduled Fixed-Charged and Value-Related Items

PSA 8.3.1 Contractual Requirements

Add the following to this clause:

| | | | |
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



As indicated in the Contract Data (Clause 8.6.13), any claims against the insurance effected by the Employer shall be subject to the Contractor being responsible for the payment of the amount stated in the Policy as being the Deductible (First Amount Payable) as defined in the Policy.

PSA 8.3.2.1 Facilities for Employer's Agent

Add the following to this sub-clause:

- | | | |
|----|---------------------------------------------------------|------------------|
| d) | Latrine facilities | Unit: Sum |
| e) | Board room to accommodate 15 personnel | Unit: Sum |
| f) | Carports (5 of) | Unit: No |
| h) | Construction & setting out of survey beacons (3 No. of) | Unit: Sum |
| i) | Furniture for offices & meeting room | Unit: Sum |
| j) | Laptop, Data & Software | Unit: Sum |

PSA 8.3.2.2 Facilities for the Contractor

(f) Tools and Equipment

Add the following new sub-clause:

"The sum shall cover the cost of supplying all hand tools and equipment, as necessary for proper execution of the works.

Unit: Sum

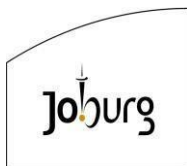
Add the following new sub-clause:

(k) Security of works

"The sum shall cover the cost of supplying 24hr security at the Contractors camp as well as all other areas of the Works for the duration of the Contract.

The cost should also include all other security requirements, as deemed

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



necessary by the Contractor. Refer to clause PS7.2 .

Unit: Sum

Add the following new sub-clause:

(l) Personal Protection Equipment

“The sum shall cover the cost of supplying all personal protective equipment, as deemed necessary by the Contractor and in accordance with the Health & Safety Plan.

Unit: Sum

PSA 8.4 Scheduled Time Related Items

PSA 8.4.2.1 Facilities for Employer’s Agent

Add the following to this sub-clause:

- | | | |
|----|---------------------------------------------------------|------------------|
| e) | Latrine facilities for the sole of the Employer’s Agent | Unit: Sum |
| f) | Boardroom to accommodate 15 personnel | Unit: Sum |
| g) | Carports (5 No. of) | Unit: No |
| h) | Construction & setting out of survey beacons (3 No. of) | Unit: Sum |
| i) | Furniture for offices and meeting rooms | Unit: Sum |
| j) | Laptop, Data & Software | Unit: Sum |

PSA 8.4.2.2 Facilities for the Contractor

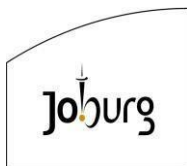
Add the following new sub-clause:

k) Security of Works

“The sum shall cover the cost of supplying all security works, as deemed necessary by the Contractor, refer to clause PS7.1

Unit: Sum

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



I) Water Tanker for Dust Suppression

The rate shall include for the full-time supply and operation of a water tanker, with assistant to keep all the roads and work areas dust free for the duration of the contract. The rate shall include for the filling of the tanker from a designated water source.

Unit: Sum

PSA 8.4.3 Supervision for the Duration of the Contract

Add the following to the Clause:

The sum stated shall include, at minimum, the cost of full time, on-site supervision in the form of a Site Agent and Contracts Manager; whose qualifications and level of experience meet the requirements stated in the Functionality Criteria (Volume 1, Part 1, Tender Procedures). Both resources will be expected to provide the full range of Project Management Services as they relate to the Works.

Unit: Sum

PSA 8.4.4 Compliance with Local Content Requirements

The sum stated shall include, at minimum, the cost of all items required to ensure compliance with local content obligations. These may include (but are not limited to), packaging of works, sourcing, evaluation and negotiations, appointments, contracts, liaison with Ward councillor, CLO and JW Stakeholder Relations, etc. Additionally, the sum stated should include any additional items that the Contractor may deem necessary.

Unit: Sum

PSA 8.5 Sums Stated Provisionally by Employer's Agent

(b) (3) Add the following sub-items:

- a) Provisional sum for control testing to be carried out as required by the Employer's Agent, including testing of structure **Unit: Prov Sum**

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



b) Additional tests ordered by Employer's Agent Unit: Prov Sum

The provisional sum shall cover the cost of control tests specifically ordered by the Employer's Agent. Tests shall be executed by an approved commercial laboratory.

c) Community Liaison Officer Unit: Prov Sum

The provisional sum shall cover the cost of advertising, interviewing and employing the CLO. Additionally, it should include the CLO's salary for the duration of the Contract.

d) Training of targeted labour and SMME's

The sum shall be in full compensation for the provision of training to targeted labour according to the specification of the Employer and approved by the Employer's Agent.

Unit: Prov Sum

e) Training of Interns

The sum shall be in full compensation for the provision of training of interns according to the specification of the Employer and approved by the Employer's Agent.

Unit: Prov Sum

f) Signage for Buildings

The sum shall cover the full cost of the supply and installation of signage onsite.

Unit: Prov Sum

g) GPR Survey

The sum shall cover the full cost of a GPR survey to identify all existing sub-surface services as directed by the Employer's Agent. The survey submission must include all drawings in DWG and PDF format.

Unit: Prov Sum

h) Protection of Existing Services

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



The sum shall cover the full cost of protecting the identified existing services which may be exposed during the duration of the Contract.

Unit: Prov Sum

i) Application for Environmental regulation

The sum shall cover the full cost for Environmental Regulation which may be required by the authorities during the duration of the Contract.

Unit: Prov Sum

j) Environmental Control Officer

The sum shall cover the full cost of an Environmental Control Officer during the duration of the Contract.

Unit: Prov Sum

k) Full time Environmental Liaison Officer

The sum shall cover the full cost of a Full time Environmental Liaison Officer during the duration of the Contract.

Unit: Prov Sum

l) Project Mentor

The sum shall cover the full cost of a Project Mentor during the duration of the Contract.

Unit: Prov Sum

m) Contractor's percentage to cover cost of handling cost and charges

PSA 8.7 Daywork

Replace this clause with the following:

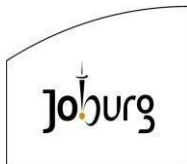
PSA 8.7.1 Expenditure on Daywork Items

Wages paid to workmen and invoices of cost of materials delivered on site.

Unit: Prov Sum

PSA 8.7.2 Supervision, Overheads and All Other Costs

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Extra over item PSA 8.7.1 for supervision, overheads and all other costs related to the Daywork items under item PSA 8.7.1 for the following:

- a) Skilled Labourers **Unit: Percentage of Prov Sum**
- b) Unskilled Labourers **Unit: Percentage of Prov Sum**
- c) Material **Unit: Percentage of Prov Sum**

PSA 8.7.3 Plant Hire Rates

Types and sizes indicated in the bill of quantities **Unit: hours**

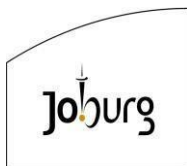
- a) Labour

The labour charges to be reimbursed under the Daywork item PSA 8.7.1 in the Schedule of Quantities shall be the actual amount of wages paid to workmen, chargehands and gangers, (but not foremen), employed on Daywork with the authorisation of the Employer's Agent. The labour charges will be paid only for the time that the workmen are actually employed on Daywork.

Leave pay, bonuses, subsistence allowances, employer's contributions to medical schemes and provident funds and the like shall not be included in the above-mentioned labour charges but will be deemed to be covered by the percentage rate tendered by the Contractor against the items PSA 8.7.2(a) and PSA 8.7.2(b) scheduled for this purpose under Daywork in the Schedule of Quantities.

This percentage rate shall also be deemed to allow for the use of small tools, supervision, insurances, overhead expenses, transport of workmen, housing and feeding (if the liability of the Contractor) profit and any other expenses in connection with workmen employed on Daywork and shall also include for everything else covered under the allowances as stated in Clause 6.5 of the GCC.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



b) Materials

The material charges to be reimbursed under the Daywork item PSA 8.7.1 scheduled in the Schedule of Quantities shall be the invoiced cost as approved by the Employer's Agent, less any discount granted by the Supplier. Only the actual quantities of materials used, as verified by the Employer's Agent, will be paid for.

The cost of transportation to site, storage, transportation to the point of use on site, insurance, superintendence and administrative costs, overhead expenses and profit shall be deemed to be covered by the percentage rate tendered by the Contractor against the item PSA 8.7.2(c) scheduled for this purpose under Daywork in the Schedule of Quantities. The percentage rate tendered shall also include for everything else covered under the allowances as stated in Clause 6.5 of the GCC.

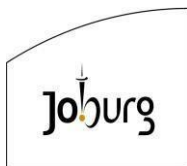
c) Plant Hire Rates

The rates tendered for the hire of plant shall be applicable only to plant that the Contractor has on the site and shall be total all inclusive unit prices which shall include, inter alia, for all fuel and lubricants; for the wages of operators, drivers or attendants; for all tools, accessories, equipment and everything else necessary; for all depreciation, maintenance and repair costs; for overhead expenses, profit and for everything in accordance with Clause 6.5 of the GCC.

The hire charges shall be paid only for the time that the plant is actually working on the Daywork as authorised by the Employer's Agent.

Payment will not be made in respect of established, fixed or static plant on the site such as static concrete batching and mixing plant, cocopan track, monorails, static generators, compressors, pumps, lighting, ventilation plant and the like which are covered under other items but which may be used for Daywork.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PSA 8.8 Temporary Work

PSA 8.8.2 Dealing with Traffic and Maintaining of Existing Roadways

Tendered rate to include provision for dealing with traffic on Walton Road and Whisken Avenue during construction. Contractor to include all necessary provisions (including method statements and traffic accommodation drawings) for road closure (from 9am-3pm)/traffic management during construction of the access road (including entrance). Traffic calming and management mechanisms to include the use of signage, barricades, flagmen etc, as deemed necessary by the Contractor.

Unit: Sum

PSA 8.8.4 Relocation of Services

Excavation for exposing existing services in the following depth ranges below ground level:

a. 0,0 m up to 2,0 m:

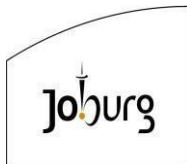
- | | |
|---------------------------|------------------------------------------|
| i. Soft material | Unit: cubic metre (m³) |
| ii. Intermediate material | Unit: cubic metre (m³) |
| iii. Hard material | Unit: cubic metre (m³) |

b. Exceeding 2,0 m up to 4,0 m:

- | | |
|---------------------------|------------------------------------------|
| i. Soft material | Unit: cubic metre (m³) |
| ii. Intermediate material | Unit: cubic metre (m³) |
| iii. Hard material | Unit: cubic metre (m³) |

c. Extra over sub-items (a) and (b) above for hand excavation by means of hand tools such as picks, crowbars and pneumatic tools in close

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



vicinity of services or where no blasting or machine excavation is allowed:

- | | | |
|------|-----------------------|------------------------------------------|
| i. | Soft material | Unit: cubic metre (m³) |
| ii. | Intermediate material | Unit: cubic metre (m³) |
| iii. | Hard material | Unit: cubic metre (m³) |

The unit of measurement shall be in cubic metre of the material removed as specified.

The rates shall include full compensation for all cost to excavate and break down the various classes of materials, including the cost of all the necessary additional effort, plant, tools, materials, labour and supervision.

PSA 8.9 Work Stoppage

The rate tendered shall cover all unforeseen work stoppages which may be attributed to community disruptions, COVID-19 related delays etc, and will be assessed at the discretion of the Employer's Agent. Rate to be based on the Contractors total Time Related Preliminary & General items. **Unit: Days**

PSA 8.10 Sub-Contractors (SMME's)

PSA 8.10.1 Main Contractor Overhead Charges and Profits

The Main Contractor shall retain liability and responsibility for the management, scheduling, and quality control of all works performed by approved sub-contractors (SMME's). This item will be calculated as a percentage of the sum of works allocated to SMME's and shall include the process to appoint a sub-contractor, as well as all costs and charges to manage all sub-contracted works. (Note: This amount must be at a minimum of 30% of the total contract

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



value).

Unit: Percentage of total amount of work done by SMME's (%)

PSA 8.10.2 Fixed Charge Items for SMME Contractual Requirements

This item will be calculated as a percentage of the approved amount towards Fixed Charged Preliminary and General Items allocated to SMME's as compensation for Overhead Charges and Profits for the Main Contractor.

Unit: Percentage of total amount of Fixed Charge Items for SMME's (%)

PSA 8.10.3 Time Related Items for SMME Contractual Requirements

This item will be calculated as a percentage of the approved amount towards Time Related Preliminary and General Items allocated to SMME's as compensation for Overhead Charges and Profits for the Main Contractor.

Unit: Percentage of total amount of Time Related Charges for SMME's (%)

PSA 8.10.4 Payments on behalf of Sub-Contractor by Main Contractor

Provisional Sum to cover costs incurred by the Contractor when making payments on behalf of the sub-contractor (ref Special Conditions) or to provide ad-hoc services on behalf of the sub-contractor.

Unit: Prov. Sum

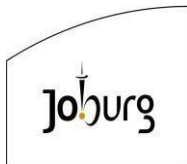
SANS 1200AB: EMPLOYER'S AGENT'S OFFICE

PSAB 1 SCOPE

Replace this Clause with the following:

This section covers the provision of accommodation for the Employer's Agent's resident staff. This accommodation shall include the necessary additional offices and furniture as well as the provision of all the services required. The

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Contractor will be required to supply a meeting room, an Employers office, a Employer's Agent's Representative's Office and five car ports.

All furniture supplied shall be new.

PSAB 3 MATERIALS

PSAB 3.1 Name Boards

The numbers of name boards noted in the Bill of Quantities are to be provided under this contract.

No other name boards other than stated above shall be allowed. The Contractor shall erect the name boards at locations indicated by the while establishing himself on Site, but not later than 14 days after the start of the Contract.

The name boards shall comply with the requirements as stipulated by the Employer's Agent.

On completion of the works, the Contractor shall obliterate all particulars on the name board and remove the board from the site, prior to the release of retention money.

PSAB 3.2 Site Office

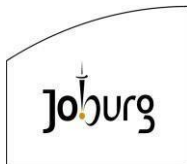
Replace this Sub-Clause with the following:

PSAB 3.2.1 Specification for Office & Meeting Room Furniture

In addition to the furniture supplied by the Employer, the following items shall be provided under this Contract:

- k. One (1) office desk each with a surface area of at least 1.5m² with lockable drawers with keys.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



- l. One (1) drawing rack for A0 drawings. The hangers shall be of the “Barhold” type with ten hangers per drawing rack.
- m. One (1) drawing table with an inclined surface area of at least 3m² and a smooth top constructed to the dimensions as directed by the Employer’s Agent’s Representative.
- n. Two (2) sturdy and comfortable chairs fitted with padded seats and backrests.
- o. Venetian blinds or roller blinds, opaque type fitted to all the Employer’s Agent’s offices.
- p. One (1) large meeting table to accommodate approximately 15 people.
- q. Fifteen (15) plastic chairs with metal frames; and
- r. One (1) plastic rubbish bin.

PSAB 3.2.2 Employer’s Agent’s Meeting Room and Employer’s Office

The Contractor shall provide one prefabricated site meeting room and one office similar to the existing meeting room and offices of approved dimensions with at least 35m² in floor area for the meeting room and 18m² in floor area for the Employer’s Office. The rooms shall be completed, furnished and ready for use not later than three weeks after the commencement date of the Contract.

The timber floor of the office shall be at least 300mm above the surrounding ground level. Doors shall be provided at each end of the meeting room and each shall be provided with a suitable 3 lever lock and two keys.

Windows shall be provided, with a minimum glazed area of 15% of the floor area. At least half of this area must be able to open and shall be fitted with burglar bars and all the windows shall be fitted with venetian or other approved blinds.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



The meeting room will be equipped with furniture supplied under PSAB 3.2.1.

Two (2) air conditioning units shall be supplied with the meeting room with capacity for the air volume of the room as per PSAB 3.2.6 and one (1) air conditioning unit shall be supplied for the Employer's Office.

Adequate electric fluorescent lighting and four (4) 15-amp power points.

PSAB 3.2.4 Car Ports

Carports shall be so constructed as to protect the vehicles parked under them at all times against rain, hail and sun. Shade netting will not be permitted for the carports. Preference is for corrugated iron sheeting for the roof and sides. The carports shall each be at least 15 m² in area and their floors shall consist of a layer of broken stone or concrete to minimise dusty and muddy conditions. Seven car ports are required.

PSAB 3.2.5 Areas Surrounding Offices

The access and other roads and parking areas surrounding the existing offices shall be treated and maintained to make them dust free either by using crushed stone or bituminous surfacing. They shall be well drained and kept trafficable and free from mud and weeds at all times. They shall also be maintained and kept clean and tidy at all times.

PSAB 3.2.6 Air-conditioning Units and Heaters

The Contractor shall provide and install air-conditioning units and heaters as specified. The air-conditioning units shall be electrically operated compressor type with closed circuit, and not an evaporation type. The capacity of the air-conditioning units shall be at least 2,2 kW. The heaters shall preferably be of the space-heating type without exposed elements and shall have a capacity of not less than 1,5 kW.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PSAB 3.2.7 Ablution units

Ablution facilities for the sole use of the Employer's Agent's staff and visitors must be provided.

PSAB 3.3 Services

PSAB 3.3.1 Sanitary arrangements

The Contractor shall be responsible for providing all sanitary services on the site.

The Contractor shall also make provision for the removal of all domestic rubbish on a regular basis.

PSAB 3.3.2 Water and Electricity

The Contractor shall provide a constant supply of clean potable water suitable for human consumption.

The cost of all water & electricity required for the Employer's Agent's purposes shall be borne by the Contractor. All buildings supplied shall include the provision of 220 V electricity.

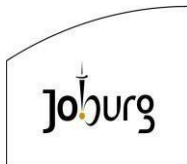
PSAB 3.3.3 Maintenance

The Contractor shall provide all labour, equipment and material which may be necessary to keep all accommodation in a neat and clean condition, and repairs shall be done without undue delay.

PSAB 3.4 General

- h. The Contractor shall not order any materials, equipment or fittings on the basis of their having been specified or scheduled without the written confirmation of the Employer's Agent having been obtained. No building

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



shall be erected without the Employer's Agent's written instructions as to the exact position and orientation of the building.

- i. Unless otherwise agreed upon, the meeting room shall be erected in close proximity to the Employer's Agent's offices.
- j. The required facilities shall be completed, ready for occupation as specified, not later than three (3) weeks after the commencement date of the contract.
- k. The ownership of the meeting room and Employer's Office shall remain the property of the Employer at the end of the Contract.
- l. The ownership of the furniture in PSAB 3.2.1 and PSAB 3.2.3 shall remain the property of the Employer.
- m. The Contractor shall take all reasonable precautions to prevent unauthorised entry to the offices and to ensure the general security of the offices and meeting rooms.
- n. No accommodation shall be erected without the prior approval of the Drawings by all local or Government authorities requiring such prior approval.

PSAB 3.5 Insurance

The Contractor shall keep all the site offices, furniture and equipment insured against loss, damage or breakage and shall indemnify the Employer, the Employer's Agent and his staff against claims in this regard for the full duration of the Contract.

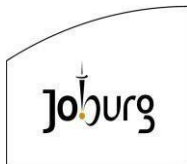
SANS 1200 C: SITE CLEARANCE

PSC 3 MATERIALS

PSC 3.1 Disposal of Material

Add the following:

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



"The Contractor shall obtain his own dumping sites for the disposal of material and all transport costs shall be included in the rates tendered for site clearance."

PSC 5 CONSTRUCTION

PSC 5.1 Areas to be Cleared and Grubbed

Add the following:

"Pipeline routes shall be cleared on instruction of the Employer's Agent to a distance of 1.5 m on both sides of the pipeline centre line. Route pegs or markers shall not be destroyed or damaged during clearing operations."

PSC 5.2 Cutting of Trees

Preservation of Trees

PSC 5.2.3.2 Individual Trees

Replace the last sentence with the following:

"An amount of R1 000,00 will be deducted from moneys due to the Contractor as a penalty for every tree that is damaged or removed unnecessarily and without prior instruction from the Employer's Agent."

PSC 5.5 Re-clearing of Vegetation

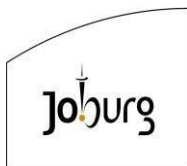
Add the following:

"When areas have to be re-cleared on the written instructions of the Employer's Agent, such re-clearing shall be carried out at the Contractor's own cost and the Contractor is therefore advised not to clear the areas too soon."

SANS 1200 D: EARTHWORKS

PSD 3.2 Classification for Placing Purposes

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PSD 3.2.3 Material Suitable for Backfill or Fill Against Structures

This clause is deleted and replaced by:

Areas against structures which may be damaged by the use of heavy equipment (e.g. grader, towed grid roller, large self-propelled vibratory roller, etc.) must get filled in layers with material from the excavations on the site which shall comply with clause 3.2.1 except that it shall contain more than 20% material passing the 75 micron sieve.

PSD 3.3 Selection

PSD 3.3.1 General

Add the following:

The Contractor will be required to stockpile the surplus excavated material on sites to be designated on the drawings or by the Employer's Agent.

The Contractor shall be entirely responsible for the selection of suitable material for all backfilling and embankments from excavation on the site and from borrow pits.

PSD 5 Construction

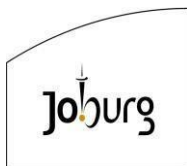
PSD 5.1.1 Safety

PSD 5.1.3 Stormwater and Groundwater

Add the following to this Sub-Clause:

Over and above his general obligations in regard to dealing with water as specified in SANS 1200 A, the Contractor shall be responsible for preventing the ingress of water into the foundation excavations. The preventive measures shall include the construction of proper drainage channels, diversion channels,

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



berms, sumps, and the supply, operation and maintenance of the necessary bailing and pumping equipment if required.

The dewatering measures, with the exception of pumping, shall be maintained until the backfilling has been completed, after which all settled silt, mud, etc. shall be removed from the exposed surfaces where necessary. Between the various construction stages, pumping may be interrupted as may be decided by the Employer's Agent. The draining or pumping of water from foundation excavations shall be so done that no concrete materials will be carried away.

PSD 5.2.2 Excavation

Add the following Sub Clauses:

PSD 5.2.2.4 Utilization of Excavated Material

Excavated material and material recovered from temporary work shall, in so far as it is suitable, be utilized for backfill. Material unsuitable for use as backfill or in excess of the quantity required to complete the backfill shall be spoiled or utilized as directed by the Employer's Agent.

PSD 5.2.2.5 Excavation limits for payment purposes

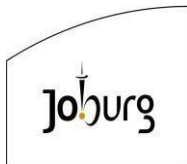
For measurement and payment purposes, the limits of the excavations for structures shall be as shown on the Drawings.

Where no excavation limits are shown on the Drawings and the Employer's Agent has decided that formwork has to be provided for the sides of a concrete member, the limits of the excavation for measurement and payment purposes shall be the vertical planes 0.5 m outside the perimeter of the concrete member for which the formwork is to be provided, and the founding level shown on the Drawings.

PSD 5.2.2.6 Unsuitable Material

Boulders, logs or any other unsuitable excavated material shall be taken to spoil.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Where, in the opinion of the Employer's Agent, unsuitable material is encountered at founding level, such material shall be removed and replaced with foundation fill in accordance with the requirements of clause PSD 5.2.3.4 of this section and as directed by the Employer's Agent.

PSD 5.2.2.7 Preparation of the Founding Surface

Where hard material suitable for founding is encountered at the founding level, it shall be cut and trimmed to a firm surface, either level, stepped or serrated, as may be required.

Where there are indications that the material at the founding level will be soft material or hard material that will deteriorate rapidly on exposure, the excavation of the final layer with a thickness of 150 mm shall be postponed until just before the blinding layer is placed.

Where shown on the Drawings or ordered by the Employer's Agent, excavations shall be extended to a specified depth below the given undersides of the slabs and footings to make provision for the placing of a concrete blinding layer.

PSD 5.2.3.3 Backfill and Fill Near Structures

a. General

When placing backfill and fill, the following precautions shall be taken:

- i. In so far as it is possible, the material shall be placed simultaneously to approximately the same elevation on both sides of a structure or structural member where appropriate. If conditions require that backfill or fill be placed appreciably higher on one side than on the opposite side, the additional material on the higher side shall not be placed until authorized by the Employer's Agent and preferably not until the concrete has been in place for 14 days, or until tests show that the concrete has attained sufficient strength to withstand any pressure

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



safely that has been created by the backfill or fill or by the method of construction.

- ii. The material behind structural members restrained at the top by the superstructure, e.g. portal type structures, shall be placed as stated on the Drawings or as directed by the Employer's Agent.

b. Backfill

Excavated areas around structures, between the structure and the vertical walls of the surrounding excavation, shall be backfilled with approved material in horizontal layers not exceeding 150 mm in depth after compaction, to the level of the original ground surface or to the level specified on the Drawings. Each layer shall be moistened or dried to the optimum moisture content for the material and be compacted to a density of not less than 93 % of modified AASHTO density, except that, in a road prism, the material shall be compacted to a density of not less than 93 % of modified AASHTO density. In cases where structures are founded on backfill material, the density shall be as specified in the Project Specifications but shall not be less than 95 % of modified AASHTO density.

c. Prevention of Wedge Action

Before the fill in the space between a structure and any adjacent sloping fill and the backfill between a structure and the sloping sides of the surrounding excavation is constructed, the slope of the fill and of the sides of the excavation shall be benched or serrated in order to prevent wedge action between the structure and the fill or the sides of the excavation during backfilling and compaction.

The distance between the exposed face of the structure and the toe of the fill or excavation side shall be sufficient to allow proper compaction.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PSD 5.2.3.4 Foundation fill

If, during the course of excavation, it is found that the material at the indicated founding depth does not have the required bearing capacity as specified on the Drawings, the excavations shall be extended at the discretion of the Employer's Agent until satisfactory founding material is encountered. The Employer's Agent reserves the right to order the Contractor to make up the difference in levels with foundation fill.

Where the foundation fill consists of rock or crushed stone, it shall be constructed as directed by the Employer's Agent.

Foundation fill consisting of granular material shall be constructed in layers not exceeding 150 mm in thickness after compaction. Each layer shall be moistened or dried to optimum moisture content for the material and be compacted to a density of not less than 95 % of modified AASHTO density.

Mass concrete fill to be used shall be of the class or mix specified or directed by the Employer's Agent.

PSD 5.2.4.2 Topsoiling

Delete this Sub-Clause and refer to Section PSVA.

PSD 5.2.4.3 Grass or Other Vegetation

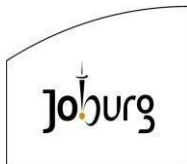
Delete this Sub-Clause and refer to Section PSVA.

PSD 8 MEASUREMENT AND PAYMENT

PSD 8.3.2 Bulk Excavation

b. Extra over for: Delete pay items (3) and (4).

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PSD 8.3.3 Restricted Excavation

- a. Excavation for restricted foundations, footings and pipe trenches in all materials and use for backfill or embankment or dispose

Add the following to this pay item

- i. In the case of structures, excavation will be scheduled to different depths as follows:

- | | |
|-------------------------------------|------------------------------------------|
| a. 0 m up to 2 m | Unit: Cubic metre (m³) |
| b. Exceeding 2 m up to 4 m | Unit: Cubic metre (m³) |
| c. Etc. in increments of 2 m depths | Unit: Cubic metre (m³) |

- (ii) Extra over item (i) above for additional excavation required by the Employer's Agent after the excavation has been completed

Unit: Cubic metre (m³)

The limits for the successive depth ranges shall be measured down from the average surface to the agreed founding level.

The unit of measurement shall be the cubic metre of material measured in the original position before excavation. The quantity of excavation for each depth range shall be calculated from the nett outlines of the excavation limits shown on the Drawings and the depth of excavation completed within each range.

Irrespective of the total depth of the excavation, the quantity of material within each depth range shall be measured and paid for separately.

Where no excavation limits are shown on the Drawings and formwork has to be provided to the sides of concrete members, an additional quantity of excavation shall be measured to 0,5 m outside the concrete perimeter in order to provide a working space.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Where foundation fill is constructed in an excavation, the quantity of excavated material measured for payment shall be the material excavated between the average ground surface, and the founding level, from the prism with vertical sides or as specified or directed by the Employer's Agent.

In no case shall any of the following volumes of excavation be included in the measurement for payment:

- i. The volume of excavation in excess of the abovementioned limits.
- ii. The volume included within the excavated road prism, contiguous channels, ditches, etc. for which payment is provided elsewhere in the Specifications.
- iii. The volume of water or other liquid (except the volume of mud, muck or similar semi solid matter, which has not resulted from the construction operations and which cannot be pumped or drained away).
- iv. Sloping sides of excavations required to make the excavation safe.

The tendered rate shall include full compensation for excavation in each class of material, including overbreak in hard material, the spoiling or stockpiling of material, the hauling of excavated material within the defined Site boundaries, for any additional excavation the Contractor may require for additional working space outside the authorized limits, for trimming and cleaning the bottoms and sides of excavation, and for strutting, shoring and safeguarding excavations.

If, after a foundation excavation has been completed, cleaned and trimmed ready for blinding, the Employer's Agent orders further excavations on account of changed dimensions and/or founding conditions, an extra over payment (item PSD 8.3.3(a)(ii) for the additional excavation shall be payable in full compensation for any additional costs to the Contractor over and above the normal excavation costs.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PSD 8.3.3(b) Extra-over for:

Delete pay items (3) and (4).

PSD 8.3.5 Extra Excavation in All Materials to Provide Working Space Around Structures

Delete this Sub-Clause and refer to Sub-Clause PSD 5.2.2.5.

PSD 8.3.10 Grassing or other vegetation cover

Delete this clause and refer to section PSVA.

SANS 1200 DB: EARTHWORKS (Pipe trenches)

PSDB 5 CONSTRUCTION

PSDB 4.3 Compaction Equipment

Add the following to this Sub-Clause:

A minimum thickness of compacted selected fill blanket of 300mm is required over the top of any pipe before machine compaction commences.

PSDB 5.1 Precautions

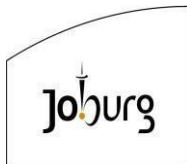
PSDB 5.1.1 General

Add the following to this sub-clause:

The Contractor shall programme his activities in such a way that long sections of trenches do not lie open for undue periods of time, as this poses a safety risk. The pipes shall be laid as soon as possible after excavation of the trenches and the trenches then backfilled. Under no circumstances will trenches be left open for more than 1 week.

The Contractor shall inform the Johannesburg Road Agency (JRA) at least 2 days in advance of the actual date on which he proposes to excavate in any road or footway.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PSDB 5.1.3 Accommodation of Traffic and Access to Property

Add the following Sub-Clause:

All traffic signs and traffic control measures shall comply with the South African Road Traffic Sign Manual and the Road Signs Note.

PSDB 5.1.4 Existing Services That Intersect or Adjoin Trenches

Add the following to this sub-clause:

Where it is necessary for a pipeline to pass under existing services, the Contractor shall carefully excavate and backfill around them. During the course of the work, the services shall be adequately supported to the satisfaction of the Employer's Agent. Any damage shall be reported without delay and shall be made good by the Contractor before backfilling.

PSDB 5.4 Excavation

Add the following to this sub-clause:

Where the pipe trench crosses surfaced roads the Contractor shall neatly cut four parallel grooves into and through the "black top" before excavating between the inside 2 grooves. The outside 2 grooves should be 100 from the inside ones. The cost of this operation, where not scheduled separately, will be deemed to have been included in the general rates for excavation.

PSDB 5.5 Trench Bottom

Add the following to this sub-clause:

Unsuitable material shall only be excavated once the Employer's Agent has given a written instruction to this effect. Backfilling material for over excavation shall comply with the requirements of SANS 1200 LB and shall be compacted to 93 % modified AASHTO.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PSDB 5.6 Backfilling

PSDB 5.6.1 General

Add the following to this sub-clause:

Notwithstanding the requirements of sub-clauses PSDB 5.6.1 and 5.6.6, no pipe joint or pipefitting shall be covered by either the blanket or the backfill prior to the successful completion of the visual inspection and the pressure testing of the relevant section of the pipeline and without the written permission of the Employer's Agent.

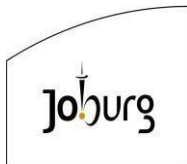
PSDB 5.6.2 Material for backfilling

Add the following to this sub-clause:

No backfilling may be done unless it is authorised by the Employer's Agent. Trenches must be backfilled and compacted to 90% modified AASHTO to at least 300mm above the pipe soffit in layers of 150mm around and above the pipe and care should be exercised to prevent damage to the pipe. Subsequent layers may be compacted in 175mm layers. Except where backfill material is in the opinion of the Employer's Agent moist enough; water must be added to facilitate compaction.

In the event of no suitable material being available around the pipe for backfilling the trench in question, the Contractor must obtain suitable material from other excavations, transport it to the site and remove the unsuitable material to an approved dumping site. If no suitable material is thus obtainable, the Contractor must sift the material obtained from the trench through a sieve with a 10mm mesh, but, if above mentioned procedure is not practical, the Employer's Agent may instruct the Contractor to import suitable material from approved sources and the Contractor will be under obligation to remove the unsuitable material to a dumping site.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



If any settlement occurs during the Construction Period or before the end of the defect's liability period, the Contractor must rectify such settlement to the satisfaction of the Employer's Agent.

After all the excavations and backfilling have been completed, the surplus material and all additional material must be removed from the site to the satisfaction of the Employer's Agent.

PSDB 5.6.3 Disposal of Soft Excavation Material

Add the following to this sub-clause:

Surplus material or unsuitable material which is not disposed of within the trench servitude shall, on the instruction of the Employer's Agent, be disposed of at approved tipping sites to be located by the Contractor.

The prior approval of the Employer's Agent must be obtained before surplus material may be deposited, spread and levelled at agreed sites within the area of the works.

PSDB 5.6.4 Disposal of intermediate and hard rock material

Add the following to this sub-clause:

Surplus intermediate and hard rock material from trench excavations shall, on the instruction of the Employer's Agent, be disposed of at approved tipping sites to be located by the Contractor.

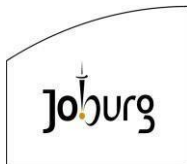
The prior approval of the Employer's Agent must be obtained before surplus material may be deposited, spread and levelled at agreed sites within the area of the works.

PSDB 5.7 Compaction

PSDB 5.7.2 Areas subject to traffic loads

Add the following to this sub-clause:

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



In areas subject to traffic loading and in constructed footways, compaction shall be done as directed by the Employer's Agent.

PSDB 8 MEASUREMENT AND PAYMENT

PSDB 8.3 Scheduled Items

PSDB 8.3.5 Existing Services That Intersect or Adjoin A Pipe Trench

Add the following to the end of the sub-clause:

- v. Notifying and attending upon the proprietor of the service,
- vi. Supporting and protecting the service while the pipeline is installed, inspected, tested and backfilled.

SANS 1200 DM : EARTHWORKS (ROADS, SUBGRADE)

PSDM 5.2.2.4 Temporary Stockpiling of Materials

The Contractor shall programme the Works in such a way that double handling of material is minimised. No additional payment will be made for temporary stockpiling or extra handling where materials must be stockpiled temporarily.

PSDM 5.2.4.3 Topsoiling

The final thickness of topsoil shall be at least 100 mm.

PSDM 7.2 Process Control

The Contractor shall provide and maintain laboratory equipment on site to perform the following tests or make arrangements to the satisfaction of the Employer's Agent to have them done as and when required:

- a. Indicator Tests.
- b. Sieve Analysis.
- c. Field Compaction Tests.

| | | | |
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



- d. California Bearing Ratio's (C.B.R.'s)
- e. Mod. AASHTO Density Tests

SANS 1200 G: CONCRETE (STRUCTURAL)

PSG 3 MATERIALS

PSG 2.3 Definitions

PSG 2.3 b) Quality

Change the following Sub-Clause:

Sample (of concrete). The minimum volume of uncompacted freshly mixed concrete required in terms of SANS Method 861-2 for a designated test (eg 16 dm³ for the compressive strength test for 3 cubes of nominal side 150mm).

PSG 2.3 c) Strength

Change the following Sub-Clause:

Valid test result. The average result obtained from the testing of three test cubes of concrete in accordance with SANS Method 862-1, Method 861-3 and Method 863.

PSG 3.2 Cement

PSG 3.2.1 Applicable Specifications

Add the following:

Change this Sub-Clause as follows:

Cementitious materials for concrete shall comply with:

- a. SANS 50197-1-Cement-part 1: Composition, specification and conformity criteria for common cements.

| | | | |
|------------------|--|--------------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



- b. SANS 55167-1: 2011 Part 1-Ground granulated blast-furnace slag.
- c. SANS 55450-1: 2011 Part 2-Fly ash.
- d. SANS 53263-1: 2011 Silica fume for concrete Part 1.

Under no circumstances shall a “masonry cement” complying with SANS 50413-1 be used for concrete.

Before any concrete is produced, the Contractor shall submit full details of the cement to be used for the production of concrete to the Employer’s Agent for approval. The name of the manufacturer of the cement and the place of manufacture shall also be submitted for approval.

PSG 3.2.2 Alternative Types of Cement

Add the following to this Sub-Clause:

The following materials may be used:

CEM II as described in SANS 50197-1.

A site blend comprising, by mass:

70 parts of CEM I.

30 parts of fly ash.

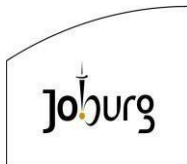
The type of cementitious material to be used for specific structures or structural elements may be specified by the Employer’s Agent.

For concrete pavements and floors that have joints sawn at an early age, the strength class of the cementitious material shall be 42,5N, 42,5R 52,5N or 52,5R.

PSG 3.2.3 Storage of Cement

Add the following to this Sub-Clause:

| | | | |
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Where the cement is supplied in bags, the bags shall be closely and neatly stacked to a height not exceeding 12 bags, and they shall be so arranged that they can be used in the order in which they were delivered to the Site.

Cement shall not be kept in storage for longer than 6 weeks from the date of manufacture without the Employer's Agent's permission.

The Employer's Agent may order the removal of cement, which is older than 6 weeks, from the Site or the alteration of the design mix if he does allow its use. Alternatively, he may allow the cement to be used in concrete of less critical importance, as in blinding layers.

PSG 3.4 Aggregates

PSG 3.4.3 Storage of Aggregates

Add the following:

When aggregates of different chloride content are stored on the site, their use in the various classes of concrete shall be strictly controlled."

PSG 3.5 Admixtures

PSG 3.5.1 Approval of Admixtures Required

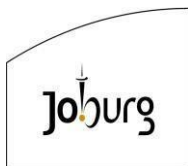
Add the following:

- a. Water proofing additive with tracing agent or similar approved.
- b. Minimum dosage 0,8% by weight of cementitious content, with 20year warranty and all to manufacturers specifications. Concrete to be placed, protected and cured according to SANS 10100-2"

PSG 3.5.3 Specifications:

Add the following Sub-Clause:

| | | | |
|------------------|--|--------------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Admixtures shall comply with the requirements of ASTM C-494 and full details of the brand and type shall be submitted to the Employer's Agent for approval. Air entraining agents shall comply with the requirements of ASTM C-260 and full details of the brand and type shall be submitted to the Employer's Agent for approval.

PSG 4 PLANT
PSG 4.1 General

Add the following subclause:

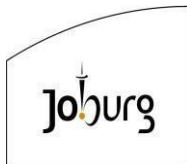
PSG 4.1.1 Minimum plant

The Contractor shall have the following minimum plant available and in sound working order:

- a. One concrete mixer of sufficient capacity to complete a section of the floor or road between construction joints within 4 hours and without interruption.
- b. Two concrete vibrators, at least one of which shall be powered by an internal combustion engine.
- c. One air compressor.
- d. Suitable and adequate plant to transport concrete and other material and equipment at all stages of construction.
- e. Storage tanks of adequate capacity to ensure that sufficient water will be available before commencement of every major concrete-placing operation.

If the Plant used for placing concrete is electrically or mechanically powered, the Contractor shall also provide some other approved, non-electrically-powered standby means for placing concrete at an adequate rate in the event of a power or mechanical failure of the main Plant."

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PSG 4.2 Batching Plant

Add the following Sub-Clause:

- d. admixtures may be batched to an accuracy of within 2 % of the mass required.

PSG 4.5 Formwork

PSG 4.5.1 Design

Add the following:

"All formwork or scaffolding required for any part of the Works shall be designed by the Contractor, and before commencing with the erection of any formwork or scaffolding, the Contractor shall submit the methods he proposes to use to the Employer's Agent for approval. The Employer's Agent has the authority to order alterations to the design or the sizes of any part of the formwork or scaffolding. The Contractor shall check the safety and suitability of all such alterations. The fact that the Employer's Agent has approved or altered any part of the formwork or scaffolding shall not be construed as relieving the Contractor of his responsibility with regard to the strength and stability of the formwork or scaffolding."

PSG 4.5.2 Finish

Add the following to this Sub-Clause:

All external corners shall be chamfered by the fixing of fillet strips into the corners of the formwork to form 20 mm x 20 mm chamfers, all at no extra payment.

PSG 4.5.3 Ties

Add the following:

| | | | |
|------------------|--|--------------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



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

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

The cavities left in the concrete when the tie-rod end cones are removed shall be soundly caulked with a cement mortar to which an approved shrinkage-reducing agent has been added and shall be neatly finished to a smooth surface uniform with that of the surrounding concrete.

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

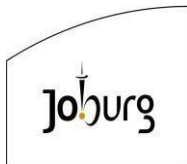
On no account shall formwork be secured to reinforcing bars."

Only patented ties shall be used on water-retaining structures. Ties must be suitable for grouting to a depth at least equal to the concrete cover or 50 mm. Details of ties to be used shall be submitted to the Employer's Agent for approval.

PSG 5 CONSTRUCTION
PSG 5.1 Reinforcement
PSG 5.1.2 Fixing

Add the following:

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



"The Employer's Agent will inspect the reinforcing after it has been fixed in place, the formwork has been cleaned, cover blocks have been positioned, and before concreting commences.

Welding of reinforcing steel will not be permitted."

PSG 5.1.3 Cover

Add the following:

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

- a. 40 mm or
- b. 5 mm plus the maximum size of the coarse aggregate, whichever is the largest."

The cover of concrete over reinforcement shall be measured from the outside of any reinforcement bar or stirrup. Minimum cover shall be in accordance with the dimension shown on the relevant drawing. Unless otherwise shown on the drawings, minimum cover to reinforcement shall be 50mm.

PSG 5.2 Formwork

PSG 5.2.1 Classification of Finishes

- a. Smooth

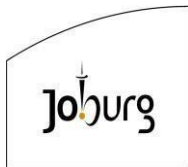
Add the following to this Sub-Clause:

Smooth formwork is required where concrete will be in contact with backfill or where exposed formed surfaces will not readily be visible.

- c. Special

Add the following to this Sub-Clause:

| | | | |
|------------------|--|--------------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Special smooth formwork is required where concrete surfaces are exposed and is to be carried down to 150mm below adjoining ground or paving level.

Imperfections such as small fins, bulges, irregularities, surface honeycombing, and slight surface discolorations shall be made good and repaired by approved methods including rubbing down or grinding to the complete satisfaction of the Employer's Agent. The finish of the concrete shall be accurate to Degree of Accuracy I as defined in terms of Clause 6.

Patching of the tie holes to match the colour of the concrete where exposed.

PSG 5.2.2 Preparation for Formwork

Add the following:

Surfaces of formwork that are to be in contact with concrete shall be treated with an approved release agent to prevent adhesion of the concrete during stripping. The joints between continuous formwork elements shall be closely butted and, where necessary, if undue leakage is expected, the joints shall be caulked, taped or packed with a sealing gasket, all at no extra payment. Paper, cloth or similar materials shall not be used for this purpose.

Any discolouration to the concrete by the release agent shall be permanently removed.

Construction joints shall be positioned as shown on the Drawings.

PSG 5.2.5 Removal of Formwork

Add the following subclause:

PSG 5.2.5.7 The Contractor shall make provision for the continued support of beams and slabs while the formwork is being removed and/or for back propping of beams and slabs.

PSG 5.5 Concrete

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PSG 5.5.1 Quality

PSG 5.5.1.2 Consistency

Add the following to this Sub-Clause:

The slump, measured in accordance with SANS Method 862-1, shall be not less than 50 mm and not more than 80 mm, unless permitted otherwise by the Employer's Agent for specific applications.

PSG 5.5.1.5 Durability

Add the following to this Sub-Clause:

All water retaining structures shall be deemed to be exposed to severe conditions. The cement/water ratio shall be determined by the strength of the concrete specified but shall not be less than 2.0.

In addition to these requirements the cementitious material content shall not be less than 325 kg/m³ for structural concrete Grade 35/20.

For reinforced concrete the cement content should not exceed either 400 kg/m³ of ordinary Portland cement or cements containing G.G.B.S. or 450 kg/m³ where cements containing P.F.A. are used. For prestressed concrete the maximum cement content may be increased to 500 kg/m³ or 550 kg/m³ respectively.

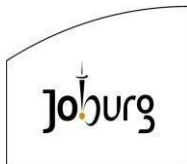
PSG 5.5.1.7 Strength Concrete

Add the following to this Sub-Clause:

Before the commencement of any construction work, the Contractor shall submit a concrete mix design report to the Employer's Agent for approval. A reputable commercial laboratory shall compile this concrete mix design report.

Unless specified differently the grade of concrete to be used shall be as follows:

| | | | |
|------------------|--|--------------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



- a. Grade 35/20: All reinforced concrete structures
- b. Grade 35/20: All paving slabs and floor slabs
- c. Grade 15/20: Unreinforced foundations, pipe encasements and blinding
- d. Grade 10/20: Mass concrete and concrete filling
- e. Grade 15/10: Screeds and benching

PSG 5.5.2 Batching

Add the following to this Sub-Clause:

Equipment for mass batching shall be clearly marked to show the mass of each material required for a batch.

PSG 5.5.2.3 Aggregates

Add the following to this Sub-Clause:

Batching of aggregates shall be by mass to an accuracy of within 2 % of the mass required. No volume batching will be permitted.

PSG 5.5.3 Mixing

PSG 5.5.3.2 Ready-Mixed Concrete

Add the following:

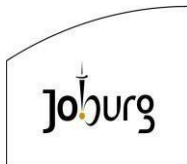
Ready-mixed concrete may be used on the Site. The Contractor shall take samples for testing from every load delivered to the Site.

PSG 5.5.5 Placing

Add the following:

Concreting of the floor between construction joints shall be carried out in both directions from a point on the floor in order to close the gap with fresh concrete.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PSG 5.5.6 Compaction

Add the following to this Sub-Clause:

PSG 5.5.6.3 Compaction shall be carried out by mechanical vibration with suitably sized equipment. Compaction by hand shall not be permitted.

PSG 5.5.6.5 Particular care shall be taken with the top section of the walls of the reservoir to prevent cracking.

PSG 5.5.7 Construction Joints

Add the following:

Should the Contractor's method of construction necessitate the placing of a construction or other joint in a position not shown on the Drawings, such method of construction and position of the joint shall be approved by the Employer's Agent in writing. The cost of such joint shall be included in the tendered rates and shall include scabbling of the concrete where steel reinforcement is continuous.

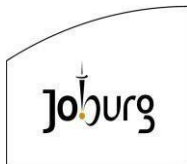
PSG 5.5.7.1b) Install a controlled expansion self-healing concrete waterstop (Size: 19 x 25 x 5mm), guaranteed as a system with the crystalline waterproofing additive with tracing agent, to primed joint surface between concrete pours by an approved applicator as per manufacturer's instructions.

PSG 5.5.7.3 a) Construction joints when concrete is not more than 24 hours old:

The surface of the concrete shall be brushed with a wire brush, loose material removed and the surface dampened . New concrete shall be placed directly in contact with the old concrete and compacted thoroughly.

b) Construction joints when concrete is more than 24 hours old:

| | | | |
|------------------|--|--------------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



The surface of the concrete shall be sand blasted or chipped with a light hammer, and swept clean. The surface shall then be wetted and allowed to become surface-dry before new concrete is placed directly in contact with the old concrete and compacted thoroughly.

Add the following Sub-Clause:

PSG 5.5.7.3 e) No vertical construction joints will be permitted in circular tanks.

PSG 5.5.8 Curing and Protection

Add the following:

The curing methods of retaining the formwork in place or covering with a waterproof membrane are strongly recommended. Concrete will not be paid for unless properly cured and proof of curing is continuously visible on site.

The minimum period of moist curing shall be:

- 5 days for normal weather (temperature 18°C to 22°C, 65 % RH, low wind speeds).
- 7 days for hot weather with drying winds.
- 9 days for cold weather (temperature 5°C to 12°C).

PSG 5.5.11 Watertight Concrete

Add the following:

All structures shall be deemed to be water retaining unless otherwise specified.

PSG 5.5.11.1 Testing of Water Tank

For a test of liquid retention, the structure should be cleaned and initially filled to the normal maximum level with the specified liquid (usually water) at a uniform rate of not greater than 2 m in 24 h.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

When first filled, the liquid level should be maintained by the addition of further liquid for a stabilizing period while absorption and autogenous healing take place. The stabilizing period may be 7 days for a maximum design crack width of 0.1 mm or 21 days for 0.2 mm or greater. After the stabilizing period the level of the liquid surface should be recorded at 24 h intervals for a test period of 7 days. During this 7-day test period the total permissible drop in level, after allowing for evaporation and rainfall, should not exceed 1/500th of the average water depth of the full tank, 10 mm or another specified amount.

Notwithstanding the satisfactory completion of the test, any evidence of seepage of the liquid to the outside faces of the liquid-retaining walls should be assessed against the requirements of the specification. Any necessary remedial treatment of the concrete, cracks, or joints should, where practicable, be carried out from the liquid face. When a remedial lining is applied to inhibit leakage at a crack it should have adequate flexibility and have no reaction with the stored liquid.

Should the structure not satisfy the 7-day test, then after the completion of the remedial work it should be refilled and if necessary, left for a further stabilizing period; a further test of 7 days' duration should then be undertaken in accordance with this clause.

PSG 5.5.11.2 Testing of Roofs

The roofs of liquid-retaining structures should be watertight and should, where practicable, be tested on completion by flooding the roof with water to a minimum depth of 25 mm for 24 h or longer if so specified. Where it is impracticable, because of roof falls or otherwise, to contain a 25 mm depth of water, the roof should have water applied by a continuous hose or sprinkler system to provide a sheet flow of water over the entire area of the roof for not less than 6 h. In either case the roof should be considered satisfactory if no leaks or damp patches show on the soffit. Should the structure not satisfy either of these tests, then after the completion of the remedial work it should be retested in accordance with this clause. The roof insulation and covering should be completed as soon as possible after satisfactory testing.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

PSG 5.5.13 Grouting

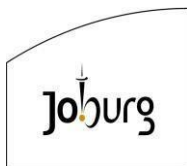
Add the following:

PSG 5.5.13.1 Materials

- a. Water - Water for grout shall comply with the requirements given in Sub-Clause 3.3 of SANS 1200 G: 1982 (2002-07-30)
- b. (Aggregates - Notwithstanding the requirements of Sub Clause 3.4.1 of SANS 1200 G, the grading of fine aggregate (sand) and coarse aggregate (stone or pea gravel) shall conform to the grading given in Tables 1 and 2, respectively, below.
- c. Cementitious material – This shall be type CEM II complying with SANS 50197-1 and of strength class 42,5 N or higher.
- d. Admixtures - Admixtures shall comply with the requirements of Sub-Clause 3.5 of SANS 1200 G: 1982 (2002-07-30) and shall have a proven record of satisfactory performance under conditions encountered in the Republic of South Africa.
- e. Proprietary grouting materials - Unless otherwise approved by the Employer's Agent, 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 nominal aperture size, (mm) | % Passing (by mass) |
| 9,75 | 100 | 9,5 | 100 |
| 4,75 | 95 - 100 | 4,74 | 95 - 100 |
| 1,18 | 45 - 65 | 2,36 | 0 - 5 |
| 0,3 (300 µm) | 5 - 15 | | |
| 0,15(150 µm) | 0 - 5 | | |

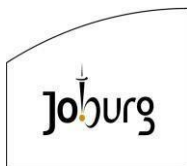
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PSG 5.5.13.2 Preparation and Procedures

- a. Before a machine or structural bedplate is placed on the concrete the following steps 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 re shaped 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 bedplate 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 undersides of bedplates, 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

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



thoroughly saturated with clean water, and all free water shall be removed from the surface and the bolt holes just before the grout is placed.

3. Grouting shall not be carried out until the alignment of all units to be grouted has been checked and approved by the Employer's Agent.
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°C - 27°C.

Shields to protect the grout from the sun and from hot winds shall be provided by the Contractor when so ordered.

PSG 5.5.13.3 Formwork

Formwork for grouting shall comply with the applicable requirements of Clause 5.2 of SANS 1200 G: 1982 (2002-07-30). Forms shall be caulked where necessary. Adequate clearance between forms and bedplates shall be provided to enable the grout to be worked into place.

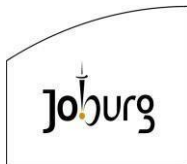
PSG 5.5.13.4 Mixing (All Free-Flowing Grouts Except Epoxy Grouts)

The grout shall be mixed to a homogeneous 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

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



a period of 20 min. After the grout has been mixed, it shall not be retempered by the addition of water.

PSG 5.5.13.5 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, thoroughly compacted, 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 practicable, 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° to the vertical, from the bottom edge of the bedplate and
- d. all excess grout on or about the bedplates shall be removed.

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

PSG 5.5.13.6 Dry-Packed Grout (Standard Dry Sand and Cement Grout)

Dry-packed grout shall have a minimum compressive strength at 28 d of 20 MPa. The quantity of water added after placing shall be kept to a minimum

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



consistent with placing conditions, and the cement, sand and, where applicable, pea gravel proportions by mass shall be as follows:

- a. Where the clearance between bedplate and foundation is 25 mm or less : 1 part of cement and 2 parts of sand;
- b. Where the clearance exceeds 25 mm: 1 part of cement, 1 part of sand, and 1 part of pea gravel.

Dry packed grout shall be rammed by means of tamping rods against formwork placed along three sides of the bedplate.

PSG 5.5.13.7 Non-Shrink Grout with Metallic Aggregate

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

Where the clearance between the bedplate and the foundation is less than 50 mm a sand-based mix shall be used. Where the clearance exceeds 50 mm the Employer's Agent may order a mix with a base of sand plus pea gravel to be used.

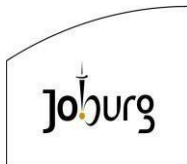
PSG 5.5.13.8 Expanding Grout with Powdered Aluminium Additive

The manufacturer's instructions shall be observed when an expanding grout with powdered aluminium additive is used. Where the clearance between the bedplate and the foundation is less than 25 mm, a sand-based mix shall be used.

Where the clearance exceeds 25 mm the Employer's Agent may order mix with a base of sand plus pea gravel to be used.

Each batch shall be mixed for at least 6 min. 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 in PSG 9.4. Grout shall be placed within 45 min. after the addition of the powdered aluminium.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



The Contractor shall not use powdered aluminium additive when the ambient temperature is below 5°C.

PSG 5.5.13.9 Epoxy Grout (Epoxy Mortar Type Only)

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

PSG 5.5.13.10 Testing (Clause 7)

The Contractor shall, where so ordered, carry out a site test for each grouting procedure and each grouting gang to be used. The tests shall be carried out on a dummy bedplate similar in configuration to that, which is to be grouted, but not exceeding 1 m in area unless otherwise ordered.

When the dummy bedplate is dismantled, the underside shall show a minimum grout contact area of 80 % with reasonably even distribution of the grout over the surface grouted except that, in the case of expanding grout, the minimum grout contact area shall be 95 %. The test shall show evidence of good workmanship and materials and the results shall be to the satisfaction of the Employer's Agent.

The Contractor shall, when so ordered, make standard test cubes from various grout mixtures and subject them to compression tests to determine whether the specified strength has been achieved. Test procedures shall comply with the relevant requirements of Sub-Clause 7.2.1 to 7.2.3(f) SANS 1200 G: 1982 (2002-07-30).

Add the following Sub-Clauses:

PSG 5.5.16 No Fines Concrete

PSG 5.5.16.1 Materials

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

Cement, aggregate and water shall comply with the requirements of Clause 3 of this section.

Each size of aggregate shall be a single sized aggregate graded in accordance with SANS 1083:2006.

PSG 5.5.16.2 Classes of No-Fines Concrete

No fines concrete shall be classified by the prefix NF and the size of the aggregate to be used. Class NF 20 means a no fines concrete with a 19 mm nominal size aggregate.

The volume of aggregate per 50 kg of cement for each class of no fines concrete shall be as follows:

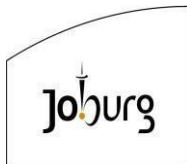
| Class | Aggregate per 50 kg cement |
|-------|----------------------------|
| NF 40 | 0,33 m ³ |
| NF 20 | 0,30 m ³ |
| NF 10 | 0,27 m ³ |

PSG 5.5.16.3 Batching and Mixing

Cement shall be measured by mass or full bags of 50 kg each and aggregate shall be measured by volume in approved measuring boxes or barrows.

The quantity of water added shall be just sufficient to form a smooth grout that will adhere to and completely coat each and every particle of aggregate and to be just wet enough to ensure that, at points of contact of the aggregate, the grout will run together to form a small fillet to bond the aggregate together. The mix shall contain no more than 20l of water per 50 kg of cement.

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Mixing shall be carried out in an approved batch type mechanical mixer, but small quantities may be hand mixed.

PSG 5.5.16.4 Placing

No fines concrete shall be placed in accordance with the procedure agreed on by the Employer's Agent. It shall be placed in its final position within 30 minutes of mixing.

The no fines concrete shall be worked sufficiently to ensure that it completely fills the space to be concreted and that adjacent aggregate particles are in contact with one another. Excessive tamping or ramming shall be avoided and under no circumstances may the no fines concrete be vibrated.

PSG 5.5.16.5 Protection

All no-fines concrete shall be protected from the elements and loss of moisture. Protection against loss of moisture shall be accomplished in one or more of the following ways:

- a. Retaining formwork in place.
- b. Covering exposed surfaces with sacking or other approved material kept continuously wet.
- c. Covering exposed surfaces with plastic sheeting.

No-fines concrete placed during cold weather shall be adequately protected against frost for at least 3 days.

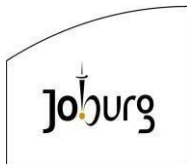
PSG 5.5.17 Joints in Structures

PSG 5.5.17.1 Materials

- a. General

All materials used in the forming, construction and sealing of permanent joints, as well as all proprietary or custom-built expansion joint assemblies shall be subject to the approval of the Employer's Agent.

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When required by the Employer's Agent, the Contractor shall submit test certificates from an approved independent testing authority to show that the respective materials comply with the specified requirements, or a certificate from the patent holder or designer to certify that the manufactured item complies in all respects with relevant product specifications.

b. Joint filler

Joint filler shall comply with the requirements of the following specifications:

- i. American Association of State Highway Officials (A.A.S.H.O.) Standard Specification M153 54 Type I and III;
- ii. National Transport Commission "Standard Specification for Roads and Bridge Works";
- iii. Department of Public Works PW471 "Specification of Materials and Methods to be used" Section 3.13 Expansion Joints;

Joint fillers shall consist of closed cell expanded polyethylene with a density of not less than 100 kg/m³.

c. Sealants

Joint sealers shall consist of a two-component polyurethane sealing compound complying with the requirements of SANS 1077: 2009 (Ed. 1.2s).

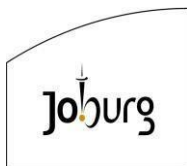
The Contractor may use other sealants if approved by the Employer's Agent after submission of full specifications and information at tender stage.

d. Waterstops

Waterstops shall be of natural rubber, or plasticized, virgin, non biodegradable PVC, and of the type specified or shown on the Drawings.

- i. Natural rubber waterstops shall comply with the requirements of CKS 388.

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- ii. Flexible polyvinyl chloride (PVC) rubber waterstops shall comply with the requirements of CKS 389.

e. Accessory materials

- i. Primers

When a primer is to be used in conjunction with the sealant, it shall be of the prescribed proprietary material.

- ii. Adhesives

Adhesives used in conjunction with preformed seals shall be of a proven and approved type, which is compatible with the material of the seal.

- iii. Bond breakers

Polyethylene tape, coated papers, metal foils or similar material may be used where bond breakers are required.

- iv. Back-up material

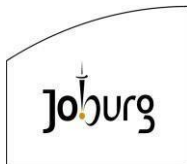
Back-up material shall consist of a compressible material of correct width and shape in order to ensure that it will be in approximately 50 % compression after installation and that the sealant can be formed to the specified depth.

Back-up materials shall be compatible with the sealant used. Material containing bitumen or volatiles shall not be used with thermosetting chemically curing sealants.

- f. Storage

All materials used in the forming, construction and sealing of permanent joints and all proprietary or custom built expansion joint assemblies shall be stored off the ground under cover that provides adequate protection against sunlight, physical or chemical damage or other factors that may cause deterioration.

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PSG 5.5.17.2 Filled Joints

Filled joints shall be accurately formed to the dimensions shown and with the filler material specified on the Drawings. The filler shall be secured in position so that it will not be displaced during or after concreting if the filler is to remain permanently in the joint. In addition the filler shall be provided with a cut line prior to installation, e.g. factory perforated on the correct depth. This cut line, intended to aid removal of a portion of the filler to make room for the sealant, shall be in a position which coincides with the depth of the sealant.

Wherever polystyrene or a similar material, which is susceptible to damage, is used to form joints, it shall be lined with a hard surface on the side to be concreted. The hard surface shall be sufficiently resilient to ensure that the joint and surfaces can be formed free from defects.

PSG 5.5.17.3 Sealing of Joints

a. General

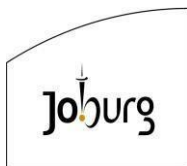
Sealed joints shall be made watertight over the full length of the joints, unless otherwise permitted by the Employer's Agent, and the joint dimensions shall be as shown on the Drawings.

b. Preparation of Joints

The reaming of joints by sawing or other means shall be undertaken when edge spalling or ravelling can be avoided and shall be subject to the Employer's Agent's approval.

After removal of the temporary filler material up to the cut line or the breaking out of the excess concrete, the inside faces of the joint shall be wire brushed or grit blasted to remove all laitance and contaminants. Thereafter the joint shall be cleaned and blown out with compressed air to remove all traces of dust. Solvents shall not be used for removing contaminants from concrete and porous surfaces.

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Care shall be taken to ensure that primers or adhesives are applied only to surfaces that are absolutely dry. The primer or adhesive shall be applied strictly in accordance with the manufacturer's instructions. Unless otherwise specified, the primer shall be applied within the temperature range of 10°C to 40°C and the sealant shall be applied after the curing period of the primer and within the period during which the primer remains active.

A bond breaking tape (or rope) shall be applied to the filler prior to adding the sealant in order to prevent bondage between sealant and filler.

c. Sealants

Sealants shall be applied strictly in accordance with the manufacturer's instructions by a person skilled in the use of the particular type of sealant. The trapping of air and the formation of voids in the sealant shall be avoided. The sealant shall be finished to a neat appearance flush with the edges of the concrete or to the specified depth.

Thermoplastic hot poured sealants shall not be poured into the joints when the temperature of the joint is below 10°C. The safe heating temperature shall not exceed the specified pouring temperature by more than 10°C.

Two part thermosetting chemically curing sealants shall not be applied after expiry of the specified pot life period, which shall commence once the base and activator of the sealant have been combined.

d. Preformed compression seals

The seal shall be inserted and secured with a lubricant adhesive which covers both sides of the seal over the full area in contact with the inside faces of the joint. The lubricant adhesive shall be applied immediately before the seal is inserted.

The seal shall be installed in a compressed state, with the appropriate equipment, so that the seal will remain in compression even under the most

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adverse conditions. The final position of the seal shall be as shown on the Drawings or as directed by the Employer's Agent.

Joints in seals shall be bonded or fused and shall be only at positions agreed on by the Employer's Agent.

e. Waterstops

i. General requirements

The waterstops shall be supplied in unjointed standard production lengths. Site jointing shall be limited to the absolute minimum. Where lengths in excess of the standard production lengths are required, such longer lengths shall preferably be factory jointed.

At intersections, transitions and abrupt changes of direction, factory moulded watertight junction pieces shall be used so that any site jointing can be restricted to simple joints.

When a waterstop with a centre bulb is intersected, the centre bulb shall be continuous throughout the intersection irrespective of the makeup of the intersection.

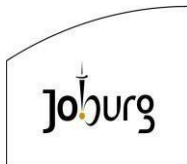
ii. Rubber Waterstops

All joints shall be vulcanized and shall have a tensile strength of at least eighty (80) per cent of that of the unjointed material for water retaining structures, and fifty (50) per cent for other structures.

Site joints shall be vulcanized joints made in accordance with the requirements of these Specifications and the manufacturer's instructions, and with equipment prescribed or supplied by the manufacturer and approved by the Employer's Agent.

The vulcanizing process shall be a hot process with strict control on the pressure, the temperature and the time. The vulcanizing temperature shall be between 150 °C and 160 °C. The rubber shall not be heated above 160°C. The

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vulcanizing time for the specific type of rubber of the waterstops involved shall be determined with a curometer for the abovementioned vulcanizing temperatures before a vulcanized joint is made. The recommended pressure between the two sections which must be vulcanized is 3,4 MPa and the minimum allowable pressure is 2,4 MPa.

The contact faces of the sections to be jointed shall be accurately and evenly cut at the angle shown on the Drawings or prescribed by the Employer's Agent to obtain a precise fit and complete contact.

Care shall be taken to keep centre bulbs unobstructed at the joints so that the lateral flexibility of the waterstops will not be affected by the presence of clotted rubber inside the bulbs.

The rubber of the waterstop shall not have any porosity of voids between the contact faces of the sections and/or at the finished vulcanized joint, especially at the centre bulb.

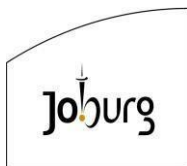
The vulcanizing equipment shall comply with the following minimum requirements:

The heating elements shall be equipped with an automatic temperature control device to keep the elements at the required temperature.

It shall be equipped with an automatic temperature control device to keep the heating elements at the required temperature, with a device to measure the temperature at the vulcanizing plane, a device to measure the temperature applied to the external faces of the rubber, and with a pressure gauge to regulate the applied pressure within the specified limits in relation to the liquidity of the rubber.

During the vulcanizing process, the pressure shall be spread evenly over the entire contact area and the pressure plates shall be sufficiently rigid that they will not bend under the applied pressure. The cut-out forms of the pressure plates shall fit accurately over the waterstops so that all the faces of the waterstops will be in contact with the pressure plates.

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The planes of contact of the two sections of the waterstops to be joined together shall be prevented from sliding from each other when pressure is applied to the plates.

A shield shall be available to shield the apparatus against wind, rain, etc. when joints are made in the open to ensure proper temperature control.

The apparatus as a whole shall be safe in all respects and shall comply with all the appropriate statutory requirements.

iii. Plasticized, Flexible PVC Waterstops

The waterstops shall be manufactured from high quality virgin material and shall not contain any scrap or reclaimed material. The waterstops shall be light coloured to reduce heat absorption when exposed to sunlight.

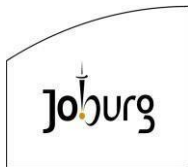
The waterstops shall be precision moulded or extruded to the required cross sectional profile, they shall be free from porosity or other imperfections, and shall be provided with eyelets so that they can be securely fixed to prevent displacement during concreting.

All joints shall be butt jointed hot welded joints. Where joints cannot be factory made, Site joints shall be made in accordance with the manufacturer's instructions with equipment prescribed or supplied by the manufacturer and approved by the Employer's Agent.

f. Bandages

Bandages shall consist of a highly flexible, waterproof and weatherproof polymer sheeting between two layers of two component, solvent free, moisture insensitive, high viscosity, epoxy paste adhesive. The material, method of application, names of supplier and instance doing the installation shall all be to the approval of the Employer's Agent.

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PSG 5.5.18 Building in of Pipes

The Contractor under this Contract shall be responsible for building in or caulking and making watertight around all pipes and fittings which pass through walls or under floors of the structures, irrespective of whether the Contractor himself supplies and installs the pipes and fittings, or the Employer purchases the pipes and fittings and the Contractor under this Contract takes delivery and installs them, or some other contractor (e.g. a plant supplier) supplies and installs the pipes and fittings in recesses or through holes left in the various structures for the reception of such pipes and fittings. In the latter case, the Contractor under this Contract will be paid for forming the openings for and caulking of these pipes or fittings under the item provided for this purpose in the Schedule of Quantities.

Where pipes or specials are required to pass through or be set into concrete work, holes shall be left in the concrete.

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

- a. cut the reinforcement to allow the pipe to be installed.
- b. remove all shuttering and boxing remaining in the holes.
- c. make any alterations required to the position and shape of the holes.
- d. thoroughly clean the sides of the holes so as to obtain a satisfactory bond surface for the new concrete; and

After accurately positioning the pipes/specials in their respective holes, the Contractor shall fix the pipes/specials in the holes.

Immediately before grouting is carried out by the placing of mortar and concrete around the pipes, the surface of the existing concrete shall be saturated with water. All surplus water shall be removed, and the surface covered with a layer,

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approximately 12 mm thick, of mortar consisting of 3 parts of concrete sand and 1 part of cement.

The concrete ingredients shall be mixed and placed as dry as possible to obtain a dense, waterproof concrete. Where a watertight seal is required, the concrete shall be carefully worked around the puddle flange, if any, and the pipe barrel or body of the special, and shall be vibrated in layers so as to obviate any falling away from pipe/special surfaces of the concrete already placed. The whole shall, when set, form a dense, homogeneous, and waterproof mass. A spare vibrator with an independent power source shall be kept in readiness to ensure continuity of placing in the event of the breakdown of the duty vibrator.

Smooth formwork that has been suitably strengthened for use with a vibrator shall be provided for facing the concrete around each pipe/special.

Alternatively, pipes may be cast into the wall in which case the pipes shall be installed in the required position with the formwork fixed around them and the concrete worked thoroughly into contact.

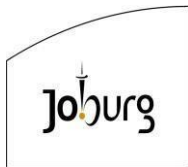
PSG 5.5.19 Foundations for Mechanical Equipment

The mechanical contractors shall supply the holding down bolts for all mechanical equipment, together with all dimensions and other details necessary for the construction of the pedestals and holding down bolt pockets, or the fixing of the bolts. The Contractor shall either form pockets for the holding down bolts to be installed at a later stage or he shall position the bolts before the concrete is cast as ordered by the Employer's Agent. The mechanical contractor shall fix, align and level the mechanical equipment after which the Contractor shall grout up the units solidly by filling the voids inside and under the baseplates as ordered with an approved non shrink grout.

PSG 5.5.20 Testing for Watertightness

The structure that has to be tested for water tightness shall be filled by water being gradually let in until the top water level has been reached. The water level will then be carefully noted and recorded by the Employer's Agent in relation to

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a fixed benchmark, and the structure shall be allowed to remain filled for a period of two weeks to permit complete absorption of water by the concrete.

Any loss of water, which may have occurred, shall then be made up by again filling the structure to the top water level and by allowing the water to remain undisturbed for a period of not less than four days. The structure shall be considered to be watertight if the drop in level in 96 hours (less the drop caused by evaporation) does not represent more than 0,06 % of the volume of the structure.

The evaporation shall be measured by the mean drop in level caused by the evaporation of the water in three flat containers floating in the water, being recorded.

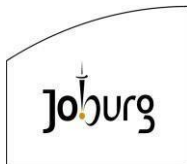
The Contractor is free to attend the taking of all measurements by the Employer's Agent.

In the event of an appreciable leakage being evident or visible at any stage of the filling or testing, or in the event of the final degree of watertightness being unsatisfactory, the Contractor shall, when so ordered by the Employer's Agent, discontinue such filling or testing that shall, at his own expense, take approved steps to rectify the leakage, until a test proves that a sufficient degree of watertightness has been obtained.

Before the expiry of the period of maintenance, the Employer's Agent shall have the right to retest the structure for watertightness; results of such further tests will be made available for the information of the Contractor. In the event of these tests indicating an unsatisfactory degree of watertightness, the Employer's Agent will, before issuing the final certificate, again require the Contractor to rectify the leakage, at his own expense, in such a manner as will cause the least interruption of the water supply to consumers and as will ensure the soundness of the work, to the satisfaction of the Employer's Agent.

Should the failure of the structure to pass the first or any subsequent test for watertightness necessitate the draining of the structure, the Employer reserves

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the right to itself utilise the water by discharging it into its water reticulation network, in which case the Contractor:

- i. shall not have to pay for the subsequent refilling of the structure.
- ii. shall, if applicable, reimburse the Employer for any additional costs incurred to make the water fit for consumption; and
- iii. shall not be entitled to claim for extra time whilst waiting for the water to be discharged into the network.

The costs of retesting the structure for watertightness shall be borne by the Contractor.

PSG 5.5.21 Sterilization of the Reservoir

After completion and before commissioning, the reservoir shall be cleaned, washed and disinfected.

All areas inside of the structure shall be washed to the satisfaction of the Employer's Agent and thereafter it shall be brushed with a 15mg/l calcium hypochlorite solution. Upon completion of the disinfection process, the wash water shall be drained from the structure and disposed of at a suitable location offsite. Thereafter the water tightness test can be carried out.

PSG 6 TOLERANCES

PSG 6.2 Permissible Deviations

PSG 6.2.3 Specified Permissible Deviations

Add the following:

Degree-of-accuracy II is applicable.

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

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| Employer: | | Contractor: | |
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Replace subclause 6.2.3(d)(5) with the following:

| | Permissible deviation | | |
|----------------------------------------------------------|-----------------------|---------|---------|
| | Degree of accuracy | | |
| | III | II | I |
| | mm | mm | mm |
| "Vertically, per metre of height subject to a maximum of | 5 50 | 3 30 | 2 10 |

PSG 7 TESTS

PSG 7.1 Facilities and Frequency of Sampling

PSG 7.1.1 Facilities

Add the following:

Testing will be done in accordance with SANS Methods 860, 861-3 and 863.

The Contractor shall provide sufficient storage capacity for the concrete cubes and shall arrange to have them tested by an approved laboratory.

The cost of all testing, including the cost of sampling, storage and transport of samples shall be included in the rates tendered for concrete work,

PSG 7.3 Acceptance Criteria For Strength Concrete

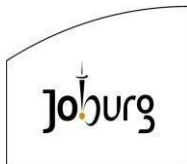
Add the following:

Test results obtained from the supplier of ready-mixed concrete will not be accepted for evaluation in terms of subclause 7.3, but samples for testing shall be taken of such concrete at the point of placing.

PSG 8 MEASUREMENT AND PAYMENT

PSG 8.1 Measurement and Rates

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PSG 8.1.1 Formwork

DELETE "or splays over 20 mm x 20 mm" FROM THE FIRST LINE OF PARAGRAPH 8.1.1.2.

Add the following to paragraph 8.1.1.2:

"Splays up to and including 20 mm x 20 mm will not be measured separately and will be deemed to be included in the formwork costs."

Add the following paragraphs:

8.1.1.7 For construction joints at kickers, all additional costs for formwork to edges up to 300 mm high will be deemed to be included in the rates tendered for vertical formwork to sides of walls and will not be measured separately in narrow widths.

8.1.1.8 No formwork will be measured to edges of blinding layers under structures, and the cost thereof (if needed) will be deemed to be included in the rates tendered for concrete in blinding layers.

8.1.1.9 Back-shuttering or formwork to top revealed surfaces of sloping or conical formwork will only be measured to surfaces of over 40° and up to 85° to the horizontal.

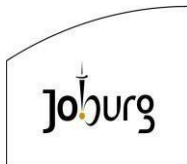
8.1.1.10 Formwork to horizontal surfaces in pump stations, valve chambers, manholes or sumps can either be removed through the manhole cover opening or the Contractor may use permanent formwork at his own cost as no claims in this regard will be considered."

PSG 8.3 Reinforcement

Replace the contents of this subclause with the following:

"The unit of measurement for steel bars shall be the ton of reinforcement in place, in accordance with the Drawings or as authorised by the Employer's Agent.

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

Clips, ties, separators, stools and other steel used for positioning reinforcement will not be measured, unless these are shown on the bending schedules.

The tendered rate shall include full compensation for the supply, delivery, cutting, bending, welding, placing and fixing of the steel reinforcement, including all tying wire, stools, supports and waste."

PSG 8.2 Scheduled Formwork Items

Add the following pay item:

PSG 8.2.7 Chamfers larger than 20 mm x 20 mm

- | | |
|------------------------------|------------------------|
| a. Size and member indicated | Unit: metre (m) |
| b. Ditto for other sizes | Unit: metre (m) |

The unit of measurement shall be the metre length of chamfer formwork provided. Chamfers 20 mm x 20mm and smaller will not be measured for payment and their cost shall be deemed to be included in the rates tendered for formwork.

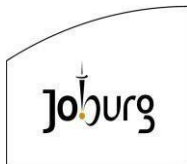
PSG 8.4.3 Concrete

Item to be priced as per SABS 1200G 8.4.3 but to include admixture specified in PSG 3.5.1.

PSG 8.4.7 Grouting

Rate to cover supply and installation of all grouting for ferrol holes in concrete tank walls made up of material specified in PSG 4.5.3.

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PSG 8.5 JOINTS

Delete this pay item and add the following pay item:

PSG 8.5.1 Expansion Joints

Forming expansion joint (Width of joint to be stated) **unit: metre (m)**

The unit of measurement shall be the square metre net area of one face of the concrete that constitutes the joint.

The tendered rate shall cover the cost of all materials and labour for the construction of the joint as specified or shown on the drawings, including the cost of formwork, surface roughening and cleaning, testing and making good.

PSG 8.5.2 Filled Joints

Forming filled expansion joint (Thickness and width of joint to be stated, material of joint filler to be stated) **unit: metre (m)**

The unit of measurement shall be the square metre net area of one face of the concrete that constitutes the joint.

The tendered rate shall cover the cost of all materials and labour for the construction of the joint, including formwork, supply and installation of joint filler as specified, testing and making good.

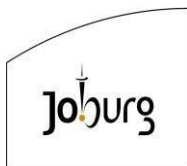
PSG 8.5.3 Sealed Joints

Sealing of joints (Size of finished seal to be stated. Material of joint sealer to be stated). **Unit: metre (m)**

The unit of measurement shall be the linear metre net length of the position where the sealant is applied.

The tendered rate shall cover cost of supplying, preparing and application of the joint sealer as specified including testing and making good. Other costs related to the joint will be covered by items PSG 8.5.1 or 2 as the case may be.

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PSG 8.5.4 Joints with Waterstop

Separate items will be scheduled for:

- a. Waterstops in a straight-line **Unit: metre (m)**
- b. Waterstops on a curve **Unit: metre (m)**
- c. Extra-over items (a) and (b) above for factory moulded intersection pieces (described) **Unit: Number (No)**

Full description of waterstop with the relevant dimensions to be stated.

The unit of measurement shall be the linear metre net length of waterstop installed, measured along its central bulb.

The tendered rate shall cover the cost of supplying and installation of the waterstop. Other costs related to the joint will be covered by items PSG 8.5.1; 2 and/or 3 as the case may be. Regarding the intersection pieces, the rate shall also include the joining of the intersection piece on site with straight or curved water stops.

PSG 8.5.5 Bandaged Joints

Separate items will be scheduled for:

- a. 200mm wide X 2mm thick (horizontal) **Unit: metre (m)**
- b. 250mm wide X 2mm thick (vertical) **Unit: metre (m)**
- c. 300mm wide X 2mm thick (90°angle) **Unit: metre (m)**

The unit of measurement shall be the linear metre net length of the joint to be sealed and the rate shall be the same for horizontal, sloping or vertical joints or of joints around bends.

The tendered rate shall cover the cost of supplying all the material required, preparing and application of the joint bandage as shown on the drawings strictly

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



to the supplier's instructions and making use of the services of an experienced company for the bandaging of the joints, including cutting and welding, testing and making good.

Other costs related to the joint will be covered by item PSG 8.5.2 & 8.5.3.

PSG 8.7 Grouting

Add the following pay items:

PSG 8.7(c) Grouting in of equipment supplied and installed by the Plant Supplier

- i. using non shrink grout (state type) **unit: cubic metre (m³)**
- ii. using dry packed grout **unit: cubic metre (m³)**

The unit of measurement shall be the cubic metre of completed grouting.

The tendered rate shall include full compensation for supplying of all materials, mixing, applying and finishing to a steel float surface finish after installation of the Plant.

Add the following pay items:

PSG 8.10 Testing Structures for Watertightness

The unit of measurement for testing for watertightness shall be the lump sum.

Unit: Lump sum

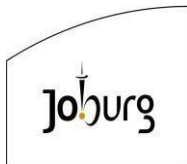
The tendered rate shall include full compensation for the provision of all labour, plant and materials necessary for testing the structure for watertightness as specified, and for emptying it afterwards, all to the satisfaction of the Employer's Agent.

PSG 8.11 Sterilization of the Reservoir

The unit of measurement for sterilization shall be the lump sum.

Unit: Lump sum

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



The tendered rate shall include full compensation for the provision of all labour, plant and materials necessary for sterilization as specified, and for emptying it afterwards, all to the satisfaction of the Employer's Agent.

PSG 8.12 Casting in Pipes

The tendered rate shall include full compensation for the provision of all labour, plant and materials necessary for the casting in of pipes (size, type and location indicated) as provided in Clause 5.5.18.

PSG 8.13 Waterproofing

The unit of measurement for waterproofing shall be square metre of the area where the product is applied to. **Unit: Square metre (m²)**

The tendered rate shall include full compensation for the provision of all labour, plant and materials necessary for the preparation and application of the approved waterproofing product to the indicated concrete surfaces as specified, all to the satisfaction of the Employer's Agent.

SANS 1200 H STRUCTURAL STEELWORK

PSH 2 INTERPRETATION

PSH 2.1 Supporting Specifications

- a. SANS 1200 HA

PSH 3. STRUCTURAL STEELWORK

Replace the contents of this clause with the following:

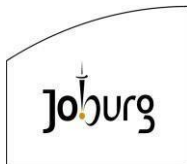
All structural steelwork will be to SANS 1431: 2003, Grade S355JR.

PSH 3.6 Bolts, Nuts and Washers

PSH 3.6.1 Bolts and Nuts (Other than Friction Grip)

Add the following to this Sub-Clause:

| | | | |
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



All bolts and nuts shall comply with the requirements of SANS 136 and shall be 4.6 strength grade. Washers shall be provided at each nut and shall be of the same material (or coating where applicable) to match the bolt and nut. Single coil square section spring washers shall be fitted to all nuts subject to vibration.

Bolts other than jacking bolts shall project not less than 3 mm and not more than 10 mm from the heads of the nuts after tightening. An approved nickel based anti-seize compound shall be used on all stainless steel bolts and nuts.

Unless otherwise shown all bolts, nuts and washers shall be of the material as specified below:

Holding down bolts to be built into concrete work as well as bolts to be installed above ground level directly above and under water shall all be of stainless steel grade 304. Bolts for flexible couplings and flanges for underground installation shall be of the same material as the couplings or flanges. Bolts to be installed inside buildings shall be of the same material as the pipework and fittings. Corrosion protection shall be as specified in the Particular Specification G02: Corrosion Protection.

Suitable plastic sleeves and/or washers shall be used for protection against corrosion by bi-metallic action.

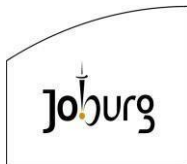
PSH 5 CONSTRUCTION

PSH 5.1.1 Shop Drawings

The Contractor is to provide the Employer's Agent with shop drawings at least 4 weeks before the Contract Commencement date.

The drawings shall be compiled in the official language of the Contract. Approved drawings shall form an integral part of the Contract documents. Drawings not accepted and signed by a professional Employer's Agent, shall not be used by the Contractor on the site of Works for construction purposes or the manufacturing of any member.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



The Contractor shall submit completed drawings in accordance with this specification and shall not be entitled to claim for delays resulting from incomplete submittals that may lead to the rejection thereof. The Employer's Agent shall require a period of at least 21 working days for the reviewing of the submittals.

The following submission items are considered to be essential and shall form part of the shop drawing submittals:

- A complete material list clearly indicating the quantities of each member,
- Detail of each member showing the overall dimensions, drilling requirements and net weight, and
- Connection details for purlins fixing, bracing, sag rods and all members.

PSH 5.3.9 Protective Treatment

Delete this Sub-Clause and refer to the Particular Specification G02: Corrosion Protection.

SANS 1200HA: STRUCTURAL STEELWORK (SUNDRY ITEMS)

PSHA 2 INTERPRETATION

PSHA 2.1 Supporting Specifications

(c) SANS 1200 H

PSHA 3 MATERIALS

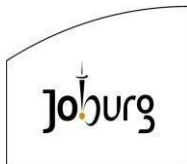
PSHA 3.3 Bolts, Nuts and Washers

PSHA 3.3.1 Bolts and nuts (other than friction grip)

Add the following to this Sub-Clause:

All bolts and nuts shall comply with the requirements of SANS 136 and shall be 4.6 strength grade. Washers shall be provided at each nut and shall be of the

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



same material (or coating where applicable) to match the bolt and nut. Single coil square section spring washers shall be fitted to all nuts subject to vibration.

Bolts other than jacking bolts shall project not less than 3 mm and not more than

10 mm from the heads of the nuts after tightening.

Holding down bolts to be built into concrete work as well as bolts to be installed above ground level directly above and under water shall all be of stainless steel grade 304. Bolts for flexible couplings and flanges for underground installation shall be hot-dip galvanized in accordance with the requirements of SANS 763. Bolts to be installed inside buildings shall be hot-dip galvanized in accordance with the requirements of SANS 763 and afterwards painted with the pipework and fittings as specified in the Particular Specification G02: Corrosion Protection.

Suitable plastic sleeves and/or washers shall be used for protection against corrosion by metallic action.

PSHA 5.2.10 Protective treatment

Delete this Sub Clause and refer to the Particular Specification G02: Corrosion Protection.

PSHA 5.2.11 Handrails

Add the following to this Sub Clause:

Stanchions for handrailing shall be of approved prefabricated ball type made in one piece without welding at ball joints to accept the hand and kneerails and shall have adequate baseplates drilled for two No. M 12 bolts at appropriate centres.

Hand and kneerails shall consist of 25 mm nominal inside diameter tubing cut and bent to shape and no welding is allowed at joints. Stanchions shall be

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



spaced not more than 1,5 metres apart. Unless otherwise shown, all handrailing shall be 900 mm above walkway level.

All tubing, stanchions and baseplates shall be manufactured in grade 304 stainless steel or hot dipped galvanized (heavy coating), as scheduled or shown on the drawings.

All stainless steel components shall have a No. 1 surface finish and surfaces shall be pickled and passivated in accordance with the requirements of the Particular Specification G02: Corrosion Protection.

PSHA 5.2.12 Ladders

Ladders shall be of all welded construction completely in accordance with the accompanying sketch. Corrosion Protection shall be carried out in accordance with the requirements of the Particular Specification G02: Corrosion Protection.

Vertical ladders may also comprise tubular stringers at 500 mm centres made of 32 mm nominal bore pipes with wall thickness not less than 3.0 mm. Rungs shall be spaced 300 mm centres and made of 20 mm nominal bore pipes with wall thickness not less than 2.5 mm.

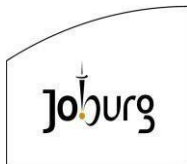
The tubular stringers shall be drilled on one side only to provide a sliding fit for the ends of the rungs which shall protrude through these holes up to the opposite inside face of the stringer and be welded all around where they enter the holes in the stringers.

Lugs for bolting these ladders to walls shall consist of 20 mm nominal bore pipes with wall thickness not less than 2.5 mm. Baseplates for stringers and lugs shall be adequate and drilled for 2 No. M12 stainless steel bolts at appropriate centres.

PSHA 5.2.13 Prefabricated open grid flooring

PSHA 5.2.13 Add the following to this sub clause:

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Open grid flooring shall be of square pattern type of approved manufacture with 40 x 4 mm minimum thickness bearer bars spaced at not more than 40 mm centres and shall be manufactured in grade 304 stainless steel or 3CR12 steel (as scheduled or as shown on the drawings). The tendered rate shall include for all cutting into the required panels, banding and for frames detailed below.

Open grid flooring shall be provided with welded frames as scheduled, made of 3CR12 steel or stainless steel as scheduled or as shown on the drawings and with dimensions 50 x 50 x 5 mm thick angle to provide a seating for the flooring. The nett clearance between the side bars of the open steel flooring and the vertical leg of the frame or strip shall be 5 mm per side. The frames shall be complete with 100 x 40 x 3 mm fishtail anchors (of the same material) fixed at 500 mm centres for building the frame into the concrete work.

Pickling and passivation shall be carried out in accordance with the requirements of the Particular Specification G02: Corrosion Protection.

PSHA 5.2.14 Floorplate floors (chequer plates)

Unless otherwise stated on the drawings or schedules, floorplate shall have a thickness of 4.5 mm and shall be of the non slip type.

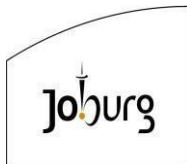
The floorplate shall be made up as shown on the Drawing complete with handles, hinges and locating angles welded to the underside.

The tendered rate shall include for all cutting into the required panels (and for a frame, should it be described on the drawings or schedules).

Floorplate shall be manufactured in grade 304 stainless steel or 3CR12 steel (as scheduled or as shown on the drawings) and shall be pickled and passivated as specified in the Particular Specification G02: Corrosion Protection.

PSHA 5.2.17 Straps for pipes

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Straps for holding down pipes to concrete surfaces shall be manufactured in the material stated on the drawing and to the dimensions as shown on the drawing. If no dimensions or materials are shown, same shall be 50 mm wide by 3 mm thick 3CR12 steel. The strap shall be slotted and shall be fixed to the concrete by means of M10 stainless steel self drilling anchor bolts. The material between the strap and pipe shall be 8 mm thick neoprene sealing material 50 mm wide.

Pickling and passivation shall be carried out in accordance with the requirements of the Particular Specification G02: Corrosion Protection.

SANS 1200 L: MEDIUM PRESSURE PIPELINES

PSL 2 INTERPRETATION

PSL 2.1.2 Supporting Specifications

Add the following to this Sub-Clause:

(h) SANS 1200 HA

PSL 2.4 Abbreviations

Add the following to this Sub-Clause:

FC - Fibre reinforced cement

HDPE - High density polyethylene

PSL 3 MATERIALS

PSL 3.3 Cast Iron Pipes, Fittings And Specials

Add the following to this Sub-Clause:

All cast iron pipes and fittings shall comply with the requirements of BS2035 and unless otherwise specified, shall be of class D quality for straight pipes and of class CD quality for fittings. Material used shall comply with the requirements of SANS 1034 grade 300 for "Grey Iron Castings".

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

Before leaving the foundry, all cast iron pipes and fittings shall be protected against corrosion in accordance with the Particular Specification G02: Corrosion Protection.

PSL 3.4 Steel Pipes, Fittings And Specials.

PSL 3.4.1 General

Add the following to this Sub-Clause:

Stainless steel shall be ANSI Type 304L Schedule 10 unless otherwise specified.

PSL 3.4.3 Pipes of Nominal Bore Over 150mm

PSL 3.4.3 (a)

Replace this Sub-Clause with the following:

All pipes to comply with SANS 719 Grade “B” with wall thickness as follows:

| Nominal Bore (mm) | Minimum Wall Thickness |
|-------------------|------------------------|
| 200 – 375 | 4 mm |
| 400 – 550 | 5 mm |
| 600 – 700 | 6 mm |
| 750 – 900 | 8 mm |
| 950 – 1550 | 10 mm |
| 1800 | 14 mm |

PSL 3.7.2 Polyethylene pipes

Replace this Sub-Clause with the following:

All HDPE pipes and pipe fittings shall comply with SANS ISO 4427. All pipes, fittings and stub ends shall be joined through butt-welding in accordance with

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



SANS 10112 and welding beads shall be removed on the inside only of all butt-welded joints.

PSL 3.8.3 Flanges and accessories

Add the following to this Sub Clause:

Unless otherwise scheduled the dimensions and drilling of standard flanges shall comply with the requirements of SANS 1123 table 16 for pipes and fittings with a diameter of 150 mm and smaller and in accordance with table 10 for diameters exceeding 150 mm. Flanges shall be machined flat, i.e. without a raised joint face. Puddle flanges shall have the same dimensions as standard flanges but shall be undrilled.

Faces of flanges which will be in contact with jointing gaskets shall receive a protective coating similar to the corrosion protection specified for the internal surface of the pipes and fittings of such thickness and consistency as will not impair the air/gas/water tightness of the joint.

The jointing gaskets shall comply with the requirements of BS 3063 and shall be cut to the full width of the flange and holed for bolts.

All threaded bolts shall be coated with a nickel based anti-seize compound before adding the nut.

PSL 3.9 Corrosion Protection

Delete this Clause and refer to the Particular Specification G02: Corrosion Protection.

PSL 3.10 Valves

Delete this Clause and add the following:

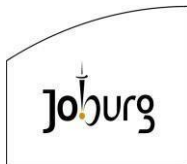
- a. Gate valves shall be double flanged with non rising spindle and shall be fitted with gun metal seats, bronze spindles and gun metal nuts. The direction of closing, which shall be clockwise when viewed from above,

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

must be clearly indicated on the hand wheel of each valve. Gate valves shall be of standard waterworks pattern complying with the requirements of SANS 664 for working pressures as specified for each application.

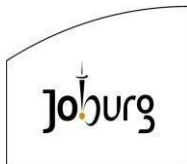
- b. Reflux valves shall, except where otherwise specified, be Nitrile covered single door swing type and shall be double flanged and mounted horizontally. The design shall be such that the gate rests against the seat in the absence of flow or of differential pressure, without the aid of springs. Reflux valves shall comply with the requirements of SANS 1551-1 for working pressures as specified for each application.
- c. Butterfly valves shall be double flanged, double eccentric type and shall conform to the requirements of BS 5155.
 - The valve body shall be of spheroidal graphite cast iron, grey cast iron or ductile iron. The valve body shall have integral hubs for housing shaft bearings and seals.
 - Valves shall be capable of operating at any opening without variation of disc position or flutter of the disc.
 - The profile of the resilient seats shall be smooth and continuous and shall provide adequate "lead in" for the resilient seal during closure of the disc to prevent excessive sealing torque requirements.
 - The resilient seals shall have non-weathering, non-sticking, long life properties and shall be fully locked-in, removable and replaceable.
 - Valve discs shall be of a single casting, with a streamlined shape, and shall have smooth surfaces.
 - Shafts shall be continuous or may be of the stub-shaft type. If of the stub-shaft type, each shaft shall extend into the disc hub for a distance of 1,5 times the shaft diameter.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



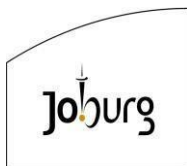
- Valves shall be capable of opening or closing under an unbalanced pressure equal to the specified working pressure without any difficulty. Closure of valves shall be by clockwise rotation of the handwheel (or ratchet, where specified for valve diameters of 200 mm or smaller) and shall be suitable for droptight shut-off application.
- d. Pinch Valves shall be double flanged and shall be suitable for fitting an electrically operated actuator to the valve if required and shall close in a clockwise direction when viewed from above. The valve body shall be manufactured in S.G. iron in accordance with BS EN 10213-2 grade 680. The sleeve shall be manufactured in neoprene and reinforced with steel cord. The valves shall be suitable for a working pressure as specified for each application.
- e. Plug Valves shall be flanged and shall be suitable for fitting an electrically operated actuator to the valve if required and shall close in a clockwise direction when viewed from above.
- Port arrangements shall be as specified for each application. The valve shall be antistatic and the body shall be manufactured in S.G. iron in accordance with BS EN 10213-2 grade 480. The plug shall be manufactured in stainless steel. The body of the valve shall be supplied with two surge connections for cleaning the inside of the valve. The valve shall be suitable for a working pressure as specified for each application.
- f. Resilient Seal Gate Valves shall be double flanged with non rising spindle and shall conform to the requirements of SANS 664 for working pressures as specified for each application. Spindles shall be in stainless steel with bronze nuts. The direction of closing, which shall be clockwise when viewed from above, must be clearly indicated on the handwheel of each valve.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



- g. Air Valves shall have single or double openings as specified and shall be manufactured, when applicable, to the same standards of quality and finish as laid down in SANS 664 for gate valves.
- Each single acting air valve shall incorporate either a large or a small orifice, as specified, and shall be fitted with a detachable copper alloy isolating gate valve.
 - Each double acting air valve shall incorporate a large and a small orifice as well as an isolating valve that forms an integral part of the air valve. Such isolating valves shall have bronze or stainless steel spindles fitted with CI cap tops and shall close clockwise.
 - The cross sectional area of the orifice openings shall be at least equal to the nominal bore of the air valve.
- h. Knife gate valves shall have a solid body casting, and shall be suitable for mounting between flanges or as a terminal valve. The knife gate valve shall have a polished 304 stainless steel gate with chamfered edge at the base.
- The gate shall seal either on a replaceable nitrile O ring or P.T.F.E. seal secured in the body. The seal shall be an internal resilient seal, mechanically retained, to ensure that the blade is guided throughout its travel and that bi-directional drop tight leak proof sealing is obtained.
 - Knife gate valves shall be fitted with rising grade 304 stainless steel spindles with non-rising hand wheels. The direction of closing, which shall be clockwise when viewed from above, shall be indicated clearly on the handwheel. The knife gate valves shall comply with the requirements of SANS 664, for working pressures as specified for each application.
- i. General: Before leaving the factory valve bodies shall be treated as follows:

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Internally: 150 mm diameter and smaller: manufacturer's standard corrosion protection treatment

Internally: larger than 150 mm diameter: as specified in the Corrosion Protection Specification

Externally: as specified in the Corrosion Protection Specification.

PSL 7.4 Tests on Epoxy Coatings

Delete this Clause and refer to the Particular Specification G02: Corrosion Protection Specification for Civil, Mechanical and Electrical Engineering Construction (Golder Associates, 2006 Edition).

PSL 8 MEASUREMENT AND PAYMENT

PSL 8.2.5 Supply and Place Pipes, Valves And Specials

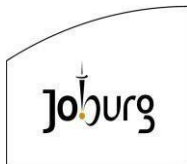
Replace this Pay Item with the following Pay Item:

Supply, testing and installation of pipework, fittings and specials as detailed in the Pipe Schedule of the Schedule of Quantities

Unit: Sum

The tendered sum shall include full compensation for the supply of all material, bolts, nuts and gaskets as described under PSH 3.6.1, manufacture of the pipes, fittings and specials and shall further include for delivery, installation, jointing, testing, holding in position during concrete encasing, blanking off ends to prevent ingress of foreign matter, cleaning out pipes, fittings and specials before connecting up and the full corrosion protection of pipes, fittings and specials as specified in the Particular Specification G02: Corrosion Protection. Testing shall include for the supply of water, testing equipment, blank flanges, pipe plugs and all other items necessary to conduct a successful test.

| | | | |
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



SANS 1200 LB: BEDDING (PIPES)

PSLB 3.4.1 Contractor Required to Excavate Selectively

Notwithstanding the requirements of Sub-Clause 3.7 of SANS 1200 DB and Sub-Clause 3.4.1 of SANS 1200 LB regarding the use of selective methods of excavating, the Contractor shall use selective methods of excavating and shall provide and use plant that will enable him to avoid burying or contaminating material that is suitable and is required for bedding.

PSLB 3.4.2 Suitable Material Not Available from Trench Excavation

For this Project freehaul will be regarded as haulage within the boundaries of the Site of the Works as well as 1,0 km outside the boundaries including the access road between the fence lines. This is also valid for Clause LB 8.1.5, LB 8.1.6, LB 8.2.1, LB 8.2.2.2, LB 8.2.2.3 and LB 8.2.5.

PSLB 5.1.2 Details of bedding

Unless otherwise directed on the Drawings or instructed by the Employer's Agent, all pipes shall be laid on Class B bedding.

PSLB 5.4 Concrete Casing to Pipes

Pipes which are to be encased in concrete shall be encased in grade 10/20 concrete to the dimensions as shown on the Drawings or as instructed by the Employer's Agent.

Add the following Sub-Clause:

PSLB 5.5 Draining of Trenches

Where ground water is present to such an extent that, in the opinion of the Employer's Agent, it would hamper the placing and consolidation of the fine granular bedding or the placing of the concrete bedding in the bottom of the trench, as the case may be, or would cause buoyancy of the pipes, the Employer's Agent may order the provision of a drain in the bottom of the trench

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



to assist in dewatering during construction and until the trench has been backfilled to such an extent as to prevent buoyancy of the pipes.

The drain ordered will be as shown in the sketches of Types 1, 2, 3 and 4 Subsoil Drains attached.

At certain points along the trench, depending upon the amount of water to be handled, sumps shall be formed from which the water may be pumped to prevent a build up of water in the trench to a level above that of the top of the layer of stone forming the underdrain.

The stone in the underdrain shall consist of nominal 40 mm crushed stone complying with the grading as specified for 'Stone for Concrete' in Table 5 of SANS 1083 (as amended 1979) and shall be well compacted to provide a uniform support for the pipe bedding to be placed on top of it.

Before placing the granular bedding or the concrete bedding the underdrain shall be covered with an approved non-woven polyester geofabric of at least 210g/m² to prevent ingress of granular material or mortar into the interstices of the underdrain.

Add the following pay item:

SANS 1200 LC: CABLE DUCTS

PSLC 8 Measurement and Payment

PSLC 8.2.9 Overhaul of surplus excavation

Add the following Sub-Clause:

For this Project freehaul will be regarded as haulage within the boundaries of the Site of the Works as well as 1,0 km outside the boundaries including the access roads within the fence lines.

SANS 1200 LD: SEWERS

PSLD 5 CONSTRUCTION

PSLD 5.2 LAYING AND BEDDING

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Add the following Sub-Clauses:

PSLD 5.2.5 Reinforced concrete pipes:

Where concrete pipes are laid between structures, manholes or junction boxes, laying of pipes shall commence at the manhole or junction box at the lower end of the pipeline with full length pipes with the last pipe cut to form a closure piece for building into the structure, manhole or junction box at the upper end of the pipeline. Only the last pipe at the upper end of the pipeline shall be cut to avoid problems with jointing.

PSLD 5.2.6 FC pipes:

Where Fibre Cement (FC) pipes are laid between structures, manholes or junction boxes, laying shall commence at the lower end of the line with a short length (500 mm or 2.5 times the internal diameter of the pipe, whichever length is longer – with both ends machined to suit a flexible coupling), and thereafter by full length pipes with the last pipe cut so as to form the closure piece in the line as at the lower end of the line.

PSLD 5.2.7 Cut pipes:

In the case of concrete pipes, after the cut end has been finished off it shall be painted with two coats of bituminous paint to provide protection to the exposed ends of the reinforcing steel in the pipe.

In case of FC pipes, the cut ends shall be machined to the correct outside diameter with appropriate tools. All work performed on the cut ends shall be done to the satisfaction of the Employer's Agent.

PSLD 8 MEASUREMENT AND PAYMENT

Add the following pay items:

PSLD 8.3 Building Pipes into Brickwork

- a. Pipes supplied and installed by the Contractor (irrespective of type)

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



i. (state diameter of pipe) **Unit: Number (No)**

ii. (etc. for other diameters) **Unit: Number (No)**

The unit of measurement shall be the number of pipes built into the concrete work as shown on the drawing.

The tendered rate shall include full compensation for supplying all materials (wet to dry epoxy in the case of casting new concrete against the faces of old concrete) concreting in the pipes, cutting and placing formwork to fit around pipes and neatly finishing to conform to a smooth surface finish.

In the case of the Contractor building in his own pipes the rate shall also include for holding the pipe in position and aligning the pipes to the correct levels as indicated on the drawing or as ordered by the Employer's Agent.

PSLD 8.4 Supplying and Building High Density Polyethylene (HDPE) Or UPVC Pipes as Specified In Sans 1200 LF Into Brickwork (For Cable Sleeves Or Pipe Sleeves)

a. State material, diameter and class **Unit: Metre (m)**

b. Etc. for other diameters **Unit: Metre (m)**

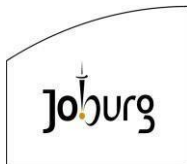
The unit of measurement shall be the linear metre of pipe installed.

The tendered rate shall include full compensation for supplying, fixing and building in of pipes. The rate shall further include for 2,5mm diameter draw wires in stainless steel and for cutting ends to the required levels for installation of cables by the Electrical Contactor or after installing pipework through ducting. The ends shall be closed with end caps to prevent ingress of rubbish and water.

PSLD 8.5 Extra Over Item LD 8.2.1 For Cutting and Painting Ends Of Concrete Pipes To Form Closure Pieces In The Pipeline (Measured Per Cut End)

a. For type or class of pipe, state diameter **Unit: Number (No)**

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



- b. etc. for different class or types of pipes, state diameters

Unit: Number (No)

The unit of measurement shall be the number of cut ends in the pipeline. The tendered rate shall include full compensation for the cutting of the pipe, including trimming of cut ends, pipe wastage and supplying and applying two coats of bituminous paint to cut ends to protect the reinforcing steel against corrosion.

SANS 1200LE: STORMWATER DRAINAGE

PSLE 1 SCOPE

PSLE 1.1 Add the following:

This specification covers all the work in connection with the construction of subsurface drains and drainage blankets at the locations and to the size, shapes, grades and dimensions as shown on the Drawings or as directed by the Employer's Agent.

PSLE 3 MATERIALS

PSLE 3.5 Geofabric Blanket

Delete this Sub Clause and refer to Sub Clause PSLE 3.7(c).

Add the following Sub Clauses:

PSLE 3.6 Pipes

- a. Pipes for subsurface drains shall be one of the following types as specified:
- b. Perforated HDPE pipes which comply with the requirements of DIN 4262 Part 1.
- c. Perforated or slotted unplasticised PVC pipes which comply with the requirements of SANS 791.

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- d. Porous concrete pipes which comply with the requirements of BS 1194.
- e. Vitrified clay pipes which comply with the requirements of SANS 559 (excepting the requirement regarding nominal diameter) and which have special joints intended for subsoil drains may be specified or used if the Employer's Agent's approval is obtained in advance, provided that, where the gaps at the joint do not conform to the requirement for the slots specified below, the grading of the permeable material shall be suitable adapted to meet the design requirements for preventing permeable material from entering the pipe.

The size of perforations in perforated pipes shall in all cases be 8 mm in diameter $\pm 1,5$ mm, and the number of perforations per metre shall not be fewer than 26 for 100 mm pipes and 52 for 150 mm pipes. Perforations shall be spaced evenly in two rows for 100 mm pipes and in four rows for 150 mm pipes.

Slotted pipes shall have a slot width of 8 mm with a tolerance of 1,5 mm in width. The arrangement of slots shall be subject to the Employer's Agent's approval, but the total slot area shall not be less than that specified for perforations.

Pipes without slots or perforations required for transporting subsoil water from the subsoil drain proper to the point of discharge shall be unperforated pitch fibre of PVC pipes of the types specified above, or concrete pipes which comply with the requirements of SANS 677 Class A.

PSLE 3.7 Permeable Material

Sand, crushed stone and geotextiles used as permeable filter materials for subsurface drains and drainage blankets shall conform to the following requirements:

- a. Sand

Sand shall be clean, hard washed river sand obtained from approved sources. The grading of the sand shall be subject to the Employer's Agent's approval.

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The requirements in respect of each type and the comparative prices of sand from the available sources will determine which source is to be used. The Contractor shall submit samples and prices from available sources when so instructed by the Employer's Agent.

b. Crushed stone

Crushed stone shall be clean, hard, durable crushed stone from approved sources. The aggregate crushing value of the stone shall not exceed 30 when tested in accordance with method B1 of TMH1.

i. Crushed stone for graded filters

Crushed stone for graded filters shall conform to the grading requirements set out below:

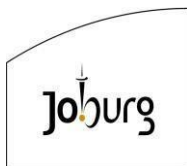
| Grade | Sieve size (mm) | Percentage passing by mass |
|-----------------|-----------------|----------------------------|
| Fine grade | 26,5 | 100 |
| | 13,2 | 60 - 85 |
| | 3,35 | 15 min |
| | 1,18 | 15 max |
| Coarse grade | 26,5 | 100 |
| | 13,2 | 60 - 85 |
| | 6,70 | 15 min |
| | 2,36 | 15 max |

The aggregate shall be evenly graded between the coarse and fine fractions with no undue discontinuities. The Employer's Agent shall indicate the grade of stone required.

ii. Crushed stone for filters which incorporate geotextiles

Crushed stone for filters which incorporate geotextiles shall be nominally sized stone which conforms to the grading requirements of

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SANS 1083, or crushed stone which complies with the grading requirements for graded filters. The Employer's Agent shall indicate the type of stone to be used in each particular case.

c. Geotextiles

Geotextiles shall be a non woven, spun or thermic bonded continuous filament fabric consisting of at least 85% by mass of poly propylene, polyester or other approved material and manufactured for civil engineering applications by a recognized manufacturer. The brand and type of geotextile to be used shall be as specified in the Project Specifications or on the Drawings or as directed by the Employer's Agent.

PSLE 3.8 Polyethylene Sheeting

Polyethylene sheeting shall be black in colour with a minimum thickness of 0,15 mm and manufactured by a recognized manufacturer.

PSLE 5 CONSTRUCTION

PSLE 5.2.4 Pipes With Open Joints Laid With Geofabric Blanket Wrapping

Delete this Sub Clause and refer to Sub Clause PSLE 3.6.

Add the following Sub Clauses:

PSLE 5.8 Graded Filter Drains

After the completion of the excavations, the bottom portion of the trench shall be lined with polyethylene sheeting as shown on the Drawings. The top edges of the vertical portions of the sheeting shall be tacked to the sides of the excavation with nails or by any other suitable approved means. The sheeting shall be heat welded at the laps. Sheeting damaged during installation or construction shall be replaced at the Contractor's cost.

A layer of permeable material of the class and thickness as shown on the Drawings shall be placed on the polyethylene sheeting on the bottom of the

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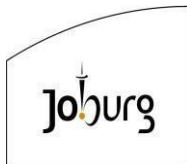
trench and shall be lightly tamped and finished to the required gradient to serve as a bedding for the pipes.

Pipes of the type and size required shall then be firmly bedded in the permeable material, true to level and grade, and shall be coupled where required. Where spigot and socket pipes are used, the socket ends shall be laid upgrade with the spigot fully entered into the adjacent socket. Where plain butt ended pipes are used, they shall be laid firmly together to prevent the infiltration of backfill material. Perforated and slotted pipes shall be joined by couplers. Perforated pipes shall be laid with the perforations at the top unless otherwise shown on the Drawings or instructed by the Employer's Agent, in writing. The higher end of a subsurface drain pipe shall be sealed off with a loose concrete cap, and at the lower end the pipe shall be built into a concrete headwall to provide a positive outlet, or it shall be connected to stormwater pipes or culverts, all as shown on the Drawings or as directed by the Employer's Agent.

Successive layers of permeable material shall be placed after the pipes have been laid. Permeable material shall be placed in layers not exceeding 300 mm at a time, and shall be lightly compacted. The total thickness of each type of permeable material shall be carefully controlled by means of spacers. When successive layers are placed, the lower layer shall not be walked on and shall, as far as is possible, not be disturbed. Care shall be taken to prevent the contamination of permeable material during construction of the subsurface drains, and all permeable material contaminated by the soil or silt shall be removed and replaced by the Contractor at his expense. Care shall also be taken at all stages not to perforate or otherwise damage the polyethylene lining.

The remainder of the trench shall be immediately backfilled with approved impermeable material preferably obtained from the excavations, in layers not exceeding 100 mm and compacted to 90% of modified AASHTO density, unless otherwise ordered by the Employer's Agent. The trench must be specially protected against the ingress of water, soil and silt until the backfilling with impermeable material has been completed.

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Permeable material in subsoil drains shall not be taken to the surface but shall be discontinued at such heights as will be determined by the Employer's Agent.

Any section of a subsurface drain constructed from pipes without perforations or slots shall be backfilled with impermeable backfill material as described above.

PSLE 5.9 Filter Drains Which Incorporate Geotextiles

After the completion of the excavations, the bottom portion of the trench shall be lined with geotextile sheeting as shown on the Drawings. The top edges of the vertical portions of the geotextile sheeting shall be tacked to the sides of the excavation with nails or by another suitable approved means. An overlap of at least 200 mm shall be provided at each joint. Geotextile sheeting damaged during the installation or construction shall be replaced at the Contractor's cost.

The specifications set out in PSLE 5.8 above for the construction of the pipe bedding, the pipe laying, and the placing of the crushed stone filter materials for graded filter drains shall apply mutatis mutandis to filter drains which incorporate geotextiles.

After the pipes have been laid and the specified layer of crushed stone filter material has been completed, the protruding vertical sections of the geotextile sheeting shall be folded back across the filter material so that the filter material will be completely enwrapped in the geotextile sheeting. An overlap of at least 200 mm shall be provided between the portions folded back.

The specifications set out in Sub Clause PSLE 5.8 above shall apply mutatis mutandis to the placing of the remaining layers of permeable material and the top layer of impermeable material, all as shown on the Drawings or ordered by the Employer's Agent.

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PSLE 5.10 Drainage Blankets

Drainage blankets shall be constructed in accordance with the details shown on the Drawings. Firstly geotextile sheeting shall be laid on top of the layer on which the drainage blanket is constructed. Then permeable material of the type specified shall be spread on the geotextile sheeting to the specified depth. The Contractor shall take care not to damage the geotextiles. The permeable material shall be lightly compacted and finished to the required level. To complete the drainage blanket, geotextile sheeting shall be laid on the layer of permeable material.

The layers on top of the drainage blanket shall be constructed in such a manner that the permeable material or the geotextile sheeting will not be displaced or damaged. Normally material which is to be compacted on top of the drainage blanket shall be watered and mixed before it is placed on the blanket. It shall then only be necessary to level and compact the material on the blanket.

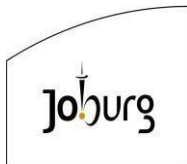
PSLE 8 MEASUREMENT AND PAYMENT

Add the following pay items:

PSLE 8.2.17 Pipes In Subsurface Drains

- (a) (Type of pipe indicated) complete with couplings:
 - (i) 110mm diameter perforated uPVC pipe **Unit: Metre (m)**
 - (ii) etc. for other diameters **Unit: Metre (m)**
- (b) (Type of fitting indicated)
 - (i) (diameter indicated) **Unit: Number (No)**
 - (ii) etc. for other diameters **Unit: Number (No)**
- (c) Etc. for other types of pipes
- (d) Etc. for other types of fittings

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



The unit of measurement for pipes shall be the metre of pipe, measured in place along its centre line, including the length of fittings. The unit of measurement for fittings shall be the number of fittings, irrespective of the type.

The tendered rate shall include full compensation for the supply and construction of the pipes and fittings as specified.

PSLE 8.2.18 Polyethylene Sheeting

(State thickness or an equivalent approved material, for lining subsurface drains) Unit: Square metre (m²)

The unit of measurement shall be the square metre of polyethylene sheeting installed, measured net from the specified dimensions.

The tendered rate shall include full compensation for the supply and construction of the sheeting as specified.

NOTE: For items PSLE 8.2.14 to PSLE 8.2.17 excavations for subsurface drains shall be measured in accordance with SANS 1200D or SANS 1200DB where applicable.

SANS 1200 LG: PIPE JACKING

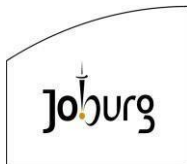
PSLG 5.1.1 Authority to Jack Pipeline under Facilities Controlled by Third Parties

Add the following:

The Contractor shall be bound by and shall observe the requirements and/or conditions imposed by the service provider in granting any such permission as specified. Although the general supervision and control of the Works falls under the authority of the Employer, the service provider reserves and shall have the right to instruct the Contractor directly in any matter that has a direct bearing on the safety of the service and the protection of the interests of the service provider.

PSLG 5.6 Backfilling and Disposal of Excavated Material

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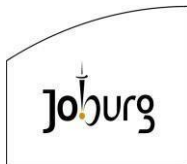


Add the following Sub-Clause:

The thrust and reception pits shall be backfilled with material obtained from the pit excavations. Hard and rock material shall be incorporated in the backfill only to the extent approved by the Employer's Agent. Depending on the quality of the material, the Employer's Agent may direct that it be mixed with other backfill material.

If, in the opinion of the Employer's Agent, insufficient or no suitable material is available for this purpose within the freehaul distance, and the shortage of such material has not been caused by the methods used by the Contractor, the Employer's Agent may instruct the Contractor to import sufficient suitable material. The Contractor shall so arrange his work that the importance of backfill material is kept to a minimum in respect to both quality and overhaul.

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| Employer: | | Contractor: | |
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PORTION 3: PARTICULAR SPECIFICATION

PSU: BUILDER'S WORK

PSU 1 SCOPE

This section covers the various construction activities associated with the erection of buildings which form part of certain civil projects.

Building work shall be carried out in accordance with the National Building Regulations and the information contained in this section.

Work appurtenant to the erection of buildings such as earthworks, concrete work, structural steelwork, etc. shall be carried out as specified in the appropriate sections of these specifications and will be measured and paid for under those sections.

PSU 2 INTERPRETATION

PSU 2.1 Supporting Specifications

The following specifications shall, inter alia, form part of the Contract Document:

- (a) SANS 1200A
- (b) SANS 1200D
- (c) SANS 1200G
- (d) SANS 1200HA
- (e) Particular Specification G02: Corrosion.

PSU 3 MATERIALS

PSU 3.1 BRICKWORK, PLASTER WORK AND FLOOR SCREEDS

- a. Bricks

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Bricks shall comply with SANS 227 and shall be classified according to their intended use as defined below.

Engineering bricks in both the clay and cement categories shall be durable and selected for their uniformity of dimension, with a minimum average strength of 25 MPa. These bricks shall be free from cracks, chips or defects.

Face bricks shall not require any further decorative treatment and shall be selected for their uniformity of dimension, colour and texture, with a minimum average compressive strength of 25 MPa. These bricks shall be of clay, and shall be pressed or wire cut and free from chips, cracks, stones or other defects. Water absorption shall not exceed 5 %. Special care shall be taken in the loading, stacking and handling of face bricks, as no damaged bricks may be used.

Stock bricks shall be suitable for general building work and shall have a minimum compressive strength of 15 MPa. The water absorption of stock bricks shall not exceed 10 %.

Satisfactory proof of the load bearing capacity of the bricks offered shall be submitted before deliveries are made to the Site.

Air bricks shall be well burnt terracotta and shall be free from cracks and blemishes and lined with copper mosquito gauze.

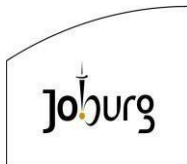
Three samples of each type of brick shall be submitted to the Employer's Agent for approval prior to the delivery of the bricks concerned. All subsequent deliveries shall be of a standard equal to or better than that of the approved samples.

b. Wall ties

Wall ties shall be of the galvanized, crimped, single wire type with a 3,5 diameter, and shall comply with the requirements of SANS 28.

c. Damp proof sheeting

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Damp proof sheeting shall comply with SANS 248, type FV for fibre felt, or SANS 952, type B for embossed polyethylene sheeting.

d. Masonite

Masonite used for roof bearings on top of brick walls shall be 3 mm thick approved tempered masonite.

e. Roof bearings

Commercial roof bearings used on top of brick walls shall (unless otherwise stated) consist of an approved neoprene core protected with approved polyethylene sponge both sides, rated at 40 kN/m and which allows horizontal movement less than 2 mm.

PSU 3.2 Ironmongery

a. General

All steel and iron work shall be delivered clean and free from rust, pitting or other defects. Shop priming's shall be applied before delivery and shall consist of a coat of red oxide paint, or any other approved anti rust paint on all surfaces.

Unless otherwise specified, all materials shall conform at least to the appropriate SANS or BS standards where such standards apply to ironmongery, steel, cast iron or any other related materials.

b. Pressed Steel Door Frames

Pressed steel door frames shall comply with SANS 1129 and shall be manufactured from 1,6 mm thick mild steel sheeting, pressed to the required shapes, properly mitred, welded and reinforced, with all welding neatly cleaned off.

Frames shall be of the widths required to suit the thickness of the walls into which they are built and shall be fitted with suitable tie bars and braces at the bottom. Three lugs to be built into the brickwork shall be provided on each jamb.

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Rebates in frames and transoms for doors shall be of the widths required to suit the thicknesses of the doors and shall be fitted with a pair of approved steel butt hinges set flush into recesses in the frames. 4,5 mm thick reinforcing plates shall be welded to the backs of the frames at hinge positions.

Heads of frames over double doors shall be drilled where required to form keeps for bolts and shall be fitted with one rubber buffer for each leaf of the door.

Frames for single doors shall be fitted with approved chromium striking plates and adjustable striking plate keeper boxes in at the back of the frame by a welded on sheet metal box. The frames shall be fitted with a minimum of two rubber buffers.

Frames shall be protected against twisting and damage during transit and erection.

c. Pressed steel doors

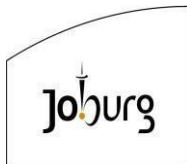
Pressed steel doors shall be manufactured from 1,6 mm thick steel plate. The doors shall be of standard design, pressed to shape with 40 mm reveals all round. The doors shall be strengthened with full length vertical V shaped or other approved sectional strengthening ribs projecting to the outer face. Two horizontal stiffening rails shall also be welded to the inner face of the doors.

A door shall be hung on a pair of 100 mm long steel butt hinges with loose pins. The leaves of the hinges shall be welded to both the door and the door frame, and a 1,6 mm thick steel plate shall be welded to the inner face of the door to protect the lock.

One leaf of double doors shall be fitted at the top and bottom with approved 150 mm cast brass barrel bolts in an approved manner and the other leaf shall be fitted with a lock, the striking plate of which shall be fixed to the first leaf.

Where indicated on the Drawings, doors shall be fitted with louvered ventilation grills of approved design, backed with insect and vermin proof gauze screening.

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| Employer: | | Contractor: | |
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d. Steel window frames

All steel window frames shall comply with SANS 727 and shall be of the types and sizes shown on the Drawings.

Standard industrial types of steel window frames shall be constructed from rolled mild steel industrial sections, 35 mm wide by 3 mm thick, with opening sections constructed from standard residential sections, 25 mm wide by 3 mm thick, welded at angles and properly jointed at intersections.

Window frames shall be formed perfectly flat, truly square and properly jointed at all angles, and the opening portion shall fit properly on all faces and shall open and close freely.

Glazing bars shall be continuous with jointed intersections, the ends being neatly tenoned into the frame and securely welded in position.

Frames shall be fitted with standard fixing lugs.

Opening sections shall open as indicated on the Drawings, and shall be fitted with steel hinges with brass pins. Pivots shall be fitted with bronze ring centres.

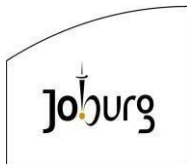
Side hung or top hung opening sections shall be fitted with brass handles and friction stays. Bottom hung sections shall be fitted with friction pivots and spring catches.

Weather bar drips shall be attached to the fixed frames for the complete width of the window at the head of outward opening sections.

Composite windows may either be delivered completely assembled with mullions and transoms or as separate units for assembly on the Site, but "one piece" construction is preferred.

e. Burglar proofing for steel window frames

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Burglar proofing for steel window frames shall be constructed from rolled mild steel rods of at least 12 mm diameter and welded at all intersections to form openings not exceeding 125 mm by 250 mm.

Burglar proofing sections shall be formed perfectly flat, truly square where applicable and properly welded onto the window frame in such a manner that it does in no way prohibit the opening/closing of windows nor the cleaning of window panes.

Burglar proofing shall be welded/fixed to the window frame prior to the building in of the frame.

f. Door locks and handles

All door locks shall comply with the requirements of SANS 4 and shall be of approved manufacture and pattern. All locks shall be supplied with two keys. Keys shall be distinctly numbered with consecutive numbers and each key shall be stamped with the same number as that of the lock which it controls. No two locks in any one building may have the same key.

External doors shall be fitted with three lever heavy duty mortice locks, which shall be master keyed.

All locks shall be properly installed and, after completion, striker plates shall be adjusted and the locks serviced.

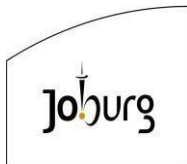
Door handles shall be of cast zinc of approved manufacture and pattern.

g. Miscellaneous fittings

All retaining devices for doors and windows as well as fittings such as coat hooks, retaining hooks, etc. shall be of solid brass. All fittings shall be secured by screws or set screws of the same material and finish as the fitting.

Fittings to be fixed to plastered walls, masonry or floors shall be fixed direct by means of patent plastic or fibre plugs fitted into drilled holes.

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Doorstops shall be provided at every door and shall be 40 mm diameter rubber stops.

h. Valves

All water taps, other than those for special hospital and similar fittings, and stop taps shall comply with the requirements of SANS 226.

Ball valves shall comply with the requirements of SANS 752.

Non swinging rotary fire hose reels shall comply with the requirements of SABS 543 with solid discs and a 25 mm waterway at the brackets. They must incorporate a Jennkin's type control valve and a rotary pressure joint at hub to hose connection. Valve handwheels are to be clearly marked with a arrow and "Open" in red.

All reels are to be fitted with the specified length of 19mm internal diameter first quality 4 ply canvas reinforced red rubber hose having a smooth black rubber core or with another equal type of hose to the approval of the Employer's Agent and the local Fire master. The hose must be firmly fixed at one end to the reel hub connection and must be so arranged that the hose coils without kinking at the joints. It must be fitted at the other end with chromium plated 19mm metal shutoff cock and an 8mm detachable nozzle. A suitable chromium plated flexible hose guide through which hose is to be permanently threaded is to be provided and securely fixed to the wall and is to be near the reel in a way which will allow the hose to be run out in any direction. A suitable chromium plated bracket is to be provided for supporting the nozzle when the hose is not in use.

PSU 3.3 Glazing

a. Glass

Glass shall comply with the requirements of CKS 55. The quality of all window glass shall be such that surface deterioration will not develop after glazing.

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All glass shall be free from bubbles, waviness, scratches, stains or other imperfections.

Unless otherwise specified, sheet glass for glazing shall be flat drawn clear glass of ordinary glazing quality and of the thicknesses indicated below.

For panes not exceeding 0.75 m in area: 3 mm.

For panes exceeding 0.75 m but not exceeding 1,5 m in area: 5mm.

b. Putty

All putty shall comply with the requirements of SANS 680.

Putty shall not be too hard or soft or caked when used and shall dry evenly without crazing or cracking.

Defective putty shall be cut out and replaced by the Contractor at his own expense, and any broken glass shall also be so replaced and putty so repainted.

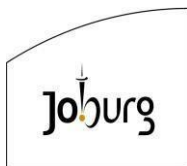
PSU 3.4 Carpentry and Joinery

a. Materials

All timber used for structural purposes shall be of merchantable grade and shall comply with the requirements of SANS 563 and SANS 1245. Structural timber shall be carefully selected and of the best quality, free from large or dead knots, shakes, waney edges or other defects. Purlins, battens (for roof tiles) and brandering shall comply with the requirements of SANS 653. Finger jointed structural timber shall comply with the requirements of SANS 096 and laminated timber with the requirements of SANS 1089.

Hardwoods and softwoods for joinery shall comply with SANS 1099 and SANS 1359 respectively and suitable species shall be used for the various purposes.

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| Employer: | | Contractor: | |
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Unless otherwise specified, all materials shall conform to the appropriate SANS or BS specification where such standards exist for nails, screws, bolts, adhesives, etc.

b. Preservative treatment

All structural timber shall be given a preservative treatment suitable for the duty for which the timber is intended in accordance with SANS 05, and no untreated timber shall be used. The preservative treatment shall not impair the final finish. The timber shall be impregnated throughout. When surface coating is specified, the compounds applied on the surfaces of the timber shall form an unbroken film.

c. Priming

The jointing surfaces of all joints exposed to the weather and built in portions of frames shall be thickly primed except where adhesives are specified.

Carpentry and joinery items which are prepared for painting by the manufacturer shall be knotted and primed before being dispatched to the Site.

Primes surfaces shall be touched up where necessary during the progress of the work or where Site adjustments have been made.

PSU 3.5 Roof Covering and Accessories

a. Roof covers

i. Galvanized steel sheeting

Unless otherwise stated, galvanized steel sheeting shall have a minimum ungalvanized thickness of 0,5 mm and shall be of the profile as scheduled or shown on the Drawings. The sheeting shall comply with the requirements of an approved manufacturer's specification. The galvanizing shall comply with the relevant requirements of SANS 934 for class Z 600 coating and shall have been passivated.

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| Employer: | | Contractor: | |
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ii. Fibre cement sheeting

Fibre cement sheeting shall have a minimum thickness of 5 mm, shall be of the profile as scheduled or shown on the Drawings, and shall comply with the relevant requirements of SANS 685.

iii. Roofing tiles (clay and concrete)

Clay roofing tiles shall comply with the requirements of SANS specification 632, and shall be of approved pattern, free of cracks, crazing, chips, twists and other defects, of a uniform colour and equal to the sample submitted to and approved by the Employer's Agent.

Clay tiles shall be approximately 381 mm x 230 mm, weighing 2,95 kg per tile and laid to a gauge to give a coverage of 17,8 tiles to the square meter.

Concrete roofing tiles shall comply with the requirements of SANS Specification 542 and shall be of approved pattern and colour, free of cracks, crazing, chips, twists and other defects, uniform in colour and equal to a sample submitted to and approved by the Employer's Agent.

Concrete tiles shall be approximately 420 mm x 330 mm weighing 4,8 kg and shall be laid to a gauge to give a coverage of 10,25 tiles to the square meter.

Unless otherwise specified, concrete tiles shall have a natural stone granular finish.

iv. Roofing underlays

Roofing underlays for tiled roofs shall either be reinforced bitumen felt complying with BS747 type 1F or polyethylene sheeting complying with SANS 952 type C with a minimum thickness of 0,25 mm.

b. Fasteners

Fasteners and washers shall comply with the requirements of SANS 1273, shall be durable, and shall be protected against corrosion to a standard at least equal

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to the standard of corrosion protection of the sheeting material with which they are to be used. Fasteners to be used with fibre cement sheeting shall be hot dip galvanized fasteners and nails for roof tiles shall be made of copper, aluminium or stainless steel.

Bolts and rivets used with galvanized sheeting shall be at least 4 mm in diameter, and those used with fibre cement sheeting, at least 6 mm in diameter. Nails for roof tiles shall be at least 2,8 mm thick and of sufficient length to penetrate the batten by 25 mm.

Self-tapping screws and blind rivets may be used for side stitching and as fasteners for ridging, flashings, etc.

c. Rainwater goods and flashings

Rain water goods such as launders, gutters, down pipes, etc. and flashings shall be of the size and materials as scheduled or shown on the Drawings, and the materials shall, if similar, comply with the same requirements as specified for the sheeting. All rain water goods shall be supplied complete with adequate quantities of suitably shaped brackets and fasteners.

d. Sealants

Sealants shall comply with the requirements of SANS 110, SANS 1254 or SANS 1305 as applicable or with the sheeting manufacturer's recommendations as approved by the Employer's Agent.

e. Battens

Battens for tiled roofs shall comply with clause PSU 3.4(a) and shall be of size 38 x 50 mm.

PSU 3.6 Wall and Floor Tiles

- a. Wall tiles shall be 'first grade' glazed ceramic tiles complying with the requirements of SANS 22 for class E tiles and shall be true and regular in shape and size and of even colour.

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- b. Quarry tiles shall be the best quality pressed tiles, sound, well burnt, even in size and colour and free of markings, hollows, cracks and chips.

PSU 3.7 Waterproofing of Concrete Roofs

Waterproofing material for concrete roof slabs shall be an approved synthetic membrane such as a multiple layer polyester reinforced acrylic membrane or other approved material capable of being fusion welded at joints to provide a homogeneous layer over the whole roof area. The membrane must be capable of withstanding extreme climatic conditions. It shall furthermore be biologically neutral, resistant to ultraviolet rays and heat, compatible with bitumen and be of a thickness of not less than 1.5 mm.

PSU 3.8 Paint

Refer to the Corrosion Protection Specification for Civil, Mechanical and Electrical Engineering Construction (Golder Associates, 2006 Edition).

PSU 4 PLANT

Not applicable to this Section

PSU 5 CONSTRUCTION

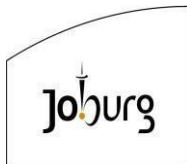
PSU 5.1 Brickwork, Plaster Work and Floor Screeds

PSU 5.1.1 Construction of brickwork

- a. Cement mortar

Cement mortar shall, unless otherwise specified, consist of 1 part of Portland cement to 4 parts of sand by volume for normal brickwork and 1 part of Portland cement to 3 parts of sand by volume for reinforced brickwork. The ingredients for cement mortar shall be measured in proper gauge boxes on a boarded platform and thoroughly mixed. Alternatively, mixing may be by means of an approved mechanical batch mixer. Only when the dry ingredients have been thoroughly mixed and a mixture of uniform colour has been obtained may the

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water be added in sufficient quantity to obtain mortar with the required consistency.

Cement mortar shall be used within two hours of adding water to the mix and shall not be used after two hours or if it has begun to set. Mortar shall be turned over frequently until it is used to prevent it from setting.

b. Brickwork

Dimensions of all the brickwork shall be set out and built as shown on the Drawings. Bricks shall be kept wet before laying and the top of brickwork shall be wetted before any further bricks are laid. Bricks shall be well buttered with mortar before being laid and all joints shall be thoroughly flushed up as the work proceeds. All joints to faced brickwork shall be neatly made and key drawn with a 6 mm key.

Brickwork shall be carried up in a uniform manner with no portion being raised more than 1 m above an adjacent portion. All perpend, quoins, etc. shall be kept strictly true and square and the whole properly bonded together.

Unless otherwise stated, brickwork shall be built in stretcher bond and bats shall not be used except where required for the bond. All joints shall be 10 mm wide and four courses shall measure 340 mm.

Brickwork for cavity walls and solid walls built in stretcher bond shall be tied with wall ties placed not more than one metre apart in every third course, and shall be staggered vertically or as otherwise specified in the Project Specifications. At openings, the ties shall be positioned not more than 300 mm apart along the periphery of the opening and 150 mm from the opening.

Face brickwork shall be kept perfectly clean. Cavities in cavity walls shall be free of any rubble. Soiled brickwork shall be cleaned at the Contractor's expense, and the cleaning method shall be approved by the Employer's Agent.

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c. Reinforced brickwork

Brickwork over door and window openings shall be reinforced with steel rods, welded or expanded mesh, etc. Reinforcement shall be placed in each course of brickwork for a minimum of 4 courses or as shown on the Drawings. Reinforced brickwork shall continue at least 300 mm on each side of the openings.

Brick lintels are to be formed of good, sound well-burnt bricks properly bonded longitudinally. They are to have a bearing of at least 330mm on each side of the opening. Where two openings are less than 1 000mm apart that lintels shall be continuous over all the openings and their dividing piers and also have at least 330mm bearing at both extreme ends. At each reveal the end bricks of the bottom course must have bearing of at least half its face length.

The number of courses in each lintel shall be at least the number of courses stated in the table below. In continuous lintels, the height shall be for the widest opening spanned. The space between the brick skins of the bottom two courses of lintels in cavity walls is to be filled in with concrete made with small aggregate. The bricks are to be bedded and jointed in 3:1 cement mortar. Particular care must be taken to ensure solid bedding, particularly where the reinforcement occurs.

Each lintel is to be reinforced with lengths of approved brick reinforcement in single layers to the full length of the lintel as set out in the table below. Brick reinforcing must be placed in the bottom courses. All brick lintels must be built upon approved rigid temporary supports left in position for at least 7 days after the lintel is completed.

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| Width of Opening | Thickness of Wall | No. of Brick Courses | Brick Reinforcement |
|-----------------------|----------------------------|----------------------|----------------------------------------------------------------------------------|
| Not Exceeding 1 500mm | 115mm 230mm or 280mm | 4 4 | 1 Run 82mm wide in each of 2 joints 1 Run 158mm wide in each of 2 joints |
| 1 500mm to 2 250mm | 115mm 230mm or 280mm | 6 6 | 1 Run 82mm wide in each of 4 joints. 1 Run 158mm wide in each of 4 joints |
| 2 250mm to 3 000mm | 115mm 230mm or 280mm | 8 8 | 1 Run 82mm wide in each of 6 joints. 1 Run 158mm wide in each of 6 joints |

Reinforcement of other diameters and strengths may be used providing the values used are equivalent to those shown in this table.

Prestressed concrete lintels may be used where approved by the Employer's Agent. Prestressed lintels are to be as manufactured and supplied by an approved manufacturer, in the appropriate widths and in the lengths to provide a minimum bearing of 225mm each side of opening. Care must be taken to avoid breakages in handling.

d. Key for plaster

Joints of all brickwork receiving plaster shall be raked out, or the brick surfaces shall otherwise be prepared with an acrylic slurry or any other approved bonding agent.

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e. Damp proofing

A damp proof course shall be laid over the full width of all the walls at a minimum height of 150 mm above the final ground level or wherever else it may be required, and it shall be lapped for at least 150 mm at angles and joints. A damp proof course shall also be laid and stepped up under all external sills.

f. Roof bearings on top of brick walls

Top of brick wall shall be properly finished with a 10 mm thick mortar layer with steel float finish and the bearing positioned securely on the centre of the wall. Should the bearing consist of two layers of masonite, the smooth faces of the masonite should each be covered with a thin layer of approved grease and stuck together to form a sliding bearing.

g. General

Rough and fair cutting shall be performed as required, and the brickwork shall be fitted around any steel work. Face brickwork shall be carefully cut and fitted to suit fittings.

Chases shall be left or formed for edges of concrete floors, staircases, etc. Chases shall also be provided wherever they may be required for pipes, conduits, switch boxes, distribution boards, and the like. Joints shall be raked out for flashings.

PSU 5.1.2 Plaster work

a. A plastered finish may consist of a combination of one or more of the following:

- i. A single coat or first coat, comprising one application of a 1:6 cement : sand mixture with a wood or steel float finish.

If a first coat, the plaster shall be wood floated and then scratched, raked or otherwise roughened to provide a mechanical key for the second coat, which shall be applied within 24 hours. Should it be impossible to apply the second

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coat within 24 hours, the first coat shall be kept moist until the second coat is applied.

- ii. A second coat comprising one application of a 1:6 cement : sand mixture with a wood float finish.
- iii. A finishing coat comprising a 1:1½ gypsum : sand mixture with a steel float finish.

b. Thickness

The total thickness of the plaster finish shall be 10 mm minimum and 20 mm maximum.

c. Workmanship

All plaster work shall be finished smooth and ready to receive paint. Plaster shall be flush with the faces of all switch and plug boxes, the interiors of which shall be kept free from plaster. Plastered surfaces shall be plumb and jambs and reveals shall be formed square.

The plasterer shall cut out and make good all cracks, blisters and other defects and leave the plaster work, on completion, in a state which is acceptable to the Employer's Agent

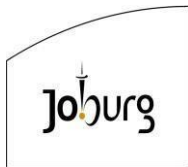
PSU 5.1.3 Floor screeds

a. Normal screeds

Normal screeds shall have a mix proportion by mass consisting of 1 part of Portland cement and 3 parts of fine aggregate. A minimum amount of water is to be used but it shall be sufficient to allow adequate compaction and activation of cement.

Screeds shall be laid on clean hardened bases, prepared as for granolithic screeds, and shall be steel trowelled to a true and smooth finish. Joints in screeds shall coincide as nearly as possible with joints in the bases. The

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thickness of screeds shall be as shown on the Drawings or as directed by the Employer's Agent.

The entire screed surface shall be free from loose or raised particles of aggregate, trowel marks or from any irregularities, humps or depressions exceeding 5 mm when measured from a 3 m long straight edge.

Screeds shall be cured for 3 to 7 days as may be directed by the Employer's Agent, and shall be protected from damage.

No moisture sensitive floor finish shall be laid on screeds unless a reliable moisture test shows that the screed is sufficiently dry to receive the covering.

b. Granolithic screeds

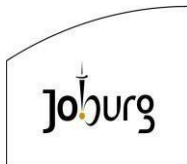
Granolithic floor screeds shall be composed of 2 parts of Portland Cement to 3 parts of aggregate with sufficient water added to obtain a consistency as dry as may be practicable. The screed shall be rendered with a wood float and struck off with a steel trowel after set has commenced.

The granolithic mixture shall be floated onto the concrete floor slab within 12 hours of the latter having been laid. Where this cannot be done within 12 hours, the concrete surfaces shall be thoroughly hacked, cleaned, watered and treated with approved cement slurry or with an approved bonding agent, as may be directed before the granolithic screed is laid.

Where a tinted granolithic screed is specified, it shall be placed in two layers, a lower layer placed to within 6 mm of the finished level and an upper layer into which the pigment has been mixed. No dusting on of colouring material will be allowed.

The surface of all granolithic screeds shall be kept damp for a period of at least 7 days after laying by covering it with polyethylene sheeting or by thickly covering it with wet sand, sawdust or Hessian kept moist by frequently sprinkling it with water.

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The granolithic screeds shall be not less than 20 mm thick, finished to falls as shown on the Drawings, and shall be laid in panels not exceeding 4,0 m in any direction.

Where shown on the Drawings or directed by the Employer's Agent thresholds shall be finished with granolithic screeds 25 mm thick, treads 25 mm thick, and risers 20 mm thick, including rounded nosings and reedings.

Edges next to walls shall be finished with projecting skirting, 75 mm high, with rounded top edges, unless otherwise specified or instructed by the Employer's Agent.

PSU 5.2 Installation of Doors And Windows

All built in door and window frames shall be set straight, plumb and level, and shall operate to the satisfaction of the Employer's Agent after fixing has been completed.

Fittings shall be either removed, or wrapped and protected from damage, until all rough trades have been completed.

PSU 5.3 Glazing

Glass shall be cut in panes to suit all glazed openings with sufficient clearance all round to prevent cracking by expansion, contraction or vibration.

In all cases the glass shall be well bedded and back puttied and installed as specified in SANS Code of Practice 0137.

All putty shall be carefully trimmed, cleaned off and neatly finished off straight with smooth surfaces and sharp mitres. A paint primer shall be applied as soon as the putty has dried out sufficiently to prevent shrinkage cracks from forming.

The entire glazing operation shall be cleaned before the premises are handed over for occupation.

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PSU 5.4 Carpentry and Joinery

PSU 5.4.1 Carpentry work

a. Scope of work

Carpentry work shall be carried out in a manner consistent with good workmanship and in compliance with the Drawings.

The carpenter shall perform all cutting away and making good in attendance upon all other trades and he shall provide and maintain temporary coverings required for the protection of any finished work that might be damaged if left unprotected during the progress of the work.

b. Dimensions

"Unwrought" timber shall be "as sawn" and shall be to the dimensions and within the tolerances specified in the relevant SANS Standard Specifications mentioned in Sub Clause PSU 3.4 (a).

c. Jointing

Unless otherwise specified, all joints shall be secured by means of a suitable type and a sufficient number of approved connectors. All joints shall be carefully made in such a way that they will not impair the strength and stiffness of the beams or members.

d. Timber roof construction

The plates, joists, rafters, purlins, bracing and other pieces used for the construction of the roof and trusses shall be of the dimensions, spacing and construction, as shown on the Drawings.

All the joints in the framework shall be of the most appropriate type, accurately formed and adequately secured with fasteners as specified.

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PSU 5.4.2 Joinery work

a. Scope of work

Joinery work shall consist of the manufacture, delivery to the Site, and fixing in the buildings, of all joinery shown on the Drawings.

Except where a special finish is specified, the Contractor shall have all stairs, landings, doors, shelves and other joinery work cleaned and scrubbed down and shall leave all his work in a good order to the satisfaction of the Employer's Agent.

b. Dimensions

All "wrought" timber shall be sawn, planed, drilled or otherwise machined or worked to the correct sizes and shapes shown on the Drawings.

Reasonable tolerance shall be provided at all connections between joinery works and the building structure to compensate adequately for any irregularities, settlements or any other movements.

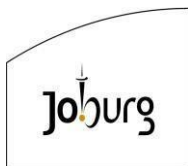
c. Fabrication

The joiner shall perform all the necessary mortising, tenoning, grooving, matching, tonguing, housing, rebating and all the other works necessary for correct jointing. He shall also provide all metal plates, screws, nails and other fixings that may be necessary for doing the specified joinery work properly.

d. Joints

Where joints are not specifically indicated, they shall be the recognised forms of joints for each position. The joints shall be so made as to comply with part 2 of BS 1186.

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e. Doors and frames

Door frames, linings, panel doors, framed, ledged and braced doors, flush doors, sliding doors, etc. shall be supplied or made by the joiner and shall be installed, fitted or hung as detailed on the Drawings.

All timber shall be "wrought" and prepared for oiling, staining, varnishing or painting.

f. Skirting, cornices, etc.

Skirting, cornices, etc. shall not be installed until after the wall coverings have been applied, the flooring laid and ceilings installed, unless otherwise specified.

g. In situ joinery

In situ joinery work shall not be executed until after all floor, wall and ceiling surfaces have been formed or constructed, unless otherwise instructed.

h. Ceilings

Ceilings shall consist of fibre cement panels as shown on the Drawings and shall be nailed to the bracing or suspended from the roof structure. The panels shall be separated by exposed tees and insulated with a 50 mm thick fibreglass wool blanket where shown on the Drawings.

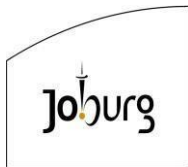
PSU 5.5 Roof Covering and Accessories

a. General

Roofs shall be left perfect and watertight on completion of the work, and all gutters and valleys shall be cleaned out.

b. Metal Roof sheeting

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Wherever possible, roof sheets shall be of a single length from eave to eave. However, if these lengths exceed the standard sheet lengths, the number of laps shall be kept to a minimum and shall conform to the manufacturer's recommendations for the roof slopes indicated. End laps extend beyond the purlin or rail by 150 mm.

Sheeting shall be fixed to purlins with approved screws, each complete with a galvanized steel washer over an approved sealing grommet.

The sides of sheets shall be lapped over for a minimum of one corrugation or according to the manufacturer's recommendations and shall be stitched with approved screws or blind rivets.

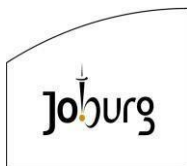
All laps in sheeting shall be sealed with an approved sealant. Swarf, grindings and surplus fasteners shall be removed from the roof on completion. Holes for fasteners shall be drilled and not punched.

Flashings, ridging, eaves closers, etc. shall be of the size and shape necessary to suit the sheeting used. Flashings shall be of an approved type and shall be properly cut, lapped, shaped, dressed and fixed in an approved manner to render a waterproof finish. Provision shall be made for expansion and contraction in long lengths and at expansion joints of the building.

Gutters shall be fixed on suitable brackets and shall fall to outlets, all as directed by the Employer's Agent. Gutters and brackets shall be standard units.

All down pipes shall be watertight and shall be fixed 25 mm clear of the finished wall face or structure by means of suitable brackets, and at approved spacings. The positions of the down pipes shall be as directed by the Employer's Agent.

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c. Roof tiling (both clay and concrete)

Note: All roofs to be tiled shall be provided with an underlay regardless of the slope of the roof.

Roof tiling shall be laid according to the "broken bond" method, and vertical joints between tiles and the bottom edge of each course of tiles, shall range perfectly straight.

For roof slopes up to 25° tile overlap shall not be less than 100 mm and for steeper slopes not less than 75 mm.

Half tiles shall be provided as required at abutments and at verges of roofs.

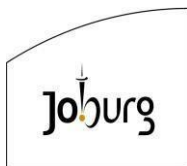
Unless otherwise specified, each tile in every third course, all tiles in eaves courses and ridge courses, end tiles in every course at each side of hips and valleys, half tiles and full tiles at verges, and all tiles to open eaves and open overhanging verges shall be secured to the battens with galvanised wire having a diameter of 1,6 mm passed through the holes in nibs, and wound round the battens or round stout galvanised clout-headed nails driven into the battens.

Tiling shall be carefully cut and dressed at hips and valleys and, where necessary, at abutments, etc. Mitred portions of tiles at hips and valleys shall be holed and properly secured.

Hip and ridge tiles shall be of the same material and manufacture as the roofing tiles, with a minimum cover of 75 mm over the top course of tiling on each side and with collars for overlapping joints, and shall be bedded and pointed in 1 to 3 cement mortar, with strips of approved bituminous sheeting laid under the mortar bedding of such a width as will give a lap of at least 25 mm onto the tiling at each side and lapped not less than 75 mm at end joints.

All hip tiles and every fourth ridge tile shall be holed and fixed with approved nails.

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The hip and ridge junction tiles, stop ends, etc. shall be of approved design, made to work in with ridging and ordinary tiles and bedded and pointed as before.

d. Roof underlays

Underlays shall be draped over the rafters in such a manner that both horizontal and vertical overlaps are at least 150 mm. The underlay shall further extend over the tiling fillet and fascia board and into the eaves gutter in such a manner that no troughs be formed behind the fascia board to inhibit the free drainage of any condensation that may be formed.

e. Setting out of tiled roofs

i. Positioning top and bottom battens

Fix the bottom batten which is to carry the eaves or first course of tiles so that it allows an overhang of the tiles over the fascia board and of one third of the gutter. Fix the top battens so that the gap between the tiles of the two ridge courses is not more than 100 mm.

ii. Batten gauge

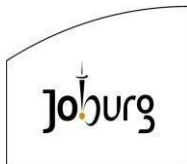
The distance between the top of the eaves batten to the top of the top batten must be divided into equal batten gauges, which must not exceed those prescribed for the tile to be fixed (i.e. (for clay tiles) not exceeding 320 mm for roof slopes up to 25° and not exceeding 345 mm for steeper slopes).

Fixing battens

The nails for fixing battens and counter battens should be of sufficient length to penetrate the rafter by 40 mm. Ensure that all batten joints are located on a rafter.

iii. Setting out tiles

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Set out a full course of tiles over the eaves course, starting with the correct overhang at the right hand verge. By opening or closing all the joints between the tiles it should be possible, given a normal run of eaves, to complete the required eaves length using only whole tiles and hence eliminating cutting.

Note: All general tile patterns are designed to allow a side lock tolerance of approximately 3 mm. Hence, by using this side lock tolerance along an eaves length; tile cutting can generally be avoided.

iv. Keeping perpendicular lines true

This can be achieved by striking perpendicular chalk lines from eaves to ridge at three tile intervals. If the tiles are subsequently laid so that their edges coincide with these lines, the roof tiles will be perpendicular and a raking left-hand verge will be avoided.

v. Keeping horizontal lines true

This can be achieved by marking the batten gauge on a rod to make corresponding marks on the underlay or rafter across the roof.

Note: The bargeboard should not be fitted and the battens should not be cut until the above setting out procedure has been completed.

PSU 5.5 Wall and Floor Tiling

- a. Tiles shall be fixed to walls with an approved adhesive and finished with white cement joints. Tiles shall be laid with straight joints and arranged symmetrically in the tiling pattern.
- b. Concrete tiles and all other types of hard tiles used as floor cover shall be bedded in cement mortar and shall be laid level. Tiles shall be laid with straight joints and flush with granolithic work, where applicable.
- c. Vinyl floor tiles shall be laid level and with straight joints. the adhesive compound used and the method of laying employed shall be strictly in accordance with the tile manufacturer's instructions.

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PSU 5.6 Paint

Refer to the Particular Specification G02: Corrosion Protection Specification for Civil, Mechanical and Electrical Engineering Construction (Golder Associates, 2006 Edition).

PSU 5.7 Waterproofing of Concrete Roofs

The water proofing material shall be properly bonded or stuck to the concrete slab and shall be sealed up against parapets and properly flashed, sealed and dressed down into outlets and flashed around all protrusions all as shown on the Drawings.

On completion the entire surface area of the waterproofing shall be given two coats of a reflective paint compatible with the waterproofing material and be left neat, clean and watertight.

The whole of the waterproofing installation must be carried out by specialists appointed by the manufacturer and the work must be guaranteed against any defects in material and/or workmanship for a period of ten years. Should any leaks become apparent during this time, the Contractor must undertake to have same repaired without delay and at his own cost.

PSU 6 TOLERANCES

Not applicable to this Section.

PSU 7 TESTING

Not applicable to this Section.

PSU 8 MEASUREMENT AND PAYMENT

PSU 8.1 Brickwork

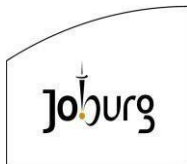
- a. 345 mm thick (state type of brick outside face and inside face)

Unit: Square metre (m²)

- b. 230 mm thick (state type of brick outside face and inside face)

Unit: Square metre (m²)

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c. 115 mm thick (state type of brick) **Unit: Square metre (m²)**

d. 300 mm thick cavity wall with reinforced concrete (state type of brick outside face and inside face) **Unit: Square metre (m²)**

The unit of measurement shall be the square metre of each type of brickwork built, calculated from the leading dimensions of the brickwork. Areas of windows, doors etc. built into brickwork shall not be included in the areas measured for payment. At corners and intersections common to more than one brick wall, the areas shall be measured only once.

The tendered rate shall include full compensation for the construction of the brickwork complete as specified, including pointing, the building in of conduits, beams, pipe sleeves, doors, windows, the raking out of joints, damp proof course, bricks on edge (if applicable), concrete and reinforcing in cavity walls, etc.

PSU 8.2 Roof Bearings on Brick walls

a. Masonite bearings as specified (state width) **Unit: Metre (m)**

b. Commercial bearing as specified (state type) **Unit: Metre (m)**

The tendered rate shall include full compensation for supply of material, cutting waste, applying grease where applicable and laying on top of brickwork including the mortar bed with steel trowel finish.

PSU 8.3 Plaster Work

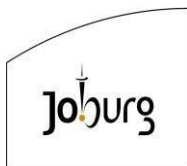
a. Single coat or first coat (thickness indicated)

i. wood float finish **Unit: Square metre (m²)**

ii. steel float finish **Unit: Square metre (m²)**

b. Second coat (thickness indicated) **Unit: Square metre (m²)**

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c. Finishing coat

Unit: Square metre (m²)

The unit of measurement shall be the square metre of each type of coat completed as specified.

The tendered rate shall include full compensation for the construction of the plaster work, including the supply of all materials, mixing, applying, finishing, forming reveals, joints, etc. complete as specified.

PSU 8.4 Floor Screeds

a. Normal screeds (thickness and finish indicated)

Unit: Square metre (m²)

b. Granolithic screeds (thickness and finish indicated)

Unit: Square metre (m²)

c. Extra-over (a) or (b) for skirting (or nosing's or reeding)

Unit: Metre (m)

The unit of measurement shall be the square metre of floor screed laid, as specified, on floors, steps or areas shown on the Drawings or as designated by the Employer's Agent.

The tendered rate shall include full compensation for the construction of the floor screeds skirting, etc., including the supply of all materials, mixing, laying and finishing.

PSU 8.5 Tiling

a. Wall tiles (type and location)

Unit: Square metre (m²)

b. Floor tiles (type and location)

Unit: Square metre (m²)

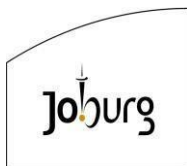
c. Quarry tiles (type and location)

Unit: Square metre (m²)

The unit of measurement shall be the square metre of each type of tile laid.

The tendered rate shall include full compensation for laying, jointing and pointing of tiles, including the supply of all materials necessary to complete the tiling, including any cutting and waste, all as specified.

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PSU 8.6 Waterproofing of Concrete Roofs

The unit of measurement shall be:

- a. Main surface **Unit: Square metre (m²)**
- b. GMS or other approved flashing **Unit: Metre (m)**

The tendered rate for the main surface shall include full compensation for the supply of all material, including installation of waterproofing, welding of joints, gluing down, sealing and painting with protective paints all as specified.

The tendered rate for the flashing shall include full compensation for the supply and installation of the flashing including all fasteners and silicone sealant as specified.

PSU 8.7 Rainwater Outlets

Supply and installation of 100 mm diameter cast-iron full-bore rainwater outlet
Unit: Number (No)

The unit of measurement shall be the number of outlets, installed.

- b. Extra over item PSU 8.7(a) for the supply and installation of 80 mm diameter screwed and socketed galvanised steel pipes and fittings.
 - i. (medium quality screwed and socketed pipes **Unit: Metre (m)**

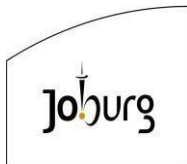
The unit of measurement shall be the linear metre of galvanised mild steel pipe installed

- ii. etc. for fittings **Unit: Number (No)**

The unit of measurement shall be the number of fittings installed.

The tendered rates shall include full compensation for the supply of material, corrosion protection as specified, including building into brickwork, cutting and

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threading, waste and neatly sealing and finishing waterproofing around rainwater outlets.

PSU 8.8 Ironmongery

PSU 8.8.1 Doors and Windows

- a. Steel door frames, including lintol (type and size indicated)

Unit: Number (No)

- b. Steel door with frame, including lintol (type and size indicated)

Unit: Number (No)

- c. Steel window frame, including burglar proofing, glazing, sills and lintols (type and size indicated)

Unit: Number (No)

The unit of measurement shall be the number of steel door frames, steel doors with frames, dark bronze anodised aluminium doors with frames, steel windows with frames, dark bronze anodised aluminium windows with frames and adjustable louvers installed complete as specified. The tendered rate shall include full compensation for the installation of the doors, windows and louvers including the supply of all materials, manufacturing, installing, hinges, handles, locks, barrel bolts, retaining devices, door stops, stays and any other work necessary to complete the work as specified. The tendered rate for windows shall also include full compensation for glazing, windowsills, lintols and dampproof sheeting all as specified. For steel window frames the supply and installation of burglar proofing shall also be included in the tendered rate. For aluminium windows the supply and installation a galvanized wire mesh (20 x 20 x 1.8 mm) screen, fixed to the inside of each adjustable louver in such a manner as not to prohibit the opening or closing of the louver as well as the supply and installation of hot dipped galvanized steel mullions between windows or where indicated on the drawing shall also be included in the tendered rate.

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PSU 8.8.2 Fixed Louvers:

Supply and installation of approved powder coated steel louvers (state opening size)
Unit: Number (No)

The unit of measurement shall be the number of louvers installed.

The tendered rate shall include full compensation for cutting of openings in walls and neatly finishing after the installation, including supply of necessary materials, wooden frames or 12 mm thick plastered sills and lintols (steel float), etc.

PSU 8.8.3 Security Gates

Supply and fixing of security gates.

a. Mild steel gates (size and type indicated) **Unit: Number (No)**

b. (Etc. for other sizes) **Unit: Number (No)**

The unit of measurement shall be the number of gates installed complete as shown on the drawing.

The tendered rate shall include full compensation for the installation of the gates, including the supply of all materials, manufacturing, installing hinges, handles, locks, barrel bolts, retaining devices and any work necessary to complete the work as shown on the drawing. The rate shall further include for corrosion protection of the mild steel and applying a final coat of paint after erection. Colour to be approved by the Employer's Agent.

PSU 8.11 Joinery

a. Doors (type and size indicated) **Unit: Number (No)**

b. Other items measured by number **Unit: Number (No)**

c. Skirting (size indicated) **Unit: Metre (m)**

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d. Other items measured by length

Unit: Metre (m)

The units of measurement shall be the number or metre of each type and/or size of joinery item specified. The tendered rate shall include full compensation for the supply of all materials, manufacture, cutting, waste, fixing and installation of the joinery items.

PSU 8.14 Roof Ventilators

a. Roof Ventilators (Type and material indicated)

Unit: Number (No)

The unit of measurement shall be the number of roof ventilators installed as shown on the Drawings or directed by the Employer's Agent.

The tendered rate shall include full compensation for the installation of the ventilators, including the supply of all materials, manufacturing and sealing.

PSU 8.15 Paint Work

a. Steel door frames (type and size indicated)

Unit: Number (No)

b. Steel door and frame (type and size indicated)

Unit: Number (No)

c. Steel window frame including burglar proofing (type and size indicated)

Unit: Number (No)

d. Other sheet metal work

Unit: Square metre (m²)

e. Structural steelwork

Unit: Kilogram (kg) weight

f. Plastered or concrete walls (interior)

Unit: Square metre (m²)

g. Plastered or concrete walls (exterior)

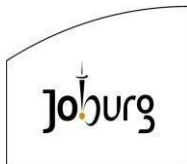
Unit: Square metre (m²)

h. Concrete soffit ceilings

Unit: Square metre (m²)

The unit of measurement for paintwork will be as stated above.

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The tendered rates shall include full compensation for the supply and application to the complete satisfaction of the Employer's Agent of all protective and decorative coatings required, as specified for the various structural members in the Particular Specification G02: Corrosion Protection.

PSU 8.16 Miscellaneous

- a. Weeping hole formed in brickwork (wall type and opening size indicated) **Unit: Number (No)**
- b. Expansion Joint in brickwork (thickness and width indicated) **Unit: Metre (m)**

SECTION VA: ANCILLARY WORK: LANDSCAPING AND GRASSING

PSVA 1 SCOPE

This section covers the landscaping and/or the establishing of vegetation in such areas as indicated on the Drawings or ordered by the Employer's Agent, in writing, including rehabilitation of borrow pits, stockpile and spoil areas and the contractor's work areas, access roads, office and store areas etc.

PSVA 2 INTERPRETATIONS

PSVA 2.1 Supporting Specifications

The following specifications shall, inter alia, form part of the Contract Document:

- a. SANS 1200A
- b. SANS 1200D.

PSVA 3 MATERIALS

PSVA 3.1 Fertilizer

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



The type of fertilizer to be used shall be as specified or ordered by the Employer's Agent or scheduled.

PSVA 3.2 Grass Cuttings

Grass cuttings shall be fresh and in a good condition for planting, with sufficient root material to ensure good growth. Species to be planted shall be as specified or scheduled.

PSVA 3.3 Grass Seed

Only good quality fresh seed shall be used. The types of seed in the mixture and the pure live seed content shall be as specified or scheduled.

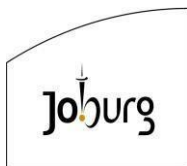
PSVA 3.4 Trees, Shrubs and Ground Covers

Plants shall be of the variety and size shown on the Drawings.

When trees, shrubs and ground covers are supplied and delivered to the Site by the Employer, the Contractor shall give the Employer's Agent at least six weeks advance notice of his requirements. Upon receipt of the plants, the Contractor shall ensure that the plants are in good condition and free from obvious diseases and shall accept full responsibility to maintain the plants in good condition throughout the Contract. The plants shall be fully maintained and watered during this period, and any losses of plants due to lack of maintenance or diseases developing during the Contract period shall be replaced at the Contractor's expense.

Plants shall be handled and packed in the approved manner for the particular species or variety, and all necessary precautions shall be taken to ensure that plants will arrive at the point of use in proper condition for successful growth. Trucks used for transporting plants shall be equipped with covers to protect plants from windburn. Containers shall be in a good condition.

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Plants supplied by the Contractor shall be healthy, shapely and well rooted. Roots shall not show any evidence of having been restricted or deformed at any time. Plants shall be well grown and free from insect pests and diseases.

PSVA 3.5 Grass Sods

Grass sods shall be of approved quality and shall be harvested, delivered and planted within 36 hours, unless otherwise authorized by the Employer's Agent. Grass sods shall be free from noxious weeds and diseases and shall contain a minimum of 30 mm of soil.

Sods shall be of the variety of grass specified or scheduled. The grass shall have been grown specifically for sod purposes, mown regularly and maintained to provide an approved quality of uniformity. It shall be harvested by special machines manufactured for this purpose to ensure an even depth of cut with sufficient root material and soil.

PSVA 3.6 Anti Erosion Compounds

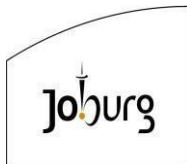
Anti erosion compounds shall consist of a plastic material in dispersion, such as Verdyol or a similar approved compound, which can be sprayed onto the soil to bind and protect it against erosion.

PSVA 3.7 Topsoil

Topsoil shall consist of fertile loamy soil selected from areas showing a good coverage of natural vegetation, preferably grasses. It shall be free from deleterious matter such as large roots, stones, refuse, stiff or heavy clays and noxious weeds, which would adversely affect its suitability for the planting of grass.

Topsoil shall be obtained wherever suitable material occurs; either from the Site or from borrow areas to be cleared, as described in Sub Clause 5.2.1.2 of SANS 1200D. The Employer's Agent shall indicate his requirements to the Contractor regarding the quantity of topsoil required and the areas at which it shall be selected and when it shall be removed. Unless otherwise specified or

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as instructed by the Employer's Agent, topsoil shall not be taken from more than 400 mm below the original undisturbed surface. If the Contractor fails to conserve topsoil as instructed, he shall obtain suitable substitute material from other sources at no extra cost to the Employer.

Where so specified, the Contractor shall procure and supply topsoil from his own sources outside the Site. Such sources shall be subject to the approval of the Employer's Agent.

Topsoil shall be stockpiled in separate loose heaps as tipped from the trucks and shall not be stockpiled higher than 2,0 m.

PSVA 3.8 Manure

Manure shall, unless another type is approved by the Employer's Agent, be pure "kraal" manure, free from soil, weed seed or other objectionable material. It shall not contain any particles that will not pass through a 50 mm screen. Only manure which has been approved by the Employer's Agent shall be delivered to the Site.

PSVA 3.9 Compost

Compost shall be well decayed, friable and free from weed seed, dust and other objectionable materials.

PSVA 4 Plant

Not applicable to this Section.

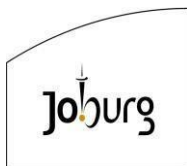
PSVA 5 CONSTRUCTION

PSVA 5.1 Landscaping of Areas

PSVA 5.1.1 Shaping

Areas that require shaping which involves bulk earthworks, such as contoured areas, shall be excavated, filled, compacted when required, and shaped to the correct contours to within a tolerance of plus or minus 150 mm. Such work shall

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be considered as earthworks and measurement and payment shall be made under SANS 1200D, except that quantities may be measured by means of a grid of levels taken at 10 m intervals before and after shaping, or by means of levelled cross sections.

PSVA 5.1.2 Trimming

Trimming shall consist of bringing the existing or previously shaped ground to an even surface with the final levels generally following the original surface. Trimming shall normally be done by grader, or, in more confined or steep areas, by bulldozer. Where machine operations are not practicable because of confined spaces or steep slopes, trimming shall be done using hand tools.

All trimming alongside roads and streets shall be completed before landscaping commences. Such trimming shall be carried out on both sides of the road or street up to the boundaries of the road reserve unless otherwise specified or instructed by the Employer's Agent.

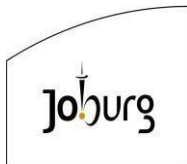
Where applicable, trimmed surfaces shall be left slightly rough to facilitate binding with topsoil or the natural establishing of vegetation.

When subsequent grassing is required or when instructed by the Employer's Agent, areas previously shaped shall be trimmed as described above to within a tolerance of plus or minus 25 mm, with all undulations following a smooth curve. The above tolerance shall apply only to areas where the final contours are given in the Drawings.

During trimming, all stones in excess of 50 mm in size and all excess material shall be removed. The trimming of any areas requiring grass shall be done in such a way that, after cultivation and application of any topsoil, the finished surface of the area shall be approximately 25 mm below the top of adjacent kerbing, channelling or pavement.

PSVA 5.1.3 Plant rates

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The Employer's Agent shall be entitled to pay for shaping and trimming as described above on the basis of the hourly rates for motor graders and bulldozers. The motor grader and bulldozer to be provided shall each have a fly wheel power of not less than 93 kW. Any labour or other plant ordered shall be paid for as "extra work" as specified in Clause 5.7 of the GCC (2015).

PSVA 5.2 Preparation of Areas For Grassing

The various areas to be grassed shall be prepared as follows:

PSVA 5.2.1 Areas Not Requiring Topsoil

Where the areas to be grassed consist of organically suitable material, they shall be scarified to a minimum depth of 150 mm. All loose stones larger than 30 mm on areas to be mowed by machine shall be removed.

PSVA 5.2.2 Areas Requiring Topsoil

Where areas to be grassed consist of organically unsuitable material, the surface shall be roughened to ensure a proper bonding between the topsoil and the subsoil. If required, the area shall be scarified as described in Sub Clause PSVA 5.2.1 above.

Topsoil shall be placed on the prepared surfaces and trimmed to the uniform thickness required. The topsoil shall be prepared by means of hand rakes or light rotavators to obtain a smooth surface. All stones shall be removed as specified for areas not requiring topsoil in Sub Clause PSVA 5.2.1 above.

PSVA 5.2.3 Fertilizing

The Contractor shall have the top 150 mm of the prepared surfaces tested to determine the amount and type of fertilizer required for establishing proper growing conditions for the grass. The fertilizer shall be evenly applied over all surfaces where grass is to be planted and shall then be thoroughly mixed with the soil, either mechanically or manually, to a depth of 150 mm. Where

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hydroseeding is to be performed, the fertilizer may be mixed with the cellulose pulp and water used in hydroseeding.

PSVA 5.3 Grassing

The method of establishing grass shall depend on the circumstances relating to each case. The method to be used in each case shall be agreed on by the Employer's Agent and the Contractor.

PSVA 5.3.1 Planting Of Grass Cuttings

The areas to be planted shall, unless they are wet, be thoroughly watered before planting to ensure that the soil will be uniformly wet over a depth of at least 150 mm during planting.

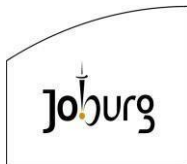
The Contractor shall plant an approved variety of grass cuttings, using his own method, in such a way as to obtain a sufficient number of live and actively growing plants per square metre to provide an acceptable cover as defined in Sub Clause PSVA 5.4.2 of this section. At least 70 grain bags of cuttings shall be planted per hectare. Only fresh cuttings shall be used. Grass cuttings that have been allowed to dry out shall not be used. Immediately after planting the grass cuttings shall be given a copious watering and when sufficiently dry shall be rolled with a light agricultural roller.

PSVA 5.3.2 Sodding

Areas to be grassed by sodding shall be given a layer of topsoil at least 75 mm thick unless the Employer's Agent instructs that the topsoil be omitted where suitable subsoil is present. The areas to be sodded shall be thoroughly watered beforehand so that they will be wet to a depth of at least 150 mm after sodding. The surface shall be slightly roughened to ensure a good penetration of roots into the soil. Sods shall be protected against drying out and shall be kept moist from the time of harvesting until finally placed.

Wherever possible, the first row of sods shall be laid in a straight line and, if on a slope, laying shall be started at the bottom of the slope. The sods shall be

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butted tightly against each other and care shall be taken not to stretch or overlap the sods. Where a good fit cannot be obtained, the intervening space shall be filled with topsoil. The next row shall similarly be placed tightly against the bottom row with the joints staggered, and so on, until the entire area is covered with sods. On the instructions of the Employer's Agent, sods shall be held in position on steep slopes by a sufficient number of robust wooden stokes approximately 300 mm in length by 20 mm in diameter.

Each section of completed sodding shall be lightly rolled and thoroughly watered.

PSVA 5.3.3 Hydroseeding

The types and mixtures of seeds to be used shall be as specified or scheduled if not so specified and shall be agreed on by the Employer's Agent and the Contractor before any seed is ordered for use by the Contractor. The Contractor shall be solely responsible for establishing an acceptable grass cover, and any approval by the Employer's Agent of seed or seed mixtures proposed for use shall not relieve him of this responsibility.

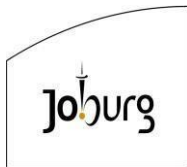
Cellulose pulp shall be added to the hydroseeding mix at a rate of 25 kg of pulp per kilolitre of water used, except where otherwise instructed for flat slopes.

Hydroseeding shall then be carried out with the use of an approved hydroseeding machine at a rate of application of not less than 38 kg of seed mixture per hectare, unless otherwise specified in the Project Specifications.

When the use of an anti-erosion compound is required and the compound is to be applied simultaneously with the hydroseeding, it shall be mixed with the hydroseeding mixture before application. In this case the amount of cellulose pulp shall be decreased by one third to a half, depending on the amount of compound added.

PSVA 5.3.4 Grassing of Borrow Pits, Temporary Bypasses, Camp Sites, Access Roads And Stockpile Sites

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| Employer: | | Contractor: | |
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Prior to any grassing that may be required on borrow areas, the finishing off of borrow pits as described in Sub Clause 5.2.2.2 of SANS 1200D, the obliteration of bypasses and access roads as described in clause 5.8 of SANS 1200A and the clearing of camp sites as described in SANS 1200A shall have been carried out as specified in the relevant sections.

PSVA 5.4 Establishing and Maintenance of Grass

PSVA 5.4.1 Watering, Weeding, Cutting and Replanting

All sodded and planted areas shall be adequately watered at frequent and regular intervals in order to ensure proper seed germination and the growth of grass until the grass has established to an acceptable cover and thereafter until the beginning of the maintenance period of the grass. The amount and frequency of watering shall be subject to the Employer's Agent's approval. Where hydroseeding is carried out, the commencement of watering may be postponed until a favourable time of the year, but watering shall in any case commence and continue as soon as the seeds have germinated and growth begins.

The Contractor shall mow the grass on all areas that have been grassed, whenever so instructed by the Employer's Agent, until the end of the contract period.

All grass cuttings shall be collected and disposed of if so directed by the Employer's Agent. Weeds shall be controlled by means of pulling or cutting or by any other approved means. Any bare patches where the grass has not taken, or where it has been damaged or has dried out shall be re-cultivated, planted, sodded or hydroseeded at the Contractor's expense.

PSVA 5.4.2 Acceptable cover

An acceptable grass cover shall mean that not less than 75% of the area planted or hydroseeded shall be covered with grass and that there shall be no bare patches the maximum dimension of which shall not exceed 500 mm. In the case of sodding, acceptable cover shall mean that the full area shall be

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covered with live grass at the end of any period of not less than three months after sodding.

PSVA 5.5 Trees, Shrubs and Ground Covers

PSVA 5.5.1 Positions of Plants

The positions in which trees, shrubs and ground covers are to be planted shall be as indicated on the Drawings or as determined by the Employer's Agent, and care shall be taken that the taller plants will not obscure traffic signs.

PSVA 5.5.2 Preparation of Plant Holes

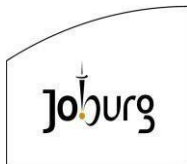
Unless otherwise directed by the Employer's Agent, holes for trees and shrubs shall be placed and prepared as follows:

- a. All holes shall be square in plan.
- b. For shrubs the holes shall be at least 500 mm square by 600 mm deep.
- c. For trees the holes shall be at least 600 mm square by 700 mm deep.
- d. The planting holes shall be refilled with selected and approved topsoil, thoroughly mixed with manure or compost (one heaped spade full added to every plant hole) and, depending on soil test reports, the required amount and type of fertilizer.
- e. The holes shall be thoroughly watered before planting. Where the local soil has poor drainage, 150 mm of broken rock shall be placed at the bottom of the planting hole before filling it with soil.

PSVA 5.5.3 Planting

Before planting, the plants shall be well watered before they are removed from their containers.

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Ground cover plants shall be carefully lifted from their containers and transferred to holes in the prepared soil, which holes shall be just large enough to accommodate the plant and the adhering soil. Care shall be taken to avoid exposure of the roots during planting. Soil for ground covers shall be prepared as for grassing as specified in clause PSVA 5.2.

Directly after the planting, plants shall be well watered to establish them firmly in the soil. After the soil has set, additional soil shall, in the case of trees and shrubs, be added where necessary to bring the backfill material to within 150 mm of the ground surface to ensure the retention of sufficient water. All trees shall be tied to a suitable creosote treated timber stake planted firmly in the ground. The stake shall have a minimum diameter of 35 mm and shall be at least 300 mm longer than the planted tree, with a maximum length of 3 m above the ground. After planting the ground surface around the plants shall be covered with straw or grass or any other type of mulch to minimize evaporation.

PSVA 5.6 General

PSVA 5.6.1 Time of planting

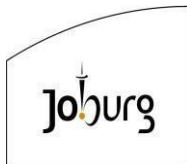
The planting of grass, trees, shrubs and ground covers shall be carried out as far as is practicable during periods most likely to produce beneficial results. The Contractor shall make every effort to programme his operations to make this possible.

PSVA 5.6.2 Traffic on Grassed Areas

The Contractor shall not plant grass until all operations that may require construction equipment to be taken over the grassed areas have been completed. No equipment, trucks or water carts shall be allowed on areas that have been grassed and only equipment required for the preparation of areas, the application of fertilizer and the spreading of topsoil will be allowed to operate on areas ready for grassing.

PSVA 5.6.3 Erosion control

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During construction, the Contractor shall protect all areas susceptible to erosion by installing all necessary temporary and permanent drainage works as soon as possible and by taking such other measures as may be necessary to prevent the concentration of surface water and the scouring of slopes, banks and other areas.

Runnels or erosion channels developing during the construction period or during the maintenance period shall be backfilled and consolidated and the affected areas shall be restored to their former proper condition. The Contractor shall not allow large scale erosion to develop before effecting repairs and all erosion damage shall be repaired as soon as possible and, in any case, not later than three months before the end of the maintenance period. Topsoil washed away shall be replaced.

PSVA 5.6.4 Proprietary Brand Materials Used for Erosion Control

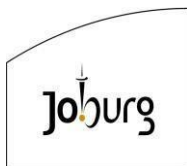
Proprietary brands of materials that may be required for erosion protection to enable natural grass to become established shall be to the approval of the Employer's Agent.

PSVA 5.6.5 Responsibility for Establishing An Acceptable Cover

Notwithstanding the fact that the method of grassing and the type of seed or grass used and the rate of seed application may be specified or agreed to by the Employer's Agent, and that the frequency of mowing will be as instructed by him, the Contractor shall be solely responsible for establishing an acceptable grass cover and for the cost of replanting or re-hydroseeding where an acceptable cover has not been obtained. Where, however, in the opinion of the Contractor, it is doubtful from the outset whether an acceptable cover can be established, he may inform the Employer's Agent of his reasons for this, and the Employer's Agent shall, if he agrees, either adopt another grassing method or agree to accept whatever cover can be obtained, provided that all reasonable efforts are made to establish a good cover by the method proposed. Such agreement shall only be valid if given in writing by the Employer's Agent.

PSVA 5.7 Site-Specific Rehabilitation Requirements

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PSVA 5.7.1 Rehabilitation of Construction Activity Sites (Such As Batch Plants, Offices, Workshops, Access Roads, Borrow Areas, Etc.)

The rehabilitation measures include:

Soil and vegetation must be rehabilitated before the last rainy season.

The following remedial action must be applied to compacted soil according to the construction areas in which they occurred:

Soils that were compacted by construction vehicles must be ripped to a depth not less than 0,5-m with a D7 or similar type tracked equipment.

Where soils were not compacted by construction vehicles the subsoil must be ripped to 150mm with a grader of similar equipment.

All soil originally stripped from the areas must be placed and spread uniformly to create a free draining area.

All oil contaminated or otherwise polluted soil and wastes from the vehicle park/site office areas must be removed to licensed landfill sites using a registered waste disposal company and a certificate obtained.

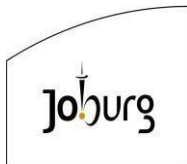
All damaged fences and gates must be repaired before rehabilitation is completed.

All roads impacted by construction must be repaired and reinstated to their original condition.

PSVA 5.7.2 Reseeding of Disturbed Areas

The primary purpose for reseeded is to facilitate the re-establishment of natural vegetation and thereby limit soil erosion. Since alien invasive species are prone to establish more quickly in disturbed areas, reseeded must be undertaken in tandem with an alien invasive plant control programme. The measures required for reseeded are given below:

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



All areas that were affected by construction activities must be reseeded;

All reseeding activities must be undertaken at the end of the dry season (middle to end September) to ensure optimal conditions for germination and rapid vegetation establishment.

Disturbed areas must be nipped to refusal or a minimum of 500mm a mix of 2:3:2 N:P:K fertilizer at 1ton/ha must be used to soil amelioration. Disturbed areas must be harrowed after spreading 100mm topsoil uniformly.

The area must be seeded with a mix of 3 kg/ha *Eragrostis curvula*, 6kg/ha *Cynodon dactylon*, 6 kg/ha *Digitaria eriantha*, 1kg/ha *Eragrostis tef* and 6 kg/ha *Chloris gayana*.

An agricultural roller must be used to cover seeds.

Rehabilitated areas must be inspected at three monthly intervals during the first and second growing season to determine the efficacy of rehabilitation measures.

Appropriate remedial action must be taken where vegetation establishment has not been successful or erosion is evident.

Weeds, especially *Khakibos Tagetes minuta*, *Blackjack Bidens pilosa* must be controlled with a broadleaf herbicide that is non-toxic to the environment and is used sparingly.

No construction equipment, vehicles or unauthorized personnel will be allowed onto areas that have been re-vegetated; and

Only persons/ equipment required for maintenance thereof will be allowed to operate on such areas.

PSVA 6 TOLERANCES

Not applicable to this Section.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PSVA 7 TESTING

Not applicable to this Section.

PSVA 8 MEASUREMENT AND PAYMENT

PSVA 8.1 Trimming

a. Machine trimming **Unit: Square metre (m²)**

b. Hand trimming **Unit: Square metre (m²)**

NOTE: All bulk earth moving operations as described in Sub Clause PSVA 5.1.1 shall be measured and paid for under SANS 1200D.

The unit of measurement for trimming shall be the square metre of area trimmed on the Employer's Agent's instructions, including areas trimmed after shaping.

The tendered rate shall include full compensation for trimming areas to the specified finish, including the moving of small quantities of material which would be inherent in this process, and the removal of surplus material and stones. For payment purposes a distinction shall be made between machine trimming that can reasonably be carried out by bulldozer or motor grader, and hand trimming that cannot be done by machine owing to confined space, steep slopes or difficult shapes.

PSVA 8.2 Use of Machines For Trimming Or Shaping (Alternative To Sub Item PSVA 8.1(A))

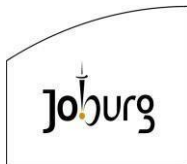
a. Bulldozer **Unit: Hour (h)**

b. Motor grader **Unit: Hour (h)**

The unit of measurement shall be the hour actually worked by each machine in trimming or shaping areas. Standing time shall not be measured.

The tendered rates shall include full compensation for the supply and use of the machines, including the cost of fuel, operators, maintenance, transporting

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



the machine to and from the point of use, and for all other incidentals necessary to carry out the work.

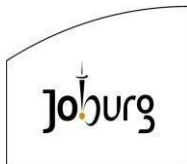
PSVA 8.3 Preparing Areas for Grassing And Ground Covers

- a. Scarifying **Unit: Hectare (ha) or square metre (m²)**
- b. Topsoiling on the Site with:
- i. Topsoil obtained from the Site or borrow areas provided by the Employer (state thickness) **Unit: Square metre (m²)**
 - ii. Topsoil obtained by the Contractor from other sources (including all haulage) (state thickness) **Unit: Square metre (m²)**
- c. Topsoiling of borrow pits with topsoil obtained from borrow areas or from the Site (state thickness) **Unit: Square metre (m²)**
- d. Supplying and applying chemical fertilizers:
- i. Lime **Unit: Ton (t)**
 - ii. Super phosphate **Unit: Ton (t)**
 - iii. Limestone ammonium nitrate **Unit: Ton (t) or kilo gram (kg)**
 - iv. (iv) 2:3:2 (22) **Unit: Ton (t)**
 - v. (v) Other fertilizers if required (type stated) **Unit: Ton (t)**
- e. Stockpiling of topsoil **Unit: Cubic metre (m³)**

The unit of measurement for scarifying shall be the hectare or square metres of ground scarified and prepared as specified. Only areas scarified on the written instructions of the Employer's Agent shall be measured for payment.

The tendered rate shall include full compensation for scarifying, removing stones and smoothing the surface.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



The unit of measurement for topsoiling shall be the square metre of topsoil applied to the specified thickness or as directed by the Employer's Agent, measured in situ after the topsoil has been placed. The quantity shall be calculated from the net area of the surface topsoil, before the application of grass sods. Any topsoil placed in excess of the average thickness specified or ordered shall not be measured for payment.

For payment purposes a distinction shall be made between topsoil obtained from designated areas on the Site or borrow areas and topsoil obtained by the Contractor from outside sources found by him when sufficient topsoil is not available from the said designated areas. For payment purposes a further distinction shall be made between topsoil applied to areas on the Site and topsoil applied to borrow areas.

The tendered rate shall include full compensation for constructing the topsoil as specified, including any royalties or compensation that may be payable in the case of topsoil under Sub item PSVA 8 (b) (ii).

The unit of measurement of fertilizer shall be the ton or kilogram of each type of fertilizer ordered and applied.

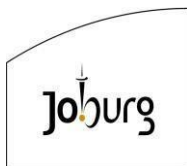
The tendered rate shall include full compensation for supplying the fertilizers, and for fertilizing the designated surfaces, all as specified.

The unit of measurement for stockpiling of topsoil shall be the cubic metre of topsoil stockpiled on the written instructions of the Employer's Agent, where this operation is unavoidable despite proper advance planning. Only material actually loaded, transported to and stockpiled on sites designated for stockpiling shall be measured, and not any material merely pushed or bladed into heaps adjacent to the area from which it was taken.

The tendered rate shall include full compensation for removal and loading the topsoil, transporting it, placing it in stockpile, and for any payments to private owners for the use of stockpile areas.

PSVA 8.4 Grassing

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



- a. Planting of grass (type indicated) **Unit: Square metre (m²)**
- b. Sodding (type indicated) **Unit: Square metre (m²)**
- c. Revegetation cylinders (description) **Unit: Metre (m)**
- d. Hydroseeding:
 - i. Providing approved seed mixture for hydroseeding (type indicated) **Unit: Kilogram (kg)**
 - ii. Hydroseeding (type indicated) **Unit: Hectare (ha)**

The unit of measurement for the planting of grass cuttings shall be the square metre of established grass with an acceptable grass cover.

The tendered rate shall include full compensation for the planting of grass cuttings, the establishing of an acceptable cover, the replanting of dead areas and the maintenance of the grass, all as specified, but excluding the mowing of grass.

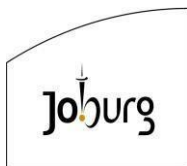
The unit of measurement for sodding shall be the square metre covered with sods and having an acceptable cover.

The tendered rate shall include full compensation for sodding, the establishing of an acceptable cover, the replanting of dead areas, and the maintenance of the grass, all as specified, but excluding the mowing of the grass.

The unit of measurement for revegetation cylinders shall be the metre of revegetation cylinders furnished and placed as specified, measured along the rows in which they are placed end to end.

The tendered rates shall include full compensation for constructing and maintaining the revegetation cylinders, all as specified. Topsoiling shall be paid for separately under items PSVA 8.3 (b) and (c) and due allowance shall be made for excluding the volume occupied by the revegetation cylinders from the

| | | | |
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



volume of topsoil measured for payment. Hydroseeding shall be paid for separately.

The unit of measurement for hydroseeding shall be the hectare of grass established by hydroseeding and having an acceptable cover. The unit of measurement for providing seed shall be the kilogram of seed of the specified mixture, excluding the mass of any pulp added thereto.

The tendered rate shall include full compensation for planting grass by hydroseeding the establishing of an acceptable cover, re-hydroseeding bare patches, and the maintenance of the grass, all as specified, but excluding the mowing of the grass.

General

Half the payments under item PSVA 8.4 shall become due when the grassing or hydroseeding has been carried out, and the remainder shall become due when a satisfactory cover has been established, except in the case of Sub item PSVA 8.4(c) where the full amount will become due upon the satisfactory execution of the work.

PSVA 8.5 Mowing of Grass Unit: Hectare (ha)

The unit of measurement shall be the hectare measured each time when the grass has been cut on the instructions of the Employer's Agent.

The tendered rate shall include full compensation for all plant, equipment and labour required for each grass cutting and the disposal of grass cuttings, i.e., payment shall be made every time the grass has been cut on the instructions of the Employer's Agent.

PSVA 8.6 Approved Anti Erosion Compound

Anti-erosion compound (type indicated) **Unit: Kilogram (kg)**

The unit of measurement shall be the kilogram net mass of anti-erosion compound used as approved by the Employer's Agent.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



The tendered rate shall include full compensation for supplying the material and mixing and applying it with the hydroseeding or by itself.

PSVA 8.7 Management of Weeds Unit: Square Meters (m²)

The unit of measurement shall be the square meter and shall be paid the Contractor on the instructions of the Employer's Agent.

The tendered rate shall include full compensation for all plant, equipment and labour required as well as for the disposal of the weeds.

PSVA 8.8 Extra Work For Landscaping Unit: Provisional sum

The provisional sum allowed shall be expended at the discretion of the Employer's Agent to cover the cost of work in addition to the scheduled items that may be required in respect of landscaping when plant is used at hourly rates, e.g. the cost of loading and transporting surplus material, in respect of establishing the grass by topsoiling only, repairing erosion damage after topsoil has been applied, or in respect of any other items of work required for which no pay items have been provided.

Payments shall be made as specified in Clause 6.6 of the GCC (2015).

PSVA 8.9 Site-Specific Rehabilitation

The cost of rehabilitation of the areas affected by the Contractor's activities on the site will be for the Contractor's account and must be provided for in the Bill of Quantities.

The requirements for rehabilitation are covered in PSVA 5.6.1 and PSVA 5.6.2.

SECTION VB: ANCILLARY WORK: FENCING

PSVB 1 SCOPE

This section covers the erection of new fences, the moving of existing fences, the erection and later removal of temporary fences and the dismantling of existing fences.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PSVB 1.1 Types of Fences

The following types of fences shall be erected in accordance with the dimensions shown on the Drawings:

- a. High density (high tensile) anti-climbing and anti-cut pressed mesh panel transparent fencing including shark tooth spike topping.

PSVB 2 INTERPRETATIONS

The following Specifications shall, inter alia, form part of the Contract Document:

- a. SANS 1200 A
- b. SANS 1200 C
- c. SANS 1200 G
- d. The Particular Specification G02: Corrosion Protection.

PSVB 3 MATERIALS

PSVB 3.1 Gates

Gates shall comply with the requirements of CKS 146 and shall be manufactured to the dimensions shown on the Drawings.

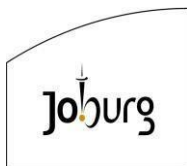
Gates shall be complete in every respect, and shall include hinges, bolts, nuts, washers and locking mechanisms as shown on the drawings.

PSVB 3.2 Materials for Temporary Fences

All new material for temporary fences shall be of the same quality as the material for new fences. Second hand material, whether available on Site or purchased, shall be submitted to the Employer's Agent for approval before use.

The protective galvanized coating on all second hand fencing wires shall be intact but may have a rusty appearance provided that the rust is superficial and does not impair the structural strength of the items.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PSVB 3.3 Materials for High-density (high tensile) anti-climbing & anti-cut pressed mesh panel fencing

High density anti-climbing and anti-cut pressed mesh panel fencing 2,4m high, formed of 3mm diameter horizontal and 3mm diameter vertical high tensile wires. Fence to be powder coated charcoal with aperture size 76,2mm x 12,7mm and reinforcing V-section ribs, bolted with vandal resistant bolts and clamping plates to 85 - 45mm Taper locking post 3,0m high including Locking Recess mechanism at 3,382m centres with sealed end caps and 30 x 3mm x 250mm long angle section base anchors. Posts to be bedded in 15MPa concrete bases size 400 x 400 x 600mm deep.

Anti-burrow Mesh Extension 600mm deep fixed to the underside of fencing including excavations and bedding.

100mm high galvanised "shark tooth" type spike rails, bolted to 50mm wide mesh flange bent along flange top.

PSVB 3.7 Concrete

Concrete used for fencing shall comply with the requirements of SANS 1200G.

PSVB 4 Plant

Not applicable to this Section.

PSVB 5 CONSTRUCTION

PSVB 5.1 Clearing of Fence Line

Strip clearing for the fence shall be carried out and paid for in accordance with SANS 1200C.

PSVB 5.2 Installing High Density Anti-Climbing and Anti-Cut Pressed Mesh Panel Fencing

Unless otherwise shown on the Drawings, High density anti-climbing and anti-cut pressed mesh panel fencing 2,4m high, formed of 3mm diameter horizontal and 3mm diameter vertical high tensile wires. Fence to be powder coated

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

charcoal with aperture size 76,2mm x 12,7mm and reinforcing V-section ribs, bolted with vandal resistant bolts and clamping plates to 85 - 45mm Taper locking post 3,0m high including Locking Recess mechanism at 3,382m centres with sealed end caps and 30 x 3mm x 250mm long angle section base anchors. Posts to be bedded in 15MPa concrete bases size 400 x 400 x 600mm deep.

Anti-burrow Mesh Extension 600mm deep fixed to the underside of fencing including excavations and bedding.

100mm high galvanised "shark tooth" type spike rails, bolted to 50mm wide mesh flange bent along flange top.

PSVB 5.3 Installing Gates

Gates shall be installed at the positions indicated on the Drawings. The gates shall be hung on gate fittings in accordance with the details shown on the Drawings. Gates shall be so erected that they swing in a horizontal plane at right angles to the gate posts and clear of the ground in all positions. Double swing gates shall close to have gaps as shown on the Drawings.

PSVB 6 TOLERANCES

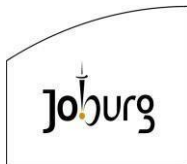
The completed fences shall be plumb, taut, true to line and to the ground contour, and with all posts, standards and stays firmly set.

The height of the lower fencing wire above the ground at posts and standards shall not vary by more than 25 mm from that shown on the Drawings. Other fencing wires shall not vary by more than 10 mm from their prescribed relative vertical positions.

Anchoring of a fence to structures shall be done as shown on the Drawings.

The Contractor shall, on completion of each section of fence, remove all cut offs and other loose wire or mesh so as to leave the fence with a neat and finished appearance.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Any cracked or damaged section of the palisade fencing shall be removed and replaced.

PSVB 7 TESTING

Not applicable to this Section.

PSVB 8 MEASUREMENT AND PAYMENT

PSVB 8.1 Supply and Installation of High Density (High Tensile) Anti-Climbing And Anti-Cut Pressed Transparent Mesh Panel Fencing

High Density (High Tensile) Anti-Climbing and Anti-Cut Pressed Mesh Panel Fencing complete including anti-burrow mesh and 100mm high galvanised “shark tooth” type spike rails.

Unit: Metre (m)

The tendered rates shall include full compensation for all excavations, concrete, formwork and the completed fence as indicated on the drawings.

PSVB 8.2 New Gate

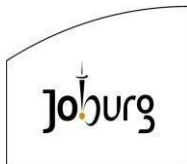
- a. Motorised galvanised steel swing gate

Unit: Number (No)

The unit of measurement shall be the number of new gates erected.

The tendered rate shall include full compensation for barrel bolts, tubular receivers, catches, chains, padlocks etc. and for the erection of the gates as specified and as shown on the Drawings.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PSX INSTRUMENTATION WORK

PSX 1 INTRODUCTION

This part contains the specific requirements for the project regarding instrumentation work that is to be carried out for the Storage Reservoir and associated piping and valve System at the new Carlswald Reservoir site.

The scope of work consists of:

- Level sensors
- Flow meters
- Actuators,
- Telemetry system complete with hybrid solar system to charge batteries
- Alarm and surveillance system
- SCADA connection

PSX 2 ULTRASONIC LEVEL SENSORS

Supply and install two ultrasonic level meters, LIT001 and LIT002 in the two opposite sides of the Reservoir, complete with brackets, supports, instrument junction boxes, terminals, surge protection, etc. Connect these ultrasonic level meters to the new Reservoir Telemetry system. The junction boxes will contain the transmitters, terminals, circuit breakers for local isolation, surge protection, etc. The junction boxes must comply with all the requirements of the attached “Automation and Control Standards, Volume 19, Field Junction Boxes” and the level meters must comply with all the requirements of the attached “Automation and Control Standards, Volume 9, Level Measurement”.

The Level Sensor JB details below must be read in conjunction with drawings 13214-73-06-010 and 13214-73-06-004,

Type: Outdoor powder coated 304 steel frame mounted with lockable front door.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

Supply: 2.5mm² x 3 core PVC SWA PVC cable plus 10mm² bare copper earth plus 0.5mm² x 4pr twisted PVC SWA PVC (individually and overall screened)

Colour: Electric orange

Fault level: 2.5kA

Equipment will be the following:

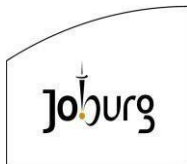
| QTY | DESCRIPTION | IDENTIFICATION |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 1 | 2Amp Continues Rated SP MCB: (10A can be used) Plus | Main |
| All | Single Phase class 2 surge arrestor unit connection type 2 as per SANS 10142-1 equal or similar to Dehn guard. DVMTT255 with remote indicator panel & remote signaling contacts connected to the SCADA: Plus | Surge arrestor |
| All | Front panel mounted LED display for instantaneous Level in percentage | Display |
| All | Pulsar type ultrasonic level controller complete with ultrasonic level transmitter mounted inside the reservoir | Level Transmitter |
| All | Terminals and interconnecting monitoring and control wiring: Plus | Connection and monitoring |
| | Signal & Data Surge protection unit suitable for the application equal or similar to Blitz ductor XT from DEHN guard.. | Signal & Data Surge Protection |

PSX 3

CLAMP-ON ULTRASONIC FLOW METERS

Supply and install two Clamp-On type Ultrasonic flow meters, FIT001 (Inlet flow meter) And FIT002 (outlet flow meter), supply and install supports, instrument junction boxes, terminals, surge protection, etc. Connect FIT001 and FIT002 to the new Reservoir telemetry system. The junction boxes will contain the transmitters, terminals, circuit breakers for local isolation, surge protection, etc. The junction boxes must comply with all the requirements of the attached "Automation and Control Standards,

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Volume 19, Field Junction Boxes” and the flow meters must comply with all the requirements of the attached “Automation and Control Standards, Volume 8, Flow Measurement”.

The flowmeter details below must be read in conjunction with drawings 13214-73-06-010 and 13214-73-06-005.

Type: Outdoor powder coated 304 steel frame mounted with lockable front door and transparent window for meter reading purposes. Transparent window must be covered with top hinged powder coated 304 cover for ultra violet protection of controller.

Supply: 2.5mm² x 3 core PVC SWA PVC cable plus 10mm² bare copper earth plus 1.5mm² x 3core plus 0.5mm² x 4pr twisted PVC SWA PVC (individually and overall screened)

Colour: Electric orange

Fault level: 2.5kA

Equipment will be the following:

| QTY | DESCRIPTION | IDENTIFICATION |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| 1 | 2Amp Continues Rated SP MCB: (10A can be used) Plus | Main |
| All | Single Phase class 2 surge arrestor unit connection type 2 as per SANS 10142-1 equal or similar to Dehn guard. DVMTT255 with remote indicator panel & remote signaling contacts connected to the SCADA: Plus | Surge arrestor |
| All | Front panel mounted LCD display for instantaneous flow and totalized flow counter. | Display |
| All | Clamp-On Type Ultrasonic Flow Meter Controller supplied, installed and commissioned as part of this in enclosure: Plus | Clamp-On Type Ultrasonic Flow Meter |
| All | Pipe connections to pipeline and coordination with Civil contractor: Plus | Civil and Pipeline Contractor coordination |
| All | Terminals and interconnecting monitoring and control wiring: Plus | Connection and monitoring |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| QTY | DESCRIPTION | IDENTIFICATION |
|-----|----------------------------------------------------------------------------------------------------------------------|--------------------------------|
| | Signal & Data Surge protection unit suitable for the application equal or similar to Blitzductor XT from DEHN guard. | Signal & Data Surge Protection |

PSX 4

ELECTRICAL ACTUATORS

Assist Mechanical contractor with supply and install two Actuator, AV001 and AV002, supply and install supports, instrument junction boxes, terminals, surge protection, etc. Connect AV001 and AV002 to the new Reservoir telemetry system. The junction boxes will contain the transmitters, terminals, circuit breakers for local isolation, surge protection, etc. The junction boxes must comply with all the requirements of the attached "Automation and Control Standards, Volume 19, Field Junction Boxes" and the flow meters must comply with all the requirements of the attached "Automation and Control Standards, Volume 8, Flow Measurement".

The flowmeter details below must be read in conjunction with drawings 13214-73-06-010, 13214-73-06-006 and 13214-73-06-007.

Type: Outdoor powder coated 304 steel frame mounted with lockable front door with indicator lights, push buttons and selector switch.

Supply: 1.5mm² x 7core PVC SWA PVC cable plus 10mm² bare copper earth plus 2x 0.5mm² x 4pr twisted PVC SWA PVC (individually and overall screened)

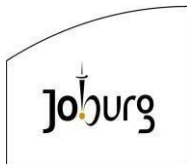
Colour: Electric orange

Fault level: 2.5kA

Equipment will be the following:

| QTY | DESCRIPTION | IDENTIFICATION |
|-----|-----------------------------------------------------|----------------|
| 1 | 2Amp Continues Rated SP MCB: (10A can be used) Plus | Main |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



| QTY | DESCRIPTION | IDENTIFICATION |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| All | Single Phase class 2 surge arrestor unit connection type 2 as per SANS 10142-1 equal or similar to Dehnguard. DVMTT255 with remote indicator panel & remote signaling contacts connected to the SCADA: Plus | Surge arrestor |
| All | Front panel mounted Open/ Close push buttons. | Manual open close |
| All | LED type indicator Lights for open and Closed indication | Open Close indication |
| All | 4-20mA source with front panel mount multiturn potentiometer for manual positioning in manual mode | Manual position setting |
| All | Terminals and interconnecting monitoring and control wiring: Plus | Connection and monitoring |
| | Signal & Data Surge protection unit suitable for the application equal or similar to Blitzductor XT from DEHNguard.. | Signal & Data Surge Protection |

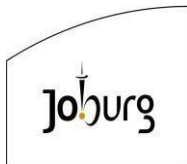
PSX 5 TELEMETRY SYSTEM

The Johannesburg Waters specifications dictates that the telemetry system consists of the following separate distribution boards mounted against a wall in close proximity of each other.

- Solar panels, Hybrid Inverter and battery DB
- Marshing Panel
- Radio Battery DB
- Telemetry I/O cards and Radio DB (Outstation)

The DB's boxes must comply with all the requirements of the attached "Automation and Control Standards, Volume 19, Field Junction Boxes" and the flow meters must comply with all the requirements of the attached "Automation and Control Standards, Volume 8, Flow Measurement".

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PSX 5.1 Telemetry I/O and Radio DB (Outstation)

The outstation details below must be read in conjunction with the following JW requirements.

All analogues except battery voltage must be galvanic isolated at the RTU side and must have lightning protection at the instrument side if outside the building. All Outstations must have the following analogues (Minimum requirement)

- i. Battery Voltage
- iv. Inflow / Outflow (Clamp on Ultrasonic if not a check meter .
Including Bunker close to meter to reduce special cable)
- v. Ultrasonic level transducer (Current Type= Pulsar)
- vi. Submersible level transducer (Current Type = ITS
- vii. 20 % spare analogues and termination capacity

All digitals except door switches , must have lightning protection at the signal side if outside the building. All outstations must have the following Digitals (Minimum requirement)

- i. Main Door Alarm
- ii. Telemetry Door Alarm
- iii. Mains Fail
- iv. Flow Counters
- v. Passive Infra-Red Detector
- ix. 20 % spare Digital and termination capacity

Type: Outdoor powder coated 304 steel frame mounted with lockable front door.

Supply: 1.5mm² x 4core PVC SWA PVC cable plus 10mm² bare copper earth plus 12 x 0.2mm² twisted PVC SWA PVC (individually and overall screened)

Colour: Painted Light Beige– C57 (SANS 1091:2012) external, White arc-free internal

Fault level: 2.5kA

Equipment will be the following:

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| QTY | DESCRIPTION | IDENTIFICATION |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 1 | 2Amp Continues Rated SP MCB: (10A can be used) Plus | Main |
| All | Single Phase class 2 surge arrestor unit connection type 2 as per SANS 10142-1 equal or similar to Dehnguard. DVMTT255 with remote indicator panel & remote signaling contacts connected to the SCADA: Plus | Surge arrestor |
| 1 | Radio GE Orbit UHF compatible with 1x Serial and 2x Ethernet port compatible with SD4 radios. | Radio |
| 1 | PSU – COMPATABLE WITH SSE PROTOCOL Power Supply with lightning protection | PSU |
| All | COMPATABLE WITH SSE PROTOCOL Outstation ribbon type , standard (RTU-Maistro), I/O Modules , galvanic isolators , LPU's , ¼ Wave LPU, Internal wiring , Wiring to J/Box , Installation and commissioning | RTU |
| 1 | Door open switch | Door open |
| All | Terminals and interconnecting monitoring and control wiring: Plus | Connection and monitoring |
| | Signal & Data Surge protection unit suitable for the application equal or similar to Blitzductor XT from DEHNguard.. | Signal & Data Surge Protection |

PSX 5.2 Marching Panel

Type: Outdoor powder coated 304 steel frame mounted with lockable front door

Supply: 1.5mm² x 7core PVC SWA PVC cable plus 10mm² bare copper earth plus 12x 0.2mm² twisted PVC SWA PVC (individually and overall screened)

Colour: Painted Light Beige– C57 (SANS 1091:2012) external, White arc-free internal

Fault level: 2.5kA

Equipment will be the following:

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| QTY | DESCRIPTION | IDENTIFICATION |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 1 | 2Amp Continues Rated SP MCB: (10A can be used) Plus | Main |
| All | Single Phase class 2 surge arrestor unit connection type 2 as per SANS 10142-1 equal or similar to Dehnguard. DVMTT255 with remote indicator panel & remote signaling contacts connected to the SCADA: Plus | Surge arrestor |
| All | Terminals and interconnecting monitoring and control wiring: Plus | Connection and monitoring |
| | Signal & Data Surge protection unit suitable for the application equal or similar to Blitzductor XT from DEHNguard.. | Signal & Data Surge Protection |

PSX 5.3 Radio battery DB

Type: Outdoor powder coated 304 steel frame mounted with lockable front door.

Supply: 1.5mm² x 7core PVC SWA PVC cable plus 10mm² bare copper earth plus 2x 0.5mm² x 4pr twisted PVC SWA PVC (individually and overall screened)

Colour: Painted Light Beige– C57 (SANS 1091:2012) external, White arc-free internal

Fault level: 2.5kA

Equipment will be the following:

| QTY | DESCRIPTION | IDENTIFICATION |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| 1 | 2Amp Continues Rated SP MCB: (10A can be used) Plus | Main |
| All | Single Phase class 2 surge arrestor unit connection type 2 as per SANS 10142-1 equal or similar to Dehnguard. DVMTT255 with remote indicator panel & remote signaling contacts connected to the SCADA: Plus | Surge arrestor |
| 1 | 48Ah 12V deep cycle battery | 12 V Battery |
| 1 | Door open switch | Door open |

| | | | |
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

| QTY | DESCRIPTION | IDENTIFICATION |
|-----|-------------------------------------------------------------------|---------------------------|
| All | Terminals and interconnecting monitoring and control wiring: Plus | Connection and monitoring |

PSX 5.4 Battery & Inverter DB

The details below must be read in conjunction with drawings 13214-73-06-010, 13214-73-06-006 and 13214-73-06-007.

Type: Outdoor powder coated 304 steel frame mounted with lockable front door with indicator lights, push buttons and selector switch.

Supply: 1.5mm² x 7core PVC SWA PVC cable plus 10mm² bare copper earth plus 2x 0.5mm² x 4pr twisted PVC SWA PVC (individually and overall screened)

Colour: Painted Light Beige– C57 (SANS 1091:2012) external, White arc-free internal

Fault level: 2.5kA

Equipment will be the following:

| QTY | DESCRIPTION | IDENTIFICATION |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| 1 | 2Amp Continues Rated SP MCB: (10A can be used) Plus | Main |
| 1 | Single Phase class 2 surge arrestor unit connection type 2 as per SANS 10142-1 equal or similar to Dehnguard. DVMTT255 with remote indicator panel & remote signaling contacts connected to the SCADA: Plus | Invertor |
| All | Fuses. | Protection |
| All | Tier 1 company Solar panels strung to Inverter requirements and having a peak capacity of 6kWp | Solar panels |
| 1 | 5kVA hybrid solar inverter that can charge the specified battery from solar and or mains if solar is "off | Inverter / charger |
| 1 | 48/ 24V DC to DC converter (min 20A) | Telemetry DC supply. |
| 4 | 5kWH 48V sealed LiFePo4 batteries connected | Batteries |

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



| QTY | DESCRIPTION | IDENTIFICATION |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| All | Terminals and interconnecting monitoring and control wiring: Plus Signal & Data Surge protection unit suitable for the application equal or similar to Blitzductor XT from DEHNguard.. | Connection and monitoring Signal & Data Surge Protection |

PSX 6 PLC AND SCADA SOFTWARE

The PLC and SCADA programming will be done by others. No cost needs to be allowed for this, but the contractor must allow costs to provide the Engineer with commissioning assistance.

PSX 7 CERTIFICATION OF IS DESIGNS

The tenderer must allow a cost for the certification of the Engineer's intrinsically safe circuit designs by a suitable authority such as Ark Holdings, Explolabs, etc. Similarly, a cost must be allowed for the testing and certification of the installation after completion.

PSX 8 TRAINING OF C&I PERSONNEL

The tenderer must allow an amount to cover the cost of training of up to two Johannesburg Water personnel by the supplier (not only the contractor) on new instrumentation supplied on this contract. Training will be by the supplier at the supplier's premises or on site. If no training is required, then this amount will not be claimed.

PSX 9 C&I MAINTENANCE SPARES

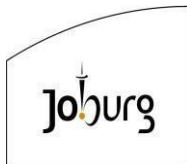
The tenderer will be required to provide a recommended list of instrumentation spares, including PLC equipment and data communications equipment including, but not limited to, at least one type of each PLC I/O module processor and power supply, spare Ethernet

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Switch etc., for at least the following three years maintenance. The tenderer must allow a corresponding cost for these spares in the BOQ.

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PSY: ELECTRICAL WORK

PSY1 INTRODUCTION

This part contains the specific requirements for the project regarding electrical work that is to be carried out for the Storage Reservoir and associated piping and valve System at the new Carlswald Reservoir site.

The scope of work consists of:

- Power supply to the Reservoir site main LV distribution board DB-01
- Sub DB's, DB-02 and DB-03
- Electrical reticulation on site,
- Site lighting
- Aviation lights according to SA-CATS 139 Standard
- Small power and lighting in buildings
- Earthing and lighting protection on site
- Alarm and surveillance system for site and buildings
- Electric fence

PSY2 CABLES RACKS

The Vendor will be responsible for the Design supply and installation of all the cable, cable racking. The cable Racks will be fixed as per design and specifications below.

The Vendor shall install cable racking for all MV and LV cables. Cable racks must be bonded together between every break in their length using a 6 mm² ICEW and at both cable ladder ends using a 35 mm² ICEW.

The cable rack installation must comply with all the requirements of the attached "Particular Specification E02, Electrical Cable Racks" and "Particular Specification E11, General Electrical Earthing and Lighting Protection".

PSY3 ELECTRIC FENCE

The electric fence shall be installed on the boundary around the new reservoir site and operated so that it causes no electrical hazard to

| | | | |
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

persons, animals or their surroundings. The energizer shall be of 2-zone battery operated (12V 7AH nominal) suitable for connection to mains 230V 50Hz nominal and shall be located in the new Guard House. The batteries to be used shall preferably be rechargeable LiFeOP4 batteries. Non-rechargeable batteries must NOT be used. Electric fence constructions which are likely to lead to the entanglement of animals or persons shall be avoided. The electric fences shall be of 2-zone, and each of the two zones to have the same energizer. The electric fence shall be of 8- strand, on 1200mm x 20mm x 20mm square tube pole. The bobbin shall be of the pop-em insulator type and the wire shall run through (inside) the bobbin.

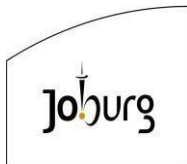
The electric fence shall be identified at frequent intervals by prominently placed warning signs securely fastened to the fence post or firmly clamped to the fence wires. The size of the warning signs shall be at least 100mm x 200mm as indicated in the image below:



Warning signs shall be placed at:

- Each gate
- Each access point
- Intervals not exceeding 10m
- Adjacent to each sign relating to chemical hazards for the information of emergency services

| | | | |
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Gates in electric security fence shall be capable of being opened without the person receiving an electric shock.

The energizer earth electrode shall penetrate the ground to a depth of at least 1m. The distance between any electric fence earth electrode and other earth systems shall not be less than 2m.

Connecting leads that are run inside the buildings shall be effectively insulated from the earth's structural parts of the building. This may be achieved by using an insulated high voltage cable.

Connecting leads that are run underground shall be run in a conduit of insulating material or else high voltage cable shall be used. Care shall be taken to avoid damage to the connecting leads due to external factors.

Connecting leads shall not be installed in the same conduit as the mains supply wiring, communication cables or data cables. Mains supply wiring shall not be installed in the same conduit as signaling leads associated with the electric fence installation.

The electric fence and its ancillary equipment shall be installed, operated and maintained in a manner that minimizes danger to persons, and reduces the risk of persons receiving an electric shock unless they attempt to penetrate the physical barrier or are in a secure area without authority.

Exposed conductive parts of the physical barrier shall be effectively earthed. Protection from the weather shall be provided from the ancillary equipment.

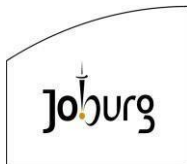
PSY4 SITE LIGHTING HIGH MASTS

Site lighting will be done via 2 x 15 m masts each equipped with 3 x LED Flood lights and LED flood lights mounted on the outside of the valve building, telemetry hut and the reservoir rim. See drawing 13214-73-06-013 for more details.

PSY4.1 15m High Masts

Two (x2) 15m high scissor masts are required and shall be positioned as indicated on drawing 13214-73-06-013, each mast shall be equipped with three (x6) warm white LED type G floodlights with lamps on top of each mast, see below.

| | | | |
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



| | |
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| Type G : | 208W warm white LED Floodlight. The luminaire consists of an LED engine, power supply and spigot compartment. It shall be secured by stainless steel latches and an access screw. The LED engine, consisting of the LED light source and the power supply, shall be easily replaceable. Both compartments are rated IP66. Electronic temperature monitoring prevents overheating of LEDs and power supply, positioned directly next to LEDs. The luminaire housing shall be manufactured of marine grade aluminium. Equal or similar to LED Flood from Beka. |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

PSY4.2 Flood light

The Flood lights shall be positioned as indicated on drawing 13214-73-06-013. The flood lights required will be as per the legend of above mentioned drawing.

PSY4.3 Aviation Light

Four (x4) ICAO/FAA approved aviation obstruction warning LED type lights shall be positioned as indicated on drawing 13214-73-06-013. This light shall be connected to a photocell and UPS power supply.

Intermediate lights shall consist of at least 3 single units spaced at 120-degree intervals, depending on the diameter of the structure, and may be below intensity type "A" lights of at least 10 candelas. When flashing lights are used, the flashes shall be synchronised.

PSY5 FIELD STOP/START STATIONS (ISOLATOR STATIONS)

Supply and install field mounted Stop/Start stations for all the rotating machinery.

| | | | |
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



All mounting accessories and support structures **MUST** be included in the tender price.

The Stop/Start stations shall be installed within a 1000 mm radius of the accompanying motor.

Each of the isolators must be equipped complete with supports, racking, mounting brackets and enclosures.

The Stop/Start stations and isolators must comply with the relevant requirements of the attached specification "Electrical Design Standards, Volume E03, Electrical Isolator Pushbutton Stations".

PSY 6

EARTHING AND LIGHTNING PROTECTION

The Vendor shall appoint a reputable company to design, install test and commission the earthing and lightning protection in and around the new Reservoir, new valve building, telemetry hut, guard hut and electric fence, etc.

The Vendor shall submit a full set of drawings detailing the design intent and installation methods to be used by the earthing and lightning protection company for review and approval by the Electrical Engineer. The installation shall **ONLY** commence once the drawings are approved by the Engineer.

All new metal parts, structures and equipment are to be bonded to the general plant earth system.

The Earthing and Lightning Protection must comply with the relevant requirements of the attached specification "Particular Specification, Volume E11 : Electrical Earthing and Lighting Protection" as well as SANS 10313, and take into account the details of drawing 13214-73-06-012 and 13214-73-06-002

| | | | |
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

PSY7

LV CABLES

The Vendor will be responsible for the supply and installation of all the LV cable, including the termination of all LV cables. The cables will be fixed to a cable rack, passed through conduit or buried in a trench. See detail on drawings 13214-73-06-001 and 13214-73-06-013

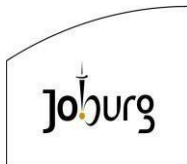
LV cables will be installed between the new MCC's and all the downstream equipment.

The cables (and the installation thereof) must comply with the attached specifications: "Particular Specification, E02, Electrical Cable Racks, "Particular Specification, E05, Electrical Low Voltage Power and Control Cables, "Particular Specification, E06, Electrical Medium and Low Voltage Installation and "Particular Specification, E09, Electrical Building Installation".

The following cables should be allowed for under this contract.

| DESCRIPTION | NO. | FROM | TO | Route Length |
|--------------------------------------------|-----|-----------------|-------------------------|--------------|
| 16mm ² 4C PVC SWA PVC CU Cable | 1 | Point of Supply | DB-01 | 75 |
| 16mm ² Bare Copper Earth Wire | 1 | Point of Supply | DB-01 | 75 |
| 16mm ² 3C PVC SWA PVC CU Cable | 1 | DB-01 | DB-02 | 100 |
| 16mm ² Bare Copper Earth Wire | 1 | DB-01 | DB-02 | 100 |
| 16mm ² 3C PVC SWA PVC CU Cable | 1 | DB-01 | WP1 | 45 |
| 16mm ² Bare Copper Earth Wire | 1 | DB-01 | WP1 | 45 |
| 16mm ² 3C PVC SWA PVC CU Cable | 1 | DB-01 | DB-03 | 45 |
| 16mm ² Bare Copper Earth Wire | 1 | DB-01 | DB-03 | 45 |
| 2.5mm ² 3C PVC SWA PVC CU Cable | 2 | DB-01 | Inlet Flow meter Koisk | 30 |
| 2.5mm ² 3C PVC SWA PVC CU Cable | 2 | DB-01 | Outlet Flow meter Koisk | 30 |

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



| | | | | |
|-----------------------------------------------|---|-----------|--------------------------|-----|
| 2.5mm ² 3C PVC SWA PVC CU Cable | 2 | DB-02 | Level sensor kiosks | 200 |
| 2.5mm ² 3C PVC SWA PVC CU Cable | 1 | DB-02 | 24V Cabinet | 10 |
| 2.5mm ² 3C PVC SWA PVC CU Cable | 2 | DB-02 | Telemetry Out station | 10 |
| 16mm ² 3C PVC SWA PVC CU Cable | 1 | DB-03 | Aviation lights | 180 |
| 16mm ² 3C PVC SWA PVC CU Cable | 1 | DB-03 | Exterior light Mast 1 | 80 |
| 16mm ² 3C PVC SWA PVC CU Cable | 1 | DB-03 | Exterior light Mats 2 | 150 |
| 70mm ² Bare Copper Earth Wire | 1 | Reservoir | Earthing system | 300 |
| 16mm ² 3C PVC SWA PVC CU Cable | 1 | DB-03 | Gate lights | 55 |

PSY7.1 Cable Trenching

The Vendor shall allow for the excavation of trenches and road crossings in and around the Return Water Pump Station building and the site reticulation paths.

All trenching for the Control & Instrumentation and Electrical installation will be done under the Electrical scope of work.

There will be several road crossings along the cables routes.

The cabling and trenching shall comply with all the requirements of the attached "Particular Specification E05, Cabling" and "Particular Specification E06, Electrical Medium and Low Voltage Cable Installation".

PSY8 SMALL POWER AND LIGHTING

Note: All equipment must be approved by the Engineer or the representative prior to the installation of or any order being placed. The Vendor shall install small power and lighting in and around the new Valve building, telemetry hut, guard house and general site lighting.

| | | | |
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

A 'Gogga vanger' with an ultraviolet fluorescent tube light must be installed outside the entrance of the following buildings to control the bugs and insects. A photocell day/night switch will switch this.

- 1 x Valve building

The following small power and lighting DB's will be required for the project,

- Valve Building
- Guard House
- Telemetry Hut

The installation must comply with the attached specifications: "Particular Specification E05, Electrical Low Voltage Power and Control Cables", "Particular Specification E06, Electrical Medium and Low Voltage Cable Installation", "Particular Specification E07, Electrical Industrial Welding Plugs, Couplers and Socket Outlets", "Particular Specification E08, Electrical Wiring" and "Particular Specification, E09, Electrical Building Installation".

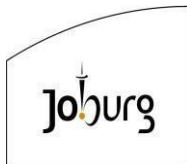
PSY8.1 Valve Building DB (DB-01)

Fault level: 5 kA fault level

Type: Indoor flush wall mounted with front access and door.
Supply: 16 mm² x 4 core PVC SWA PVC cable plus 10 mm² bare copper earth from Electrical connection from Supply Authority
Colour: Painted Light Orange – B26 (SANS 1091:2012) external, White arc-free internal (see Painting and Finishing).

Refer to drawing no;
13124-73-06-003: Single line diagram,
13124-73-06-014: Valve Building Power and Lighting Layoutingle line diagram

| | | | |
|------------------|--|--------------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



PSY8.2 Telemetry Hut DB (DB-02)

Fault level: 2.5 kA fault level

Type: Indoor flush wall mounted with front access and door.
Supply: 16 mm² x 4 core PVC SWA PVC cable plus 10 mm² bare copper earth from Electrical connection from Supply Authority
Colour: Painted Light Orange – B26 (SANS 1091:2012) external, White arc-free internal (see Painting and Finishing).

Refer to drawing no;
13124-73-06-003: Single line diagram,
13124-73-06-009: Telemetry Hut Power and Lighting Layout line diagram

PSY8.3 Guard house DB (DB-03)

Fault level: 2.5 kA fault level

Type: Indoor flush wall mounted with front access and door.
Supply: 16 mm² x 4 core PVC SWA PVC cable plus 10 mm² bare copper earth from Electrical connection from Supply Authority
Colour: Painted Light Orange – B26 (SANS 1091:2012) external, White arc-free internal (see Painting and Finishing).

Refer to drawing no;
13124-73-06-003: Single line diagram,
13124-73-06-008: Guard House Power and Lighting Layout line diagram

PSY9 DOCUMENTATION AND COMMISSIONING

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



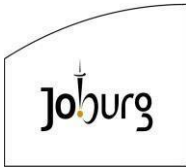
The issuing of a Certificate of Compliance for each individual area/equipment in the entire installation must be included in the tender price.

QA documentation for each set of equipment must be provided.

Commissioning and setting up of all protection equipment must be included in the tender price AND overall commissioning assistance.

The vendors recommended list of commissioning spares must be included in the tender price.

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| Employer: | | Contractor: | |
| Witness: | | Witness: | |

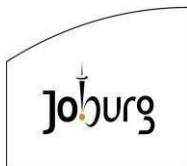


PORTION 4: STANDARD JOHANNESBURG WATER SPECIFICATIONS

These specifications are attached to this document as separate files and are as follows;

- C & I Specifications
- Corrosion Specifications
- Electrical Specifications
- Mechanical Specifications

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |



Johannesburg Water SOC Ltd



**CONSTRUCTION OF 20ML REINFORCED CONCRETE CARLSWALD
RESERVOIR**

VOLUME 2

PART 4: SITE INFORMATION

| | | | |
|-----------|--|-------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |

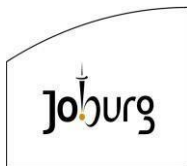
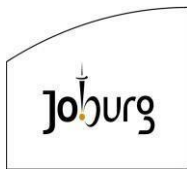


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| | | | |
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| Employer: | | Contractor: | |
| Witness: | | Witness: | |



4. EXISTING SERVICES, SERVITUDES AND WAYLEAVES

Existing services along the site have not been identified through any subsurface detection mechanism. The Contractor will be responsible for identifying all existing services along the site before commencing with the works. The Contractor will also be responsible for the procurement of any required servitude and wayleave approvals.

5. SECURITY

The Contractor shall be responsible for the security of his personnel, materials, equipment and construction plant on and around the site of the Works. He shall also be responsible for the security of his camp (if applicable). The Employer in this regard will consider no claims.

Refer to clause PS7.2 (Security).

6. GEOTECHNICAL INVESTIGATION

The existing ground and soil conditions are presented in the Geotechnical Report which was undertaken for the site (see attached).

It shall be the Contractor's responsibility to ensure that he acquaints himself with all necessary documentation in order to accurately compile his bid.

7. TOPOGRAPHICAL SURVEY

A detailed topographical survey was prepared for the site and is in the possession of the Employer's Agent. This information can be requested if required, as it shall be the Contractor's responsibility to ensure that he acquaints himself with all necessary documentation in order to accurately compile his bid.

| | | | |
|------------------|--|--------------------|--|
| Employer: | | Contractor: | |
| Witness: | | Witness: | |