REQUEST FOR BID
CONSTRUCTION CONTRACT

TENDER NO: RW10380722/19

TENDER FOR MANUFACTURE, SUPPLY, DELIVERY, INSTALLATION, COMMISSIONING AND PUTTING INTO SERVICE VARIOUS VALVES INCLUDING CONSTRUCTION OF CHAMBER AT BRONBERG RESERVOIR

TECHNICAL PART

MINIMUM CIDB CONTRACTOR GRADING: 6ME/ 5ME PE

TENDER SUBMITTED BY:

| National Treasury Central Supplier Database Number | MAAA…………………………………………………… |

Registered Name of Company: ____________________________

____________________________________________________________________________________

Address: ___________________________________________

____________________________________________________________________________________

Telephone Number: _________________________________

Fax Number: _______________________________________

E-mail: __________________________________________

Employer’s Representatives

Lesego Sineke                                                          Kulani Shibambu
  (Sourcing Manager)                                                   (Snr Buyer)
  Tel: (011) 682-0216                                                  Tel: (011) 682 0946
  e-mail: lsineke@randwater.co.za                                      e-mail: kshibambu@randwater.co.za

RAND WATER
522 IMPALA ROAD
GLENVISTA

ISSUE DATE:            FRIDAY, 20 SEPTEMBER 2019

COMPULSORY SITE MEETING DATE       THURSDAY 03 OCTOBER 2019   AT 11:00 AM

CLOSING DATE:           TUESDAY, 05 NOVEMBER 2019   AT 12:00 PM
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SECTION A

TENDER DATA
T1 TENDER DATA

The conditions of tender are the Standard Conditions of Tender as contained in the document CIDB Standard for Uniformity in Construction Procurement: Annex F and may be obtained from the CIDB (Tel 012-343 7136).

The Standard Conditions of Tender for Procurement 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 CIDB Standard Conditions of Tender to which it mainly applies.

<table>
<thead>
<tr>
<th>CLAUSE NUMBER (CIDB)</th>
<th>TENDER DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>F.1.1</td>
<td>The Employer is Rand Water.</td>
</tr>
<tr>
<td>F.1.2</td>
<td>The tender documents issued by the Employer are detailed on the contents page of this tender document.</td>
</tr>
<tr>
<td>F.1.4</td>
<td>The Employer’s Representative is stated on the cover page of this tender document.</td>
</tr>
<tr>
<td></td>
<td><strong>Objective Criteria</strong></td>
</tr>
<tr>
<td></td>
<td>Rand Water shall apply objective criteria in accordance with the PPPFA to advance the economic interests of historically disadvantaged designated groups.</td>
</tr>
<tr>
<td></td>
<td>Rand Water encourages the formation of joint ventures. However, the ownership composition of the joint ventures must meet the objective criteria stipulated in this tender document.</td>
</tr>
<tr>
<td></td>
<td>Rand Water reserves the right to apply localisation in the awarding of this tender.</td>
</tr>
<tr>
<td>F.2.1</td>
<td>Only those tenderers who are registered with the CIDB, or are capable of being so prior to the evaluation of submissions, in a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25 (1B) or 25 (7A) of the Construction Industry Development Regulations for a 6ME/5ME PE class of construction work, are eligible to have their tenders evaluated:</td>
</tr>
<tr>
<td></td>
<td>a) Contractors who have a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered, or value determined in accordance with Regulation 25 (1B) or 25 (7A) of the Construction Industry Development Regulations.</td>
</tr>
</tbody>
</table>
b) Contractors registered as potentially emerging contractors with the CIDB who are registered in one contractor grading designation lower than that required in terms of (a) above and who satisfy the following criteria:
   a) That the Employer, following an interview with the management of the enterprise, is satisfied that the enterprise has the potential to develop and qualify to be registered in a higher Contractor grading designation; and
   b) That the Employer, following a risk assessment, is able to provide the necessary supportive measures required to enable the enterprise to successfully execute the contract and puts the same in place.

Joint ventures are eligible to submit tenders provided that:
   a) Every member of the joint venture is registered with the CIDB and a lead partner must be declared.
   b) The lead partner has a contractor grading designation in the ME class of construction work with a non-lead partner has a contractor grading in the ME class of construction work; and
   c) The combined contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a contractor grading designation determined in accordance with Regulation 25 (1B) or 25 (7A) of the Construction Industry Development Regulations.

F.2.7 The arrangement for a compulsory site meeting is as stated in the Notice and Invitation to Tender.

Confirmation of attendance to be notified at least 2 (two) full working days in advance to the Employer’s Representative stated on the cover of this tender.

Non-attendance of any compulsory site meeting shall result in the Tender to be rejected by the Employer.

F.2.12 In addition to the information appearing in F2.12 of the CIDB Standard Conditions of Tender, the following points shall apply:

Calculations, drawings and all other pertinent technical information and characteristics as well as modified or proposed Pricing Data must be submitted with the alternative tender offer to enable the Employer to evaluate the efficacy of the alternative and its principal elements, to take a view on the degree to which the alternative complies with the Employer’s standards and requirements and to evaluate the acceptability of the pricing proposals. Calculations must be set out in a clear and logical sequence and must clearly reflect all design assumptions. Pricing Data must reflect all assumptions in the development of the pricing proposal.
Acceptance of an alternative tender offer will mean acceptance in principle of the offer. In the event that the alternative is accepted, it will be a contractual obligation for the Contractor to accept full responsibility and liability that the alternative offer complies in all respects with the Employer’s standards and requirements.

<table>
<thead>
<tr>
<th>Clause</th>
<th>Description</th>
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<tbody>
<tr>
<td>F.2.13.5</td>
<td>The Employer's address for delivery of the tender offers is stated in the Notice and Invitation to Tenderers. The tender submission must be sealed and endorsed with both the tender number and the description of the tender, as it appears on the front cover of this tender.</td>
</tr>
<tr>
<td>F.2.15</td>
<td>The closing time for submission of tender offers is as stated in the Notice and Invitation to Tender.</td>
</tr>
<tr>
<td>F.2.13.9</td>
<td>Telephonic, telegraphic, telex, facsimile or e-mailed tender offers will not be accepted.</td>
</tr>
<tr>
<td>F.2.16</td>
<td>The tender offer validity period is as stated in the Notice and Invitation to Tender.</td>
</tr>
<tr>
<td>F.2.23</td>
<td>See 2.1 List of Returnable Documents for a comprehensive list of certificates and additional documents required for submission with the tender.</td>
</tr>
<tr>
<td>F.3.4</td>
<td>In addition to Clauses 3.4.1, 3.4.2 and 3.4.3 of the CIDB Standard Conditions of Tender, the following shall apply: Rand Water uses a two stage process, therefore the values of tenders shall not be published.</td>
</tr>
<tr>
<td>F.3.5.1 &amp; F.3.5.2</td>
<td>The submissions shall be made in two packages as indicated in the tender documents, i.e. commercial and technical parts. Technical evaluation will be done first as a pre-qualifier, only those tender that were deemed technical competent by the committees will be further evaluated.</td>
</tr>
</tbody>
</table>
| Local Content Requirement s | Bids in respect of the designated sectors must be as follows where applicable: -
  - Bids in respect of textiles, clothing, leather and footwear must meet the specific bidding condition. The condition prescribes that only locally produced or locally manufactured textiles, clothing, leather and footwear or those that meet the stipulated minimum threshold for local production and content should be considered. The stipulated minimum threshold for local content for textiles, clothing, leather and footwear is 100%.
  - Bids in respect of furniture products must meet the specific bidding condition. The condition prescribes that only locally produced or locally manufactured furniture products or those that meet the stipulated minimum threshold for local production and content should be considered. The stipulated minimum threshold for local content for furniture products is 85 - 100%.
  - Bids in respect of valves products and actuators must meet the specific bidding condition. The condition prescribes that... |
only locally produced or locally manufactured valves products and actuators or those that meet the stipulated minimum threshold for local production and content should be considered. The stipulated minimum threshold for local content for the different types of valves products and actuators is 70%.

- Bids in respect of electrical and telecom cables must meet the specific bidding condition. The condition prescribes that only locally produced or locally manufactured electrical and telecom or those that meet the stipulated minimum threshold for local production and content should be considered. The stipulated minimum threshold for local content for the different types of electrical and telecom cables is 90%.

- Bids in respect of steel value added products and components must meet the specific bidding condition. The condition prescribes that only locally produced or locally manufactured steel value added products and components or those that meet the stipulated minimum threshold for local production and content should be considered. The stipulated minimum threshold for local content for the different types of steel value added products and components is 100%.

- Bids in respect of residential water meters must meet the specific bidding condition. The condition prescribes that only locally produced or locally manufactured residential water meters or those that meet the stipulated minimum threshold for local production and content should be considered. The stipulated minimum threshold for local content for residential water meters is 40%.

- Bids in respect of conveyance pipes must meet the specific bidding condition. The condition prescribes that only locally produced or locally manufactured conveyance pipes or those that meet the stipulated minimum threshold for local production and content should be considered. The stipulated minimum threshold for local content for the conveyance pipes is 80 -100%.

- Bids in respect of pumps, medium voltage motors and associated accessories must meet the specific bidding condition. The condition prescribes that only locally produced or locally manufactured pumps, medium voltage motors and associated accessories or those that meet the stipulated minimum threshold for local production and content should be considered. The stipulated minimum threshold for local content for the different types of pumps, medium voltage motors and associated accessories is 70%.

The exchange rate to be used for the calculation of local production and content must be the exchange rate published by the South African Reserve Bank (SARB) at 12:00 on the date of the advertisement of the bid. Only the South African Bureau of...
Standards (SABS) approved technical specification number SATS 1286:2011 must be used to calculate local content.

The local content (LC) expressed as a percentage of the quotation/bid price must be calculated in accordance with the following formula which must be disclosed in the quotation/bid documentation:

\[
LC = \left[1 - \frac{x}{y}\right] \times 100
\]

Where
- \(x\) is the imported content in Rand
- \(y\) is the bid price in Rand excluding value added tax (VAT)

Before completing the declaration, suppliers/bidders must study the General Conditions, Definitions, Directives applicable in respect of Local Content as prescribed in the Preferential Procurement Regulations, 2017, the South African Bureau of Standards (SABS) approved technical specification SATS 1286:2011 (Edition 1) and the Guidance on the Calculation of Local Content together with the Local Content Declaration Templates [Annex C (Local Content Declaration: Summary Schedule), D (Imported Content Declaration: Supporting Schedule to Annex C) and E (Local Content Declaration: Supporting Schedule to Annex C)]. These are accessible at the www.thedti.gov.za/industrial development/ ip.jsp at no cost.

The Declaration Certificate for Local Production and Content (SBD/MBD 6.2) together with the Annex C (Local Content Declaration: Summary Schedule) must be completed, duly signed and submitted by the supplier together with the quotation/bid. This declaration must be accompanied by a certificate from a registered auditor confirming that the Local Content, and that the Local Content Declaration Template have been audited and certified as correct.

Only quotations/bids that achieve the minimum stipulated threshold for local production and content will be considered for further evaluation. Unless otherwise exempted by the Minister of Finance, of which proof of exemption should be submitted together with the quotation. The evaluation will then follow the normal two stage Rand Water evaluation process, with a 60% threshold on functionality and in accordance with the 80/20 preference point systems as prescribed in Preferential Procurement Regulations of 2017.

These adjudication points will be awarded as follows:

1. **FUNCTIONALITY**
   The percentage scored for functionality may be calculated as follows:
   
   a. The value awarded for each criterion should be multiplied by the weight for the relevant criterion to obtain the score for the various criteria;
   
   b. The scores for each criterion should be added to obtain the total score out of 100%; and
c. The following formula should be used to convert the total score to percentage for functionality:

\[ P_F = \frac{S_O}{M_S} \times 100 \]

Where:
- \( P_F \) = percentage scored for functionality by bid under consideration
- \( S_O \) = total score of bid under consideration
- \( M_S \) = maximum possible score

Only bids that achieve the minimum of 60% qualifying score for functionality shall be further evaluated in accordance with the 80/20 or 90/10 preference point systems.

Tenderers will be adjudicated on the criteria outlined in items (A-J) below. Each Item (A to J) has an assigned “Weight” and “Rating” scale. During the adjudication process Tenderers shall be assigned a “Rating” for each item in (A to J). The maximum “Score” that a Tenderer can achieve will be equal to the “Weight” for a particular item. The Total Scores of each functionality or quality criterion will be multiplied by its weight and then the total score summed up to a total score out of 100. A detailed description of the “Rating” scales and associated adjudication documentation are as follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Weighting</th>
<th>Rating Scale</th>
</tr>
</thead>
</table>
| (a)  | **The Schedule: T2.2.4 Record of Previous Experience relevant to the current scope/ work (with contactable client ref.) (20 weighting)** | 20 | - None – 0%  
- Between One (1) Reference and Three (3) = Weak – 33.3%  
- Between Four (4) References and Five (5) = Moderate – 66.7%  
- Six (6) References and Above = Good – 100% |
| (b)  | **Overall Performance on Previous Work (10 Weighting)** | 10 | - Unacceptable (average performance rating of less than 80%) – 0%  
Evidence of previous experience supplied without ratings is also unacceptable under this criterion.  
- Acceptable (average performance rating of 80% and above) – 100% |
(c) **Quality Management Systems** (refer to R1.1 of T2.1.4 List of Returnable Documents) *(5 weighting)*

- Evidence of being ISO 9001 certified (certificate issued by a certification agency) or
- In-house QMS in place (demonstrated by submission of an approved quality management manual, at a minimum).

The “Rating” of this item is based on a two-point scale:

- **Unacceptable** – 0%
  Non-submission

- **Acceptable** – 100%
  Relevant submission is provided

(d) **The Schedule: T2.2.6 Human Resource Capacity** *(10 weighting)*

Adjudicated based on Human Resource Capacity Schedule (including company's Project Team vs. Company Organogram; Project Team Member List including CV's, resource allocation). The purpose is to establish an overall picture of the company's human resource capacity and ability to undertake the work.

The “Rating” of this item is based on a four-point scale:

- **None** – 0%
  No submission

- **Weak** – 33.3%
  Only company organogram provided

- **Moderate** – 66.7%
  Company organogram, project team including CVs

- **Good** – 100%
  Submission is detailed in terms of company organogram, project team including CVs, resource allocation for this project against any other projects currently managed by the bidder.

(e) **The Schedule: T2.2.7 Equipment Resource Capacity (Plant and Equipment)** *(10 weighting)*

Adjudicated based on Equipment Resource Capacity (i.e. office space and requisite tools, vehicles and working tools). The purpose is to establish an overall picture of the company's equipment resource capacity and ability to undertake the work.

Rand Water will confirm the information submitted when conducting due diligence.

The “Rating” of this item is based on a two-point scale:

- **None** – 0%
  No submission

- **Good** – 100%
Submission details the equipment resource capacity in terms of office space and requisite tools, vehicles and working tools or more.

(f) The Schedule: T2.2.9 Risk Introduced by Tender Qualifications (e.g. limitations, assumptions, limited liability etc.) (5 weighting)

The “Rating” of this item is based on a two-point scale:
- **Significant** – 0%
  Bid qualifications submitted by the bidder adversely change the bid scope.
  Significant qualifications may result in bid submissions being deemed non-responsive, should the bidder/s opt to retain such qualifications after consultation by Rand Water.
- **None** – 100%
  No bid qualification/s submitted

(g) The Schedule: T2.2.12 Project Risk Management (5 weighting)

As per risk register provided.

The “Rating” of this item is based on a three-point scale:
- **None** – 0%
  No response provided to Project Risk Management section or responses provided are not relevant to the identified risks.
- **Moderate** – 66.7%
  Relevant responses were provided to some of the risks outlined in this bid.
- **Good** – 100%
  Relevant responses were provided to the risks outlined in this bid and further risks were identified, classified and a response strategy and actions were provided by the bidder.

(h) The Schedule: T2.2.1 Detailed Project Programme (also refer to R1.4 of T2.1.4 List of Returnable Documents) (10 weighting)

Aligned with employer’s completion dates with the following specifications:
- on a Gantt chart format
- detail at least activity level 2
- resource loaded
- monthly cost forecast to completion.

The “Rating” of this item is based on a four-point scale:
- **None** – 0%
  No submission
- **Weak** – 33.3%
  Only Gantt chart format
- **Moderate** – 66.7%
  Only Gantt chart, resources loaded and activity level 2

- **Good** – 100%
  Provided all of above (Gantt chart format, activity level 2, resources loaded and monthly cost forecast to completion)

(i) **Method Statement** (refer to R1.6 of T2.1.4 List of Returnable Documents) *(15 weighting)*

- Specific method statement in accordance with the scope of work
- Aligned with Contractual requirements
- Credible/Acceptable

The “Rating” of this item is based on a four-point scale:
- **None** – 0%
  No submission

- **Weak** – 33.3%
  Method Statement addressing up to 30% of the deliverables

- **Moderate** – 66.7%
  Method statement detailing 70% of the deliverables

- **Good** – 100%
  Method statement detailing all of the deliverables

(j) The **Schedule: T2.2.8 SHERQ** *(10 weighting)*

Adjudicated based on Contractors Health & Safety Policy, and documentation submitted (as indicated in SHERQ Schedule)

The “Rating” of this item is based on a two-point scale:
- **Unacceptable** – 0%
  Non-submission

- **Acceptable** – 100%
  Relevant submission is provided.

### 2. PRICE

Refer to Commercial Part Tender Document

<table>
<thead>
<tr>
<th>F.3.13.1</th>
<th>Tender offers will only be accepted if:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- The Tenderer is registered with the Construction Industry Development Board in an appropriate Contractor grading designation;</td>
</tr>
<tr>
<td></td>
<td>- The Tenderer or any of its directors is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of</td>
</tr>
</tbody>
</table>
2004 as a person prohibited from doing business with the public sector;
- The Tenderer has not:
  I. Abused the Employer’s Supply Chain Management System; or
  II. Been blacklisted from doing business by Rand Water or any of the other state entities;
- The Tenderer has completed the Compulsory Enterprise Questionnaire (see Returnable Schedules) 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.

F.3.18 The number of paper copies of the signed contract to be provided by the Employer is 1 (one).
T2 PART 2: RETURNABLE DOCUMENTS

T2.1 LIST OF RETURNABLE DOCUMENTS

T2.1.1 The tender includes a variety of documents that must be filled in and returned by the Contractor. Previously, the majority of the Employer’s returnable documentation was termed “schedules”. This has changed with the separation of schedules, agreements and contract data, and pricing information.

T2.1.2 Table T2.1.4 illustrates the full list of returnable documents. Portions that shall be used during tender evaluation and which portions shall be incorporated into the contract are stated. Please utilize this list as a checklist prior to tender submission to ensure that required returnable documentation has been submitted.

T2.1.3 Pre Qualifier

1. Signed letter of tender
2. Attendance of compulsory site meeting.
3. Pricing schedules/ rates for proposed resources must be fully completed
4. Letter of Good Standing from the Department of Labour or from an Accredited Institution
5. Fully completed and signed Local Content Declaration Forms for each of the designated sectors
6. The bid meets the following minimum thresholds: -
   - 70% minimum threshold for local production and content for the different types of valves as stipulated in Schedule C of the Commercial Part or Exemption from the Minister of Finance in the case of non-compliance to the Local Content threshold.
7. The use of correcting fluid or any other similar substance to make corrections is not permitted.

T2.1.4 All documentation listed in Table T2.1.4 below shall form part of the Contract.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description of document to be returned</th>
<th>Required for tender evaluation</th>
<th>Only required after tender award</th>
</tr>
</thead>
<tbody>
<tr>
<td>T2.2</td>
<td>Returnable schedules (supplied with the tender document)</td>
<td></td>
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<tr>
<td>T2.2.1</td>
<td>Dates for delivery and completion</td>
<td>•</td>
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<tr>
<td></td>
<td><em>NOTE: A DETAILED PROJECT PROGRAM MUST BE INCLUDED WITH THE TENDER SUBMISSION</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T2.2.1</td>
<td>Dates for delivery and completion</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>NOTE: A DETAILED PROJECT PROGRAM MUST BE INCLUDED WITH THE TENDER SUBMISSION</em></td>
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<tr>
<td>T2.2.2</td>
<td>Clarification Certificate</td>
<td>•</td>
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<tr>
<td>T2.2.3</td>
<td>Record of Addenda to Tender Documents</td>
<td>•</td>
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<tr>
<td>T2.2.4</td>
<td>Alternative Tender</td>
<td>•</td>
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<tr>
<td>T2.2.5</td>
<td>Record of Previous Experience, Quality of Workmanship and Safety</td>
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<td>---------------------------------------------------------------</td>
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<tr>
<td>T2.2.6</td>
<td>Human Resource Capacity Schedule</td>
<td>•</td>
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<tr>
<td>T2.2.7</td>
<td>Equipment Resource Capacity (Plant and Equipment)</td>
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<tr>
<td>T2.2.8</td>
<td>Safety, Health, and Environment</td>
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<tr>
<td>T2.2.9</td>
<td>Technical qualifications to Tender</td>
<td>•</td>
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<tr>
<td>T2.2.10</td>
<td>Details of Equipment (including manufacturer’s data sheets &amp; technical publications)</td>
<td>•</td>
<td></td>
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<tr>
<td>T2.2.11</td>
<td>Recommended Spares, Special tools and servicing facilities</td>
<td>•</td>
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<tr>
<td>T2.2.12</td>
<td>Project Risk Management</td>
<td>•</td>
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<tr>
<td>T2.2.13</td>
<td>Local Content</td>
<td>•</td>
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<tr>
<td><strong>R 1</strong></td>
<td>Required documentation not issued with the tender document:</td>
<td></td>
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<tr>
<td>R 1.1</td>
<td>ISO 9001 Certification /proof of In-house Quality Management System (must include proof of a Document Control System and proof of a Non-conformity Management System).</td>
<td>•</td>
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<tr>
<td>R 1.2</td>
<td>Sample/template of Quality Control Plan and appointment letter of Quality Representative.</td>
<td>•</td>
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<tr>
<td>R 1.3</td>
<td>Main Contractor’s internal Safety and Health Policy</td>
<td>•</td>
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<tr>
<td>R 1.4</td>
<td>Detailed Project Program in the following:</td>
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<tr>
<td></td>
<td>a) Gantt Chart Format</td>
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<td></td>
<td>b) Level 3 schedule activities</td>
<td></td>
<td></td>
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<td></td>
<td>c) Credible and Aligned to Rand Water’s Programme</td>
<td></td>
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<td></td>
<td>d) Resource loaded schedule</td>
<td></td>
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<td></td>
<td>e) Monthly cash flows, project to completion.</td>
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<tr>
<td>R 1.5</td>
<td>Project Specific SHE Plan (compliance with the project specific SHE specification)</td>
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</tr>
<tr>
<td>R 1.6</td>
<td>Method Statement</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Objective of each activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) Persons Responsible</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c) Risks identified and Mitigation Strategies</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>d) Construction Methodology for all activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>e) Resources to be utilised</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>f) Site Preparation prior all the activities take place</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>g) Diagrams, sketches drawn to scale.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>h) Timeframe and indication if the activity is on critical path or not</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i) To advise during construction on other headings.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

R 1.7  Project Specific SHE risk assessment  •
R 1.8  Appointment of Construction Health and Safety Manager/Officer  •
R 1.9  Appointment of Construction Manager and Supervisor  •
R 1.10  Comprehensive SHE file (compliance with the project specific SHE Specification and SHE Plan)  •
R 1.11  Signed 37.2 written agreement on safety, health and environmental matters  •

**Note:** Technical information required after tender award is listed in Table T2.1.4 of “Commercial Part” Tender Document

**Table T2.1.4: List of Returnable Documents**

**T2.1.5**  Non-submission of any item listed only under the column “Required for Tender Evaluation” may result in the tender to be rejected by the Employer.

**T2.1.6**  Attach additional pages if more space is required.
T2.2 RETURNABLE SCHEDULES

T2.2.1 DATES FOR DELIVERY AND COMPLETION

T2.2.1.1 It is estimated that the Contract will be placed on or before February 2020. Although access to the site for inspection purposes will become available immediately, access to undertake work will only become available after the issue of the Site Access Certificate.

T2.2.1.2 The Tenderer shall state the proposed start and completion dates based on the above approximate date, these dates shall comply with the dates mentioned below in T2.2.1.4

T2.2.1.3 The Tenderer shall simultaneously fill in the period required to complete the work in days or weeks from the date of acceptance of the offer by the Employer. This shall be used to adjust dates should the Contract placement date vary.

T2.2.1.4 All equipment and plant shall be handed over by February 2021 and the Contractor’s programme shall comply with this requirement by the Employer.

<table>
<thead>
<tr>
<th>Item</th>
<th>Start Date</th>
<th>Completion Date</th>
<th>Working Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milestone 1: Submission of Preliminary Documentation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milestone 2: Site Establishment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milestone 3: Procurement of Equipment and materials</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milestone 4: Execution of the Works</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milestone 5: Testing, Commissioning and Handover</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milestone 6: Defects Notification Period</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table T2.2.1: Dates for delivery and completion

NOTE THAT A DETAILED PROJECT PROGRAMME MUST BE INCLUDED WITH THE TENDER SUBMISSION

Name of Tenderer: 

Signed by or on Behalf of the Tenderer: 

Date: 

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T2.2.2 CLARIFICATION CERTIFICATE

This is to certify that I, ___________________________________________ have:

(Tenderer’s Representative – full name)

- Examined the Tendering Procedures, Returnable Documents, Agreements and Contract Data, Pricing Data, Scope of Work, Site Information, Specifications and Drawings for the Contract for which I have submitted this Tender.
- Attended the Compulsory Site Meeting.
- Acquainted myself with the site conditions.
- Considered all addenda to tender documents (if applicable) in submission of this tender.
- Read all information relating to the OHS Act requirements of this tender.

Name of Tenderer: ___________________________________________

Signed by or on behalf of Tenderer: ___________________________________________

Date: ___________________________________________
**T2.2.3 RECORD OF ADDENDA TO TENDER DOCUMENTS**

We acknowledge receipt of communications from the Employer amending the tender documents before the submission of this tender offer. We confirm that these amendments have been taken into account in this tender offer.

<table>
<thead>
<tr>
<th>Notice Number</th>
<th>Date</th>
<th>Title or Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Attach additional pages if more space is required

Name of Tenderer:  

Signed by or on Behalf of the Tenderer:  

Date:
T2.2.4 ALTERNATIVE TENDER (TECHNICAL)

T2.2.4.1 Alternative tenders will be accepted on the conditions described in T2-Tender Data (CIDB Clause F.2.12)

T2.2.4.2 Should the Tenderer wish to submit an alternative tender he shall set out his proposals clearly hereunder or alternatively state them in a covering letter attached to his tender and referred to hereunder, failing which the tender will be deemed to be unqualified.

T2.2.4.3 If no departures or modifications are described, the schedule shall be marked NIL and signed by the Tenderer.

<table>
<thead>
<tr>
<th>Page</th>
<th>Item</th>
<th>Proposed alternative</th>
</tr>
</thead>
</table>

Note: The cost for the proposed alternative solution shall be captured in the “Commercial Part” Document under schedule “Alternative Tender”

Name of Tenderer: ________________________________________________

Signed by or on behalf of Tenderer: __________________________________

Date: __________________________________________________________
The Tenderer shall provide details of at least 3 recently **completed** works (similar to the work set out in this tender). Individuals listed as references must be contactable and willing to provide information relating to the performance of the Tenderer (in terms of safety and health, workmanship, documentation, timeous completion, etc.). In order to verify the quality of workmanship, an inspection of the works may also be undertaken should Rand Water deem it necessary.

<table>
<thead>
<tr>
<th>Description of Works</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Title:</strong></td>
</tr>
<tr>
<td>High level project description:</td>
</tr>
<tr>
<td><strong>Client:</strong></td>
</tr>
<tr>
<td><strong>Contract No.:</strong></td>
</tr>
<tr>
<td><strong>Contract Value (excl. VAT):</strong></td>
</tr>
<tr>
<td><strong>Role</strong>&lt;sup&gt;Note 1&lt;/sup&gt;:</td>
</tr>
<tr>
<td><strong>Award Date:</strong></td>
</tr>
<tr>
<td><strong>Completion Date:</strong></td>
</tr>
<tr>
<td><strong>Location of Works:</strong></td>
</tr>
<tr>
<td><strong>Project Manager:</strong></td>
</tr>
<tr>
<td><strong>Construction Manager:</strong></td>
</tr>
</tbody>
</table>

**Contact Details of Reference at Client Company**

| Name: |
| Position Held: |
| Tel: | Cell: |
| Fax: | email: |

### Description of Works

| Project Title: |
| High level project description: |
| Client: |
| Contract No.: |
| Contract Value (excl. VAT): |
| Role<sup>Note 1</sup>: |
| Award Date: |
| Completion Date: |
| Location of Works: |
| Project Manager: |
| Construction Manager: |

**Contact Details of Reference at Client Company**

| Name: |
| Position Held: |
Note 1 – Role refers to the Contractor’s responsibility w.r.t. the claimed experience. For example, Single Contractor, Main Contractor but with electrical sub – contractor, Sub – contractor for civil construction etc.

### Description of Works

<table>
<thead>
<tr>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Title:</strong></td>
<td><strong>Project Title:</strong></td>
</tr>
<tr>
<td><strong>High level project description:</strong></td>
<td><strong>High level project description:</strong></td>
</tr>
<tr>
<td><strong>Client:</strong></td>
<td><strong>Client:</strong></td>
</tr>
<tr>
<td><strong>Contract No.:</strong></td>
<td><strong>Contract No.:</strong></td>
</tr>
<tr>
<td><strong>Contract Value (excl. VAT):</strong></td>
<td><strong>Contract Value (excl. VAT):</strong></td>
</tr>
<tr>
<td><strong>Role</strong> <em>(Note 1)</em>:</td>
<td><strong>Role</strong> <em>(Note 1)</em>:</td>
</tr>
<tr>
<td><strong>Award Date:</strong></td>
<td><strong>Award Date:</strong></td>
</tr>
<tr>
<td><strong>Completion Date:</strong></td>
<td><strong>Completion Date:</strong></td>
</tr>
<tr>
<td><strong>Location of Works:</strong></td>
<td><strong>Location of Works:</strong></td>
</tr>
<tr>
<td><strong>Project Manager:</strong></td>
<td><strong>Project Manager:</strong></td>
</tr>
<tr>
<td><strong>Construction Manager:</strong></td>
<td><strong>Construction Manager:</strong></td>
</tr>
</tbody>
</table>

**Contact Details of Reference at Client Company**

<table>
<thead>
<tr>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name:</strong></td>
<td><strong>Name:</strong></td>
</tr>
<tr>
<td><strong>Position Held:</strong></td>
<td><strong>Position Held:</strong></td>
</tr>
<tr>
<td><strong>Tel:</strong></td>
<td><strong>Tel:</strong></td>
</tr>
<tr>
<td><strong>Cell:</strong></td>
<td><strong>Cell:</strong></td>
</tr>
<tr>
<td><strong>Fax:</strong></td>
<td><strong>Fax:</strong></td>
</tr>
<tr>
<td><strong>email:</strong></td>
<td><strong>email:</strong></td>
</tr>
</tbody>
</table>
Note 1 – Role refers to the Contractor’s responsibility w.r.t. the claimed experience. For example, Single Contractor, Main Contractor but with electrical sub-contractor, Sub-contractor for civil construction etc.

<table>
<thead>
<tr>
<th>Name of Tenderer:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Signed by or on behalf of Tenderer:</td>
<td></td>
</tr>
<tr>
<td>Date:</td>
<td></td>
</tr>
</tbody>
</table>
T2.2.6 HUMAN RESOURCE CAPACITY SCHEDULE

The aspects covered by T2.2.6.1, T2.2.6.2 and T2.2.6.3 will be viewed in conjunction with each other to establish an overall picture of the Tenderer’s capacity and ability to undertake the work specified in this document.

T2.2.6.1 Project Team Organogram vs. Company Organogram

The Tenderer shall detail in the block below their company organogram and the Resources dedicated to this contract must be clearly indicated. In addition, sub-contractor and Joint-Venture arrangements must be clearly indicated:
### T2.2.6.2 Proposed Team Member List (Internal & External)

<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
<th>Internal or External Resource</th>
<th>% Utilisation On other Contracts / Work</th>
<th>% Utilisation On this Contract/ Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Manager</td>
<td>Internal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction Manager</td>
<td>Internal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resident Engineer</td>
<td>Internal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality Controller</td>
<td>Internal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety Officer</td>
<td>Internal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECO</td>
<td>Internal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supervisor</td>
<td>Internal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Welders</td>
<td>External</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turner and Fitter</td>
<td>External</td>
<td></td>
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</tr>
</tbody>
</table>

cont...
### List of Current Contracts (Work Load)

<table>
<thead>
<tr>
<th>Contract or Work Title</th>
<th>Client</th>
<th>Contract Value (excl. VAT)</th>
<th>Role (^\text{NOTE 1})</th>
<th>Progress</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Award Date:</td>
<td>Completion Date:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>% Complete:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Stage (^\text{NOTE 2}):</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES**

1. Role refers to the Contractor’s responsibility w.r.t. the claimed experience for example Single Contractor, Main Contractor but with Electrical subcontractor, Sub-contractor for civil construction etc.

2. Stage refers to the current stage of the work (example design, procurement, construction, installation, commissioning, handed over, in Defects Liability Period etc.)

3. Attach additional signed copies of this schedule if insufficient space is available.
T2.2. 7 EQUIPMENT RESOURCE CAPACITY (PLANT AND EQUIPMENT)

The following are lists of major items of relevant equipment that are presently owned / leased / hired or planned to be purchased / leased / hired and will be available for this contract if the tender is accepted:

<table>
<thead>
<tr>
<th>Qty</th>
<th>Equipment Description (including capacity/size etc)</th>
<th>Currently Own / Currently Lease or Hire / Plan to Purchase / Plan to Lease or Hire</th>
<th>% Utilisation On other Contracts / Work</th>
<th>On this Contract / Work</th>
</tr>
</thead>
</table>

I, the Tenderer, guarantee that all the above listed plant and equipment is readily available and/or will be provided when required on the works and maintained on the site in good condition and working order.

Name of Tenderer:

________________________________________________________

Signed by or on behalf of Tenderer:

________________________________________________________

Date:

________________________________________________________
T2.2.8 SAFETY, HEALTH, AND ENVIRONMENT

T2.2.8.1 Safety and Health Policy
Tenderers shall submit a copy of their company’s internal Safety and Health Policy

T2.2.8.2 Safety, Health and Environment (SHE) Plan
Tenderers shall submit the project specific SHE plan as per the project specific SHE Specification

T2.2.8.3 Safety, Health and Environment (SHE) Risk assessment
Tenderers shall submit the project specific SHE risk assessment.

T2.2.8.4 Construction Health and Safety Manager / or Officer
Tenderers shall submit the details of the name and particulars of the person proposed to be appointed as the Construction Health and Safety Manager/or Officer (include proof of registration with SACPCMP).

T2.2.8.5 DIFR Status
Tenderers shall furnish their DIFR Status for 2 years in the table below, based on the following formula.

\[
DIFR \text{ (annual)} = \frac{(\text{Number of Disabling Injuries})(200000)}{(\text{Number of Hours Worked})}
\]

Number of Hours Worked (annual) = Total Number of Employees x Average Hours Worked per Employee per Year

<table>
<thead>
<tr>
<th></th>
<th>Current Year</th>
<th>Last Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Disabling Injuries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Number of Employees</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Hours Worked per Employee per Year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Hours Worked per Year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calculated DIFR</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table T2.2.7: Safety, Health, and Environment

Name of Tenderer: ______________________________________

Signed by or on behalf of Tenderer: ______________________________________

Date: ______________________________________
T2.2.9 TECHNICAL QUALIFICATIONS TO TENDER

Should the Tenderer wish to qualify any aspect of the tender (e.g. limitations, assumptions, limited liability, etc.), he shall set out his terms clearly hereunder or alternatively state them in a covering letter attached to his tender and referred to hereunder, failing which the tender will be deemed to be unqualified.

If no qualifications are made, the schedule shall be marked NIL and signed by the Tenderer.

____________________________

____________________________

____________________________

____________________________

____________________________

____________________________

____________________________

____________________________

____________________________

____________________________

____________________________

____________________________

Name of Tenderer: ________________________________

Signed by or on behalf of Tenderer: ________________________________

Date: ________________________________
### T2.2.10 DETAILS OF EQUIPMENT (INCLUDING MANUFACTURER’S DATA SHEETS & TECHNICAL PUBLICATIONS)

<table>
<thead>
<tr>
<th>Description</th>
<th>Requirement</th>
<th>Contractor’s offer (incl. make supplier and part number)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

Name of Tenderer: ____________________________

Signed by or on behalf of Tenderer: ____________________________

Date: ____________________________
T2.2.11 RECOMMENDED SPARES, SPECIAL TOOLS AND SERVICING FACILITIES

<table>
<thead>
<tr>
<th>Number recommended</th>
<th>Description</th>
<th>Price each</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>R</td>
</tr>
</tbody>
</table>

SERVICING FACILITIES (Name and address of depot and available facilities).

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

Special tools provided ..............................................................................................................................................
........................................................................................................................................................................
........................................................................................................................................................................
........................................................................................................................................................................
........................................................................................................................................................................
........................................................................................................................................................................

Name of Tenderer: ...................................................................................................................................................

Signed by or on behalf of Tenderer: ...........................................................................................................................

Date: ........................................................................................................................................................................
### Project Risk Management Register for Contract

Please fill in the blank columns labelled Response Strategy and Response Action for each Risk Event listed in the table below:

<table>
<thead>
<tr>
<th>Risk Identification</th>
<th>Qualitative Risk Assessment</th>
<th>Risk Response Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RMP No.</strong></td>
<td><strong>Risk Category</strong></td>
<td><strong>Risk Event</strong></td>
</tr>
<tr>
<td>1</td>
<td>CONSTRUCTION</td>
<td>Delay in supply of various valves</td>
</tr>
<tr>
<td>2</td>
<td>CONSTRUCTION</td>
<td>Damage to equipment and health and safety issues to personnel</td>
</tr>
<tr>
<td>3</td>
<td>CONSTRUCTION</td>
<td>Disruption of existing services</td>
</tr>
</tbody>
</table>
### Project Risk Management Register for Contract

Please fill in the blank columns labelled Response Strategy and Response Action for each Risk Event listed in the table below:

<table>
<thead>
<tr>
<th>Risk Identification</th>
<th>Qualitative Risk Assessment</th>
<th>Risk Response Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Threat</td>
<td>Time/Cost</td>
</tr>
<tr>
<td></td>
<td>Threat</td>
<td>Time/Cost</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No</th>
<th>Area</th>
<th>Risk Description</th>
<th>Action</th>
<th>Impact</th>
<th>Likelihood</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>CONSTRUCTION</td>
<td>Adverse weather conditions and erosion of layer works in steep slopes</td>
<td>Inclement weather conditions</td>
<td>Delays</td>
<td>Threat</td>
<td>Time/Cost</td>
</tr>
<tr>
<td>5</td>
<td>CONSTRUCTION</td>
<td>Disruption of water supply</td>
<td>Shut-down</td>
<td>inconvenience of the consumers</td>
<td>Threat</td>
<td>Time/Cost</td>
</tr>
</tbody>
</table>
## T2.2.13 LOCAL CONTENT REQUIREMENTS ANNEXURES

### Annex C

**Local Content Declaration - Summary Schedule**

<table>
<thead>
<tr>
<th>Tender No.</th>
<th>Tender description:</th>
<th>Designated product(s)</th>
<th>Tender Authority:</th>
<th>Tendering Entity name:</th>
<th>Tender Exchange Rate:</th>
<th>Specified local content %</th>
</tr>
</thead>
</table>

**Calculation of local content**

<table>
<thead>
<tr>
<th>Tender item no’s</th>
<th>List of Items</th>
<th>Tender price - each (excl VAT)</th>
<th>Exempted imported value</th>
<th>Tender value net of exempted imported content</th>
<th>Imported value</th>
<th>Local content % (per Item)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(C8)</td>
<td>(C9)</td>
<td>(C10)</td>
<td>(C11)</td>
<td>(C12)</td>
<td>(C13)</td>
<td>(C14)</td>
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**Tender summary**

<table>
<thead>
<tr>
<th>Tender QTY</th>
<th>Total tender value</th>
<th>Total exempted imported content</th>
<th>Total imported content</th>
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<td>(C18)</td>
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Note: VAT to be excluded from all calculations

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<table>
<thead>
<tr>
<th>C20</th>
<th>Total tender value</th>
<th>R 0</th>
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<tr>
<td>C21</td>
<td>Total exempted imported content</td>
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<tr>
<td>C22</td>
<td>Total Tender value net of exempted imported content</td>
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<tr>
<td>C23</td>
<td>Total Imported content</td>
<td>R 0</td>
</tr>
<tr>
<td>C24</td>
<td>Total local content</td>
<td>R 0</td>
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</tbody>
</table>

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Signature of tenderer from Annex B

Date: __________________________

---

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# Annex D

## Imported Content Declaration - Supporting Schedule to Annex C

### A. Exempted imported content

<table>
<thead>
<tr>
<th>Tender No.</th>
<th>Description of imported content</th>
<th>Local supplier</th>
<th>Overseas Supplier</th>
<th>Foreign currency value as per Contract</th>
<th>Exchange Rate</th>
<th>Local value of imports</th>
<th>Freight costs to port of entry</th>
<th>All locally incurred loading costs &amp;</th>
<th>Total loaded cost &amp; VAT</th>
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</table>

**Note:** VAT to be excluded from all calculations.

**Total exempted imported value:** R 0

This total must correspond with Annex C.

### B. Imported directly by the Tenderer

<table>
<thead>
<tr>
<th>Tender No.</th>
<th>Description of imported content</th>
<th>Unit of measure</th>
<th>Local supplier</th>
<th>Overseas Supplier</th>
<th>Exchange Rate</th>
<th>Local value of imports</th>
<th>Freight costs to port of entry</th>
<th>All locally incurred loading costs &amp;</th>
<th>Total loaded cost &amp; VAT</th>
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</table>

**Total imported value by tenderer:** R 0

### C. Imported by a 3rd party and supplied to the Tenderer

<table>
<thead>
<tr>
<th>Description of imported content</th>
<th>Unit of measure</th>
<th>Local supplier</th>
<th>Overseas Supplier</th>
<th>Exchange Rate</th>
<th>Local value of imports</th>
<th>Freight costs to port of entry</th>
<th>All locally incurred loading costs &amp;</th>
<th>Total loaded cost &amp; VAT</th>
</tr>
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**Total imported value by 3rd party:** R 0

### D. Other foreign currency payments

<table>
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<th>Type of payment</th>
<th>Local supplier</th>
<th>Overseas supplier</th>
<th>Foreign currency value paid</th>
<th>Exchange Rate</th>
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<td></td>
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</tbody>
</table>

**Total foreign currency payments declared by tenderer and/or 3rd party:** R 0

**Total of imported content & foreign currency payments:** (D16) & (D20) & (D24) shows R 0

This total must correspond with Annex C.

---

**Signatures of tenderers from Annex B**

---
### Annex E

**Local Content Declaration - Supporting Schedule to Annex C**

<table>
<thead>
<tr>
<th>(E1) Tender No.</th>
<th>(E2) Tender description:</th>
<th>(E3) Designated products:</th>
<th>(E4) Tender Authority:</th>
<th>(E5) Tendering Entity name:</th>
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</thead>
<tbody>
<tr>
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**Note:** VAT to be excluded from all calculations.

<table>
<thead>
<tr>
<th>Local Products (Goods, Services and Works)</th>
<th>Description of items purchased</th>
<th>Local suppliers</th>
<th>Value</th>
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<td>(E6)</td>
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</table>

- **(E9) Total local products (Goods, Services and Works):** R 0

<table>
<thead>
<tr>
<th>Additional Costs</th>
<th>Description</th>
<th>Value</th>
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<tbody>
<tr>
<td>(E10) Manpower costs</td>
<td>Tenderer’s manpower cost</td>
<td>R 0</td>
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<tr>
<td>(E11) Factory overheads</td>
<td>Rental, depreciation &amp; amortisation, utility costs, consumables etc.</td>
<td>R 0</td>
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<tr>
<td>(E12) Administration overheads and mark-up</td>
<td>Marketing, insurance, financing, interest etc.</td>
<td>R 0</td>
</tr>
</tbody>
</table>

- **(E13) Total local content: R 0**

This total must correspond with Annex C - C24

**Signature of tenderer from Annex B**

**Date:**

---

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SECTION B
SPECIFICATIONS
## SPECIFICATIONS

### INDEX

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Specification Reference</th>
<th>Number of Pages</th>
<th>In Document</th>
<th>Refer to Specific Annexures</th>
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<tr>
<td>1.</td>
<td>General Specification</td>
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<td>2.</td>
<td>Project Specification of Works Package</td>
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<td>Portion 1: Project Specification</td>
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<td>Portion 2: Variations and Additions to Standard Specifications</td>
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<td>Portion 3: Technical Specifications</td>
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<td>Pipelines Installation Fabrication and Testing Technical Specification</td>
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<td>Valve Specification</td>
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<td>Specification for Installation of sluice-, air-, reflux-, butterfly-, resilient seal gate- and ball valves and powered actuators.</td>
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<td>Rand Water Float Control Valves Specification</td>
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<td>Rand Water Pressure Reducing Valves Specification</td>
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<tr>
<td>3.</td>
<td>SHE Specification</td>
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<td>4.</td>
<td>Environmental Management Plan (&quot;EMP&quot;) &amp; Environmental Authorisation (&quot;EA&quot;) (where applicable)</td>
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</tr>
<tr>
<td>5.</td>
<td>Site Rules &amp; Regulations</td>
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</tr>
</tbody>
</table>
PART 1 – GENERAL SPECIFICATION

PREAMBLE TO SCOPE OF WORK

Clause 1.8 Specifications

The Standard Specification for all associated civil work shall be “SANS 1200 – Standardised Specification for Civil Engineering Construction”. These Specifications are not issued with this volume but are available at the Contractor’s expense from: SA Bureau of Standards, Private Bag X191, Pretoria, 0001.

The Standardised Specifications applicable to this Contract are listed in the Project Specification.

Scope

This Project Specification is set out in 4 portions:

Portion 1: PROJECT SPECIFICATION covers a general description of the project, the facilities available and the requirements to be met.

Portion 2: VARIATIONS AND ADDITIONS TO THE STANDARDISED SPECIFICATIONS covers variations to the standardized specifications and particular specifications which are applicable to the contract.

Portion 3: TECHNICAL SPECIFICATIONS contains the Rand Water technical specifications for work that fall outside of the Standardized Specifications.

Status

Should any requirement of the Project Specification conflict with any requirement of the standardized or particular specifications, the requirements of the Project Specifications shall prevail.

The “Engineer” in the Scope of Work shall mean the Programme Manager to Rand Water or other person duly authorized by him.
PART 2 – PROJECT SPECIFICATION FOR THE WORKS PACKAGE

PORTION 1 – PROJECT SPECIFICATIONS

PS 1 DESCRIPTION OF THE CONTRACT

PS 1.1 Scope of Contract

The work consists of procurement, supply and installation of DN300 mm x TP 80 bar Anti – Cavitation PRVs with rate flow level control and DN457 x 307 x TP 70 bar Angle Float Control valves, including construction of air valve chamber at Woodhill College and replacement of the T-Piece at Bronberg Reservoir. The scope will also include the replacement of four isolation gate valves.

The overall scope for this project is to install new Anti – Cavitation PRVs and upgrade the Angle Float Control valves at Bronberg Reservoir. The purpose of the Anti – Cavitation PRVs valves is to reduce the existing high pressures that affect the operation of the valves.

The Contractor shall undertake the following:-

- Installation of two T-pieces with associated fittings, one at the entrance to Bronberg Reservoir and the other one at Woodhill College.*
- T-Pieces will be free issued.
- Construction of the precast concrete chamber at Woodhill College
- Supply three (3) 300 mm Anti- Cavitation PRVs with rate flow and level control,
- Install and commission two (2) by 300 mm Anti- Cavitation PRVs with rate flow and level control at Bronberg Reservoir.
- Supply three (3) by DN 457 X 307 X TP 70 bar Angle Float Control Valves,
- Install and commission two (2) by DN 457 X 307 X TP 70 bar Angle Float Control Valves at Bronberg Reservoir.
- Supply and install two (2) DN 450 X 70 KPA (TP) isolation valves
- Supply and install two (2) DN 300 X 70 KPA (TP) isolation valves
- Supply and installation of the flow anchoring frame (ref.drawing 11852)

The Contractor must supply all resources and equipment needed for the successful execution of the Works.

*NB: Rand Water reserves the right to undertake the installation of the T-Pieces and the Contractor will be notified before commencement of works. The Contractor will not be compensated for this change.

PS 1.2 Extent of the Works

1. All civil works will be executed in accordance with the applicable SABS 1200 series specifications and the relevant (attached) Rand Water Technical Specifications. The Contractor must supply all resources and equipment needed for the successful execution of the Works.

2. The work to be performed by the Contractor:

- Procure and deliver three (3) by DN300 mm x TP 80 bar Anti – Cavitation PRVs with rate flow and level control.
- Procure and deliver three (3) DN457 x 307 x TP 70 Angle Float Control valves.
• Supply and install six (6) by 300mm diameter loose flanges to 4000kPa TP.
• Remove two (2) DN457 x 307 x TP 70 bar Angle Float Control valves, air valve and fittings, load, transport and off-load at Emhlangeni Depot.
• Produce quality reports for the manufacturing process as required by the employer.
• Clearing, grubbing and the removal of trees.
• Load, transport load all fittings and pipe specials from the manufacturing plant and offload at the works site.
• Receive and install the free issue T-Pieces.*
• Procure and install all the required pipe specials valves
• Construct and/or install precast valve chamber and all associated steel work required within the chamber
• Submit all required documentation with handover (internal and external) of the project
• Complete and repair the protective coatings as follows: Polyurethane external coating And Epoxy internal lining.
• Identify possible opportunities to reduce cost-and time schedule while not compromising the integrity, safety and quality of the project.
• The Contractor informs the Engineer and or designated Resident Engineer of all design changes, for acceptance, prior to implementation.
• Establishes the risk associated with the implementation of the works.
• Procures the required resources (labour, services, plant and material).
• Delivers and install all required plant and material to site.
• Backfill the trenches with fill material according to specification. Dispose of surplus material and reinstate the topsoil and surface area.
• Dispose of brick and concrete rubble from the demolition of the existing air valve chamber.
• Cutting of the existing T-Pieces, loading, transporting and offloading at Emhlangeni Depot.*
• Disposing of cut pipe pieces to make way for the installation of PRVs.
• Drain the pipeline of water to facilitate the installation of the T-Pieces and the Air Valve Chamber. The location of the scour valves to be used for emptying the pipeline to be shown to the Tenderers on site.

*NB: Rand Water reserves the right to undertake the installation of the T-Pieces and the Contractor will be notified before commencement of works. The Contractor will not be compensated for this change.

3. Other requirements of the Contractor:

• Evaluates and comments on the design package when a problem on site during construction occurs, identifies possible opportunities to reduce cost and time schedule while not compromising the integrity, safety and quality of the project.
• Informs the Project Manager and or designated Resident Engineer of all design changes, for acceptance, prior to implementation.
• Establishes the risk associated with the implementation of the Works.
• Procures the required labour, services, plant and material.
• Receive and install the free issue items,
• Manufacture, deliver and install all required pipeline specials and/or material to site; Ensures that he and his Sub-contractors meet the Quality Control Plan (QCP) requirements in terms of both Quality Assurance and Quality Control. Excavation at certain properties may be delayed while agreements with landowners are pending; The Contractor will take due care when working within private properties and ensure the property owners properties are not unduly disturbed by the works. The Contractor shall put measures in place to ensure public safety and that open trenches which are
4. Preliminary Documents Submission

- Programme
- Insurances
- Performance Guarantee
- Surety
- Quality control plans
- Safety File

These documents shall be submitted within 14 days of the Commencement date

**PS 1.3 Taking over of the Works:**

- The responsibility for operation and routine maintenance passes to the Employer at Completion. The Contractor ensures clean-up requirements at Completion and ensures that it is implemented.
- The Contractor transmits a complete set of marked-up drawings to the Employer before the testing of the Works.
- The Contractor compiles quality control (QC) hand-over documentation files (Data-pack which must be kept up to date as the contract progresses) for each piece of material individually which consists of:
  - Notice and acceptance of completion form.
  - Checkout conformation form.
  - Checklist applicable to Equipment.
  - Punch / Defects list.
  - Certificate of compliance by an accredited person for the portion of installation.
  - Tests, calibration, material, SABS and QC certificates.
  - Completed data sheets; Accepted for construction drawings.
  - Relevant drawings;
  - Material certificates indicating material compliance and type.
  - Engineering and design changes.
  - Safety requirements for installation and maintenance.
  - The detailed maintenance procedure documentation.
  - Fabrication and inspection plan.
  - List of tagged items for transport and construction.
  - Internal verification documents.
  - Guarantees that the Contractor and his Sub-contractor’s or suppliers provide.
  - A list of Equipment to undertake NDE.
  - Operating and maintenance manuals for valves

**PS 1.4 Supply of Pipe Specials**

All fittings and pipe specials required for this contract shall be supplied by the Contractor. However, the T-Pieces will be free issued to the Contractor and Contractor shall collect the pipes from Emhlangeni Depot.

The coordinates for the Emhlangeni Depot are: 26°21'7.99"S and 28° 3'40.68"E.
PS 1.5 Duration of the Contract

Refer to T.2.2.1 of this document

PS 1.6 Method and Procedures

The Contractor proceeds in the sequence and at progress rate as anticipated in the Contract.

- The Contractor shall be responsible for the setting out of the works. Rand Water will provide bench marks that can be used by the Contractor for the setting out of the works.
- The Contractor personnel to notify landowners / tenants to be affected during construction in writing with attached photographs 14 working days prior to start of work. The initial wayleaves and communications with Interested and Affected Parties will be handled by Rand Water. Thereafter, the Contractor will be responsible for the up keeping and maintenance of the wayleaves for duration of the contract.
- The Contractor takes delivery of the T-Piece, air valves and precast valve chamber items. He installs, joints and backfills the pipeline, constructs valve chambers, and hands over the pipeline after acceptance.
- The Contractor takes delivery of the PRVs, Angle Float Control Valves and installs them at the Bronberg Break Pressure Chamber.
- The construction operation includes clearing, demolition of existing air valve chamber, and setting out the excavation of trenches, the trench floor and pipe bed preparation, the laying operation, followed by the final backfilling, construction of the air valve chamber and structures, and the cleaning up and reinstatement of the working space.
PS 2  GENERAL PROCEDURES AND METHOD FOR THE INSTALLATION OF THE PIPELINE

PS2.1 Introduction

The works will be located within Rand Water servitude. However, the works are close to existing structures which the Contractor needs to familiarize himself with.

PS2.2 Basic Principle for Installation

The basic principle to be followed in the planning and programming of the installation of the works is that the installation of the T-Pieces be done concurrently. The installation of the PRVs and the Angle Float Control Valves will be undertaken separately based on the delivery timeframes of the fittings.

PS2.3 Working Arrangements

It is envisaged that the construction and installation of the fittings at the Bronberg Break Pressure Chamber will occur at different times and the Contractor will have to programme his works as such. This might involve the Contractor having to establish and disestablish site twice and this has to be included in his pricing.

PS2.4 Preparatory Work

The completion of certain preparatory work will be necessary before the installation of the t-piece and valves.

Preparatory work will comprise the following:

- Setting out works
- Clearing of Site
- Notify affected stakeholders in advance.
- Expose existing services by hand.

PS2.5 Water Supply

The H26 pipeline is a bulk water supply pipeline and installation of the fittings and pipe specials will affect the water supply to consumers. Proper shut downs will have to be arranged with Rand Water for the successful execution of the Works

PS2.9 Reinstatement/Rebuilding of Existing Roads

The Works are close to existing roads. Heavy vehicle travel and may damage the existing roads, stormwater drainage channels and underlying road foundation layers.

On completion of the installation of the Works, any damaged roads, road foundation layers and drainage infrastructure along roads and crossing shall be reinstated and rebuild.

Provision has been made for the reinstatement of roads under Section 7: Site Clearance And Rehabilitation in the BOQ.
PS 3  SOCIO ECONOMIC DEVELOPMENT (NOT APPLICABLE)

PS 4  DESCRIPTION OF THE SITE

PS 4.1 Site Locations

The proposed sites are located approximately 20km South East of Pretoria, Gauteng Province.

The proposed Woodhill College Air Valve Chamber Site is situated at coordinates (25°48’44.08"S, 28°19’38.87"E). Refer to Annexure A for the Locality Plan.

The Bronberg Reservoir Site is situated at coordinates (25°47’37.71”S, 28°20’33.85”E). Refer to Annexure A for the Locality Plan

PS 4.2 Laydown and Temporary Storage Areas

The Bronberg Reservoir Complex will be used for the storage and safekeeping of the fittings and pipe specials.

PS 4.3 Site Boundaries

The Contractor shall confine his construction activities to within the boundaries of the site. The Contractor shall not extend his activities outside the boundaries of the site unless the Engineer has specifically authorized the extension in writing.

In restricted areas, e.g. buildings and structures, the construction activities are to be confined to the minimum possible working space.

The Contractor shall confine his transport and traffic to the pipeline working area. The Contractor shall not extend transport or construction vehicle traffic to defined or private roads unless the Engineer and the relevant Property Owner have specifically authorized this in writing. Access can be gained from public roads after approval from the relevant authority or property owner in writing. Access onto the working strip will be authorized by the Engineer prior to the Contractor starting any work on the site.

PS 4.4 Geotechnical Investigations

No geotechnical report is available:

PS 5  METHOD STATEMENTS AND QUALITY REQUIREMENTS

PS 5.1 Method Statements

The contractor shall prepare method statements for submission with his tender. A method statement will be required for each and every activity, including the excavation and installation of the residue pipeline in constricted areas (areas with insufficient working strip), excavation along the existing Rand Water steel pipe lines, shoring of trench, internal and external welding procedures, field joint protection and site establishment. Rand Water to check and approved these method statements and give written permission for proceeding of any work. The workforce is to be briefed on each method statement and Rand Water's safety inspectors will query the workforce periodically to confirm that this is taking place. The following headings will be required for each method statement;

- Goal of activity
- Person responsible
- Dangers identified
- Safety measures to be instituted based on risk assessment
- Work methodology
- Personnel and plant and equipment
- Clearing of site
- Diagrams, sketches drawn to scale
- Timeframes and indication if the activity is on a critical path or not
- Other headings shall include:
  - Detailed description of work to be completed in terms of pipe specials and fittings to be finalized prior to commencing with the shut-down procedure.
  - Security and lighting required for shutdown.
  - Safety contingency plan for unforeseen circumstances.
  - Welding method and materials used for repairs of coatings and linings.
  - Working in confined space areas
  - Traffic management at shopping centre and estates.
  - Estimated time to perform tie-in Works, excluding scouring.

**PS5.2 Quality Control**

The contractors Quality Management System shall include quality management objectives, policies, procedures and work instruction that comply with the requirements of ISO 9001/2000.

The contractor shall within 20 days from the commencement date submit a Project Quality Plan for the Contract. The Plan shall indicate how the Quality System shall apply to the specific requirements of the Contract to ensure compliance of the works with the requirements of the scope of works. The Project Quality Plan shall be subject to the approval of the Engineer.

Quality control plans shall be prepared by the contractor and/or his subcontractors for each group of activities. Where applicable, approved plant, equipment or services required to realize the specific component shall be included.

Quality control plans shall be submitted to the engineer for approval and for the inclusion of his construction monitoring activities before any construction of the permanent works may commence.

The following surveillance requirements shall be included for affirmation by the Engineer or his representative.

- **Record I** Documentary evidence of the activity and statistical analysis of the data to be retained and copied to the Engineer.

- **Verification (V)** The Engineer or his representative will not necessarily be present during the activity but documentary evidence to permit verification of compliance with the requirements is generated, retained and copied to the Engineer.

- **Witness (W)** The Engineer or his representative required notification to permit witnessing of the activity.
  The notice period shall be agreed to depending on the nature of the activity and shall be reviewed form time to time. Documentary evidence shall be retained and copied to the engineer.

- **Hold (H)** The Contractor may not proceed to the following activity until the Engineer or his representative has approved the proceeding activity. Documentary
evidence shall be retained and copied to the Engineer.

Random I Construction monitoring by random inspection. Random construction monitoring may be carried out at any stage of the activity or preparation for the activity. Documentary evidence shall be retained and copied to the engineer.

The following categories shall apply in determining the requirement for a quality control plan:

- **Critical**: A component, group of components or structure, the failure of which to comply with the specifications may affect the performance of the works of which it is a part and will cause a detrimental environmental impact, and/or may result in hazardous or unsafe conditions.

- **Major**: A component, group of components, structure, the failure of which to comply with the specifications may affect the performance of the works of which it is a part and will result in increased maintenance and/or impact negatively on the quality of the works.

- **Minor**: All items other that those categorized as Critical or Major and which are visible and capable of rectification during routine inspections.

**PS5.3 Quality Requirements**

The Contractor shall comply in full with the Employer quality requirements. No work shall commence unless the relevant quality control documentation has been submitted and the Contract Manager has accepted the procedures.

The Contractor is responsible for all quality assurance requirements imposed on his Sub-contractors and suppliers, in terms of SABS ISO 9000 Series.

The Contractor is responsible to inspect, expedite, administer and monitor in a pro-active manner Sub-contractors and supplier’s work and the enforcing of the terms and conditions of their Tenders, except where extraordinary circumstances warrant the inclusion of Employer’s participation.

A Quality Control Plan (QCP), which includes hold points and an inspection plan, shall be provided by the Contractor to the Contract Manager for all fabrication, supply (transport) and installation of components for approval prior to start of manufacturing. The Employer may use or modify the Contractor’s QCP’s and this includes inspection hold points, dimensional checks, material quality checks, tagging procedure for items, etc.

Contractor shall submit 3 (three) copies of his QCP to the Contract Manager for review and acceptance within 2 (two) weeks after tender award.

**PS5.4 Contractor’s QA/QC Responsibilities**

All machinery, material and workmanship shall comply with the appropriate specifications and codes, and bear the official mark of such specifications and codes;

All machinery and material shall be new and of the most suitable grade, and suitable to withstand and to operate satisfactorily under all possible climate and weather conditions which are reasonably expected at the Site. Such machinery and material shall be subject to inspection and/or testing by the Engineer, who shall be granted access by the Contractor and Sub-Contractor.
The Contractor shall conduct a continuous programme of construction quality control for all work performed on the Site. All relevant inspections and tests shall be adequately documented and signed off by the Engineer;

The Contractor shall comply with any quality assurance procedures required by the Employer.

The Engineer will monitor the Contractor’s adherence to quality requirements independently. Any rejections by the Supervisor based on design, specifications, codes and the like will be binding.

**PS5.5 Quality Audits**

The Employer reserves the right to perform quality audits at any time during the execution of the Works.

The Contractor shall give 48 (forty-eight) hours’ notice (in writing) to the Engineer, prior to testing. The Supervisor will exercise the option to witness or not, such tests.

**PS5.6 Inspection Authority**

If an authorised inspection authority (AIA) is appointed and he is paid for by the Employer, in terms of the OHS act, the Contract Manager will compile and submits the scope of work for the AIA.

**PS 6 CONSTRUCTION PROGRAMME**

The tender must include a programme in Gant chart format to indicate the expected duration and completion dates of all tasks.

The Contractor’s programme must include the following, as per section of work:

- Contracted dates
- Sub-contractor activities and interface points.
- Activity duration
- Activity inter-dependency
- Activity early start and finish dates
- Activity late start and finish dates
- Free and total float for each activity
- Critical path/s indication

The following reports are required as supporting documentation to the programme:

- Time analysis print-out
- Critical activities report
- Resource schedules and histograms

It is the Contractor’s responsibility to assess the available data and available knowledge explicitly. Any technical detail, policies, imposed organisational conditions, contract conditions, specification, overall programme constraints, resource availability or any other factor of significance to implement the project successful must be identified by the Contractor.

Based upon the assessment described above the Contractor shall decide to what level to break down to for his internal planning purposes.
The Contractor will be expected to submit the indicated actual progress against this approved bar chart (planned) programme in all progress reports during the execution of the project.

The Contractor shall to submit a weekly labour alert report, if the Contractor’s available manpower is not sufficient to meet the time schedule, for performance of the work.

During the final stages of the construction activities and prior to delivering notice of completion, the Contractor shall submit his plan for demobilization of the project site to the Project Manager for acceptance and he shall comply with such demobilization plan as accepted by the Employer.

The Contractor shall submit a procurement schedule for the procurement and receipt of material and sub-contract services and a monthly status report on these items.

The Contractor shall commence with the work in accordance with the accepted program schedules, or such other date(s) mutually agreed between the Contractor and the Project Manager and shall complete the work not later than the milestone dates and Completion Date indicated on the Accepted Programme.

If the Contractor fails to complete any part of the Works according to schedule or if it becomes apparent to the Project Manager that the work is not being completed according to schedule and if such failure is due to the Contractor, then the Contractor shall submit a plan of action to deal with the delay and the Contractor shall report daily on the success of his plan of action.

The Contractor shall maintain a rate of progress of the trench excavation work, preparation of the trench floor, the bedding of the pipe, backfilling and reinstatement not less than stipulated in the programme.

Continuous stretches of trench shall be excavated and rock shall be removed as encountered. The presence of rock shall not be accepted as a factor delaying the rate of progress.

The Contractor is required to give Rand Water shut down notices 21 days in advance to enable him to cut into the existing pipelines. A total of 2 shutdowns are anticipated for the duration of the Contract.

Rand Water shall not be liable for any additional costs incurred by the Contractor while the work proceeds at a rate slower than the average rate as set out in the programme.

The Contractor is required to furnish a realistic programme showing the order of activities and methods of construction which he proposes to use in executing the Works, within 14 (fourteen) days from the date of delivery of the letter of acceptance. The Contractor shall allow for preparing the Safety and Quality Plans (the Contractor’s responsibility) and subsequent approval thereof by Rand Water prior to work commencing on site. All labour of the Contractor will be inducted prior to be allowed on site to perform any work, this applies for the full duration of the project.

The Contractor shall submit an updated copy of the programme at each site meeting clearly indicating actual versus scheduled progress. The contractual programme must be submitted in Microsoft Project format (latest version) and in hard copy at each site meeting and if any change or delay has impacted on the critical path. Fourth nightly construction Works programmes must be submitted to the Engineer throughout the duration of the Contract.
PS 7 SITE AND TECHNICAL MEETINGS

The Contractor shall attend monthly site and technical meetings with representatives of Rand Water and the Engineer at dates and times determined by Rand Water.

PS 8 PROTECTION OF WORK

The Contractor shall in particular keep free from water those portions of the site as are necessary to allow the Works to be carried out in the dry throughout the duration of the Contract, including times when the Contractor is offsite. The Contractor must make the necessary allowances in his tender price to cater for dewatering.

The Contractor shall, where applicable and at the earliest practicable opportunity, at his own cost provide the temporary drainage required to protect the Works from storm water and any other water, including seepage that may enter the Works.

The Contractor shall supply, operate and maintain such pumping plant as may be necessary to remove, control and dispose of water, including seepage water that may enter the Works.

The Engineer may take or order the Contractor to take additional precautions where he is not satisfied with the Contractor’s arrangements. The Contractor shall not be relieved of his responsibility by reason of the Engineer taking or ordering additional precautions, or by reason of the Engineer failing to do so. All expenditure incurred by Rand Water in taking any additional precautions or otherwise in remedying the default of the Contractor and making good of the Works shall be recovered from the moneys due to the Contractor.

The Contractor shall be responsible to effect all dewatering to enable the Contractor to access and execute the Works.

PS 9 FEATURES REQUIRING SPECIAL ATTENTION

PS 9.1 Accesses to Properties

The Contractor shall only make use of access onto the site of Works as agreed in writing by the Engineer in consultation with each relevant property owner. The main access onto the site of Works will be at agreed public roads and along the construction working area itself. The Contractor shall contact the primary occupant of each property in writing, including photographs of existing access, 14 working days prior to start of work, to ensure that he is informed of the work taking place and that he is satisfied with the alternative access provided while the work is in progress. Safety measures must be in place to prevent any incident.

With construction completed at the point, the Contractor shall reinstate the access to the satisfaction of the owner/occupier and the Project Manager to the same state or better condition. The Contractor must get the written acceptance of the reinstatement from the occupant.

PS 9.2 Traffic Accommodations on Roadways

The accesses to the Works are off De Villebois Mareuil (Woodhill College) and Leander Roads (BronberReservoir). The Contractor is to contact the applicable roads department in writing to ensure that they are aware of the works taking place and submit and receive written approval from the Departmental – and

- Local Authority for any safety plans and requirements before any construction activity can commence. Special care needs to be taken in these areas because it may include
twenty-four hour traffic control. The Contractor must at all times comply with the way leave conditions that are relevant.

- Copies thereof will be handed to the successful Contractor.

PS 9.3 Public Safety

During the performance of the Work, the Contractor shall erect and maintain temporary fences, railings and barriers and takes all other precautions to ensure public safety, including keeping the excavations dewatered and the site protected against surface storm water the placing of proper guards for the prevention of accidents and putting up and maintaining signs, notices and sufficient lights. He shall indemnify the Employer from all damages and costs to due to injury to persons or property damage resulting from the Contractor’s negligence or carelessness in the implementation of the Works, or in guarding the same, or from any improper materials or equipment used in its construction, or by or on account of any act or omission of the Contractor. In addition, the Contractor shall take all practical precautions to prevent the public from being injured.

PS 9.4 Damage to Public and/or Private Property

The Contractor shall indemnify and keep indemnified Employer against all losses and claims for injuries or damage to any person or property whatsoever, which arises out of or in consequence of the construction and maintenance of the Works and against all claims, demands, proceedings, damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto.

The Contractor shall confine his activities to the minimum possible construction working area. As far as possible the Contractor shall avoid unnecessary damage to buildings, structures, reservoirs, canals, roads, pavements, parks, trees, gardens, fences, gates, walls and other ground level services, etc. The liability for all necessary and reasonable damage within a construction working area shall be pre-determined by the Contract Manager and conveyed in writing to the Contractor, is borne by the Employer. The Contractor shall be liable for all unnecessary and unreasonable damage, the cost of repair and reinstatement of which shall be deducted from monies due to the Contractor. Provision has been made that the construction working area be temporarily fenced off during construction activities. In cultivated areas very careful coordination and management of construction activities together with farming activities are required.

Specific stretches along the pipeline route will be demarcated to widen the access along the pipeline route to accommodate traffic to pass in both directions. These areas will be agreed in writing by the Engineer in liaison with the Property Owner prior to the start of construction.

The Contractor must keep photographic record in digital format of all stages of construction (prior, during and after completion), along the full length of the pipeline. A digital and a hard copy thereof shall be made available to the Engineer and the relevant property owner for the full duration of the contract and be included in the handover documentation at the completion stage of the contract.

PS9.5 Fences and Adjacent Structures

The Works are in close proximity to different types of fences and walls. The fences or walls or part thereof must be kept in place during construction. Measures must be taken to ensure the stability of the fences or walls, kept in the original position, for the duration of construction. Measures must be taken to ensure the safety and stability of the excavation parallel to these fences or walls.

Where construction operations require removal of a fence or wall the Contractor shall obtain the agreement of the owner and occupier of the property bounded by the fence or wall and shall then submit his proposals to the Contract Manager for approval prior to the removal of the fence or wall.
On receiving the approval in writing from the Engineer, the Contractor shall provide a temporary fence or barrier and take the necessary precautions to prevent children and animals from straying. When the construction at the point is completed the Contractor shall reinstate and where necessary replace and/or repair the fence or wall to the satisfaction of the owner, the occupier and the Contract Manager, to the same state or better condition. Different types of fencing have been allowed for in the Schedule of Quantities.

**PS9.6 Inspection of Adjacent Structures**

The Contractor lodges to the Contract Manager an inspection with details of the conditions and stability of all structures, which includes, without derogating in any way from the generality of the terms, gate piers, garden walls, houses, outbuildings, swimming pools, bridges, canals and reservoirs, etc., within 30m of the centre line of the trench.

The inspection covering the first 1 000m of the pipeline trenches is lodged before excavation is commenced. The inspection for the remainder of the length is lodged on or before completion of the first 1 000m of excavation.

The inspection lists details of:

- Structural cracks in brickwork, masonry, pool structures, concrete or other building materials;
- Plaster cracks;
- Condition of embankments with particular imperfections noted;
- Any other features such as paintwork and boreholes.

Each structure or building is inspected both externally and internally in the presence of a representative of Contract Manager and photographs of all existing defects, deterioration and/or imperfections is taken and included in the inspection.

The inspection is drawn up by the Contractor and is signed by the owner of the property and a representative of Contract Manager who thereby agrees to the contents of the inspection being correct.

**PS9.7 Existing Services**

**PS 9.7.1 Existing Services**

The Works are in a built up area in close proximity to numerous existing services. The Contractor identifies and protects all existing services. The existing services should be marked on site with markers and danger tape as applicable. Any damage to existing services is reported to the Employer immediately and is repaired by the Contractor. Where the Contractor cannot do this work, the Employer rectifies the damage for the Contractor at the Contractor's account. Each service is inspected externally in the presence of a representative of Project Manager and photographs of the prevailing condition and all existing defects, deterioration and/or imperfections is taken and included in the inspection. Should damage occur, then the Contractor has to ensure that follow up action is initiated and taken by him/her and the necessary liaison; repair and reporting are done within practical timeframes.

**PS 9.7.2 Existing Rand Water Pipelines**

The Works are on the existing H26 pipeline which runs parallel to existing pipelines. The position of these pipelines, relative to the center line of the Works will be indicated to the Tenderers on site.
No additional loading will be allowed on these existing pipelines i.e. material storage, stockpiling of materials, etc. The following restrictions apply within the demarcated strip:

- No loaded vehicle travels along the length of the demarcated strip
- Transverse crossings, the Contractor provides an approved vehicle bridge to transmit vehicle loads to the undisturbed soil along both edges of the backfilled trench
- No excavation is permitted within 5m of any pipeline until the written permission of the Engineer is obtained
- The Contractor is responsible for the protection of the water mains and is liable for any claim for damage.

**PS 9.7.3 Existing Rand Water Cathodic Protection Equipment**

There is Rand Water Transformer Rectifier unit for Cathodic Protection of the H26 pipeline in close proximity to the Air Valve Chamber. The contractor to exercise due care not to damage the equipment and cabling.

The Contractor shall undertake the following:

- Protect the Cathodic Protection unit from damage for the duration of the
- Excavate by hand to expose the underground power cables
- Protecting of the cable
- Liase with Rand Water to Isolate the Cathodic Protection system during the installation of the air valve T-Piece and the Valve Chamber.

**PS9.8 Protection of Water Mains and Boreholes**

**PS 9.8.1 Water Mains**

The Works are on the existing H26 pipeline.

Requirements and restrictions on work adjacent to existing water mains:

The Contractor demarcates the centreline of the existing pipeline. The centre is demarcated by means of a 60 mm by 60 mm by 6 mm thick rolled steel angle stake 1.5 m long with alternate bands of red and white markings and embedded in a concrete foundation block placed at spacing not more than 200 m between stakes.

The Contractor supplies and erects the stakes before excavation commences, and maintains the demarcation system during the whole period that excavating, unloading and laying of the pipes, backfilling of trenches and construction of the structures takes place along the route of the pipeline.

Once erected a stake is maintained in position until in the Contract Manager’s opinion it serves its purpose and he authorizes its removal.

The following restrictions apply within the demarcated strip:

- No loaded vehicle travels along the length of the demarcated strip.
- Transverse crossings, other than existing roads and tracks, the Contractor provides an approved vehicle bridge to transmit vehicle loads to the undisturbed soil along both edges of the backfilled trench.
- No excavation is permitted within 5m of any pipeline until the written permission of the Contract Manager is obtained.
- The Contractor is responsible for the protection of the water mains and is liable for any claim for damage.

**PS 9.8.2 Boreholes**

Where the Works are situated in close proximity to an existing borehole, the Contractor shall arrange with the owner to certify and carry out a 4-hour water delivery test and determine the average hourly water quantity produced from the borehole. Upon completion of the installations, this test shall be re-done and recertified for comparison reasons.

**PS9.9 Protection of Power Lines**

Before any excavation is carried out within an electrical servitude or reserve the Contractor notifies the relevant authority that the work inside the servitude or reserve is to commence and the Contractor ascertains any regulations or conditions required by the authority for working in the vicinity of its services.

The use of cranes, excavating machinery and mechanical Equipment is restricted in the vicinity of an overhead power line. The Contractor allows for the work beneath a power line to be carried out manually and to proceed at a slower rate than that of the normal trench and that the excavation, blasting and backfilling is in accordance with the regulations prescribed by the authority and subject to the continuous supervision of an official of the authority.

The Contractor takes special care when excavating the trench not to damage the underground cables associated with each power line or disturbs the stability of any tower or pole supporting the power line.

The Contractor is responsible for the protection of the cables, towers and poles and liable for any claim for damage arising from his operations.

**PS9.10 Protection of Sewers and Drains**

The use of cranes, excavating machinery and mechanical equipment is restricted in the vicinity of any sewer and drain. The Contractor allows for the work to proceed at a slower rate than that of the normal trench excavation and that the excavation including blasting and backfilling is subject to the continuous inspection of the owner of the services.

The following specific requirements apply to the work in the vicinity of a sewer and/or drain:

- The owner is notified at least 10 days before the excavation adjacent to or under to the sewer and/or drain commences and arrangements made for an inspection of the site.
- No excavation with mechanical equipment is carried out within 5m if a sewer or drain without the authority of the owner. The sewer and/or drain are exposed by hand before any blasting or mechanical equipment is used for the trench excavation.
- The sewer and/or drain are supported to the satisfaction of the owner and Contract Manager before the trench is excavated under the sewer and/or drain.
- If blasting is required within 30m of a sewer and/or drain a specific report containing the recommendations of the Explosives Engineer of AECI Ltd or of an explosives factory or blasting consultant, is submitted at least 7(seven) days before the work is carried out to the owner, with a copy to the Contract Manager, and the approval of both parties obtained.
- If required by the owner, the Contract Manager instructs the Contractor to construct a 0.8m wide by 300m thick concrete slab reinforced with four 25mm diameter steel bars on top of the compacted backfill to support the sewer and/or drain across the pipeline and limit its settlement.
- No backfilling is placed around the sewer and/or drain without the approval of the owner.

**PS 9.11 Protection of Cables, Pipes, Telephone lines etc.**

The Contractor takes special care when excavating the trench, when the trench is open, or while carrying out any work under the Contract not to damage any underground or over ground service.

The approximate position of underground and over ground services is going to be pointed out to the Contractor by the Contract Manager but failure to do so does not relieve the Contractor of his responsibility.

Before any excavation is carried out within 10m of the approximate position of an underground cable of water pipe the Contractor notifies the owner of the service and the Inspector that the crossing is to be made and ascertain and comply with any conditions that are imposed for the crossing. No excavation is carried out within 10m of the service until it is exposed and protected by the Contractor under the supervision and to the satisfaction of the owner and/or the Contract Manager.

Excavation work above, below and in the vicinity of an underground service is undertaken in accordance with the requirements of the owner of the service and whether excavated by hand or with the use of excavating machinery is paid at the scheduled rate for bulk excavation and not as additional excavation.

The Contractor is liable for any damage that occurs to any cable, sewer, pipe, etc. and immediately notifies the Contract Manager of any such damage. The Contract Manager arranges for the damage to be repaired by the owners of the damaged service and the cost of such repairs is deducted from any monies due to the Contractor.

Where relocation of a service is required to accommodate the pipeline the Contract Manager makes the necessary arrangement at no cost to the Contractor.

**PS 9.12 Risk Management**

The Contractor ensures that his risks are managed to enable the successful execution of the project. The Contractors’ risk that occurs or develops during construction is brought to the Employer’s attention in writing immediately. A risk register must be kept for the duration of the project.

A general risk analysis is performed prior to starting with the construction work, which must form part of the Safety Plan. All work will be carried out in conformance to the Occupational Health and Safety Act, 1993 (latest amendment) and the Contractor shall adhere to all the legislative requirements as per Construction Regulations 2003.

**PS 9.13 Work in Dolomitic Areas**

Not Applicable.

**PS 9.14 Controlled Blasting**

The geotechnical investigations for the pipeline route have indicated that blasting will not be required.
If it so happens that blasting is required, this section covers the principal requirements of the Contractor wherever blasting takes place.

PS 9.14.1 Management of Risks

The Contractor will, prior to commencement of blasting operations, conduct hazard identification and risk assessments related to all the drilling and blasting processes. Strategies to deal adequately with the risks will be developed and submitted to the Engineer.

In addition to baseline risk assessments, issue based and continuous risk assessments should be carried out during the period of the contract.

The strategies adopted must ensure that damage does not occur to the surrounding pipelines and there will be no resultant loss of water. The Contractor will be liable for all damages to services caused as a result of the Contractor’s negligence.

PS 9.14.2 Standard Procedures

The Contractor will, prior to commencement of blasting operations, develop and submit to the Engineer their standard procedures for conducting the total blasting and/or rockbreaking procedures for the following areas:

- Control of explosives
  - Handling, transport and storage
  - Security of explosives/initiating systems
- Drilling
- Use of explosives
  - Blast layouts/designs/volumes/explosives and initiating systems
  - Priming
  - Charging
  - Stemming
  - Timing and connecting
  - Firing procedures
- Treatment of misfires
- Destruction of explosives

It is a requirement of this contract that the Contractor is fully competent in the processes associated with blasting trenches in close proximity to other services and accepts responsibility for the development and implementation of these procedures.

The Engineer reserves the right to submit these procedures for specialist review and call for a re-examination of the procedures where significant deficiencies are identified.

PS 9.14.3 Environmental Blasting Aspects

The Contractor will take into account in the development and application of the designs and procedures, the various impacts on the environment.

PS 9.14.3.1 Determination of safety zones during blasting

The Contractor will evaluate and demarcate safety zones for each blast and take measures to minimize/control fly-rock so as to prevent injury to people and animals as well as damage to equipment and services.

It is expected that it will be necessary to provide cover for the majority of the blasts.
PS 9.14.3.2 Air Blast (Sound-over-pressure)

The accepted levels for air blast will be applied, i.e.

- 128dB – reasonable level for public concern (no more than 10% of measurements to exceed this value)
- 134dB – damage should not occur below this level (no measurements to exceed this value outside the safety zones for each blast).

Thus it will be necessary to take regular measurements, particularly in the early stages of blasting to establish benchmarks, which can be reviewed based on performance history.

PS 9.14.3.3 Ground Vibrations (Peak Particle Velocity and Frequency)

It is expected that it will be necessary to conduct test blasting in the various site specific conditions such as areas adjacent to steel pipes and/or asbestos concrete pipes as well as sections of "elastic" rock properties and/or rocks with higher uniaxial compressive strengths, e.g. dolerites.

In these instances, it will be expected that results will be obtained of blasting efficiencies and excavation stabilities, but it will also be necessary to conduct vibration analysis at strategic points.

From several results, it will be possible to determine the range of site specific constants in the equation to estimate peak particle velocity, distance from blast and maximum charge per delay, i.e.

$$ PPV = a \left( \frac{D}{\sqrt{E}} \right)^b $$

- PPV in mm/sec (peak particle velocity)
- D in metres (distance from blast)
- E in kg (mass charge per delay)
- A site characteristic (intercept with y axis)
- B site characteristic (gradient on line)

In addition, the frequency of ground vibrations will be measured. Damage to structures can be expected in the range of 5-25Hz. Whilst these lower frequencies are regularly achieved in surface mining and quarrying, they are less common in construction/civil blasting but should be protected against.

PS 9.14.3.3.1 Services

The initial blast designs should aim to produce less than 5mm/sec (ppv) and greater than 25Hz at the closest pipeline(s) to the blast.

However, trial blasting may indicate the need for higher factors of safety with a lower ppv. In the higher risk areas of asbestos concrete pipes and live/operational pipelines it is recommended that use be made of electronic initiating systems to eliminate the variations encountered in pyrotechnic initiating systems.

Other forms of Rock breaking may have to be considered and utilised at no extra cost to the client.

PS 9.14.3.3.2 Buildings and other structures

Vibration measurements will be taken at strategic buildings and structures and measures put in place to ensure the South African guidelines are not exceeded: (greater than 50Hz)
Notwithstanding these guidelines and limits, the Contractor will at all times be responsible for the safety of the works, persons, animals, equipment, property and services in the vicinity of the blasting operations.

It is expected that the Contractor will obtain photographic evidence plus other measurements of buildings and structures prior to blasting taking place. It will be the responsibility of the Contractor to make good at his own expense any further damage to houses, buildings, structures, services which have resulted from this blasting.

**PS 9.14.3.4 Occupational Hygiene (Blasting)**

Adequate precautions should be taken to minimise exposure to:

- Blasting fumes (nitrous oxides, carbon monoxide, etc.)
- Airborne pollutants (dust)
- Water pollution (nitrates)

The limits expressed in Chapter 22 of the Mine Health & Safety Acts Regulations should be used as occupational exposure limits.

**PS 9.14.4 Statutory Compliance**

**PS 9.14.4.1 Acts and Regulations**

The Contractor must ensure his staff are fully cognizant of the current legislation and processes must be in place to ensure compliance.

In addition to the requirements of the Explosives Act No. 15 of 2003, it is notified that new Explosives Regulations under this Act are due to be promulgated shortly.

These regulations impose additional duties and administrative burdens including revised applications for licences, permits, certificates, authorisations and written permissions. In particular, certain employees will require Police Clearance Certificates. This includes the appointment of a legal person – Explosives Supervisor/Manager – to be responsible for the control and use of explosives.

In addition to the relevant regulations, the Contractor must conform to the relative SANS standards particularly regarding the use of initiating systems.

The Contractor will supply the Engineer with copies of all the relevant blast permits, licences and authorisations prior to commencement of blasting operations.

<table>
<thead>
<tr>
<th>Blast Situation</th>
<th>Recommended Maximum Level (mm/s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavily reinforced concrete structures</td>
<td>120</td>
</tr>
<tr>
<td>Property owned by concern performing blasting operations</td>
<td>84</td>
</tr>
<tr>
<td>Commercial property in reasonable repair</td>
<td>25</td>
</tr>
<tr>
<td>Private property – public concern (blasting frequent/regular)</td>
<td>10</td>
</tr>
</tbody>
</table>
PS 9.14.4.2 Competence

The Contractor will ensure that all his personnel involved in the blasting processes have been trained and assessed competent to perform their assigned duties.

Copies of related certificates, training undertaken as well as work experience will be provided to the Engineer for all employees involved with the blasting processes, both on and off site, prior to start of blasting operations.

PS 9.14.5 Blasting Operations

Prior to starting any drilling for blasting operations, the Contractor shall submit the blast plan to the Engineer indicating details of the drill holes (diameter, depths, inclinations, directions, sub-drill) as well as the blast pattern/design (burden, spacing, charge details, stemming, pattern, timing, powder factor, mass charge per delay).

These should be indicated on sketches and/or tables with additional information on the geology as required (weathered zones, voids, presence of water).

The Engineer may submit these plans for specialist review, more particularly in cases where change takes place and/or anomalous conditions exist.

The Engineer will then agree a programme (dates and times) for the blast(s) to be conducted. Whenever blasting operations consistently approach agreed limits and/or the safety factors are reduced to the extent that damage with serious implications could occur, the Engineer reserves the right to order the Contractor to modify his methods and procedures of drilling and blasting or other Rock breaking techniques without invalidating this contract.

The Contractor shall have no claim for extra payment, over and above his tendered rates, due to being instructed to modify the methods and procedures of drilling, blasting and Rockbreaking regardless of any prior acceptance of procedures submitted to the Engineer.

Within 24 hours of each blast, the Contractor will submit to the Engineer, the actual data related to the blast including the volumes of rock blasted.

In the event of any non-conformances, e.g. misfires, fly-rock, excessive ground vibrations, gassing, damage/injuries to persons/equipment/structures/services, these will be reported to the Engineer or his representative immediately.

PS 9.15 Recording Weather

The Contractor shall be permitted to take his own rainfall measurements on site subject to the Engineer’s approval, but access to the measuring gauge(s) shall be under engineer’s control. The Contractor it 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 9.16 Format of Communication

All contract communication shall be in English and in writing (letters, faxes and electronic mail).
PS 9.17 Key Personnel

The contractor shall be required to allocate sufficiently experienced personnel to execute the contract successfully.

PS 9.18 Forms for Contract Administration

The contractor shall maintain a file (hard copy and electronically) per contract project, which shall contain:

a) The details of the sub-contractors, if any;
b) Project programme, with commencement and completion date;
c) Procurement information;
d) Progress reports, minutes, letters, faxes, emails of all project or project related correspondence;
e) Record documentation, reports, designs, and drawings;
f) A copy of the Health and Safety Plan and the Environmental Management Plan;
g) Record of cost implications, variations, claims and disputes; and
h) Empowerment records.

At the end of this period of performance the contractor shall hand-over such hard copy files to the Employer, including all electronic records, documentation, reports, designs, and drawings.

PS 9.19 Daily Records

The contractor is to provide a site diary, which is to be kept on site, for the purpose of keeping daily records in respect of work performed on the site.

PS 9.20 Bonds and Guarantees

If the tenderer, when notified on the acceptance of his tender, fails to provide guarantee within the period stipulated in the Contract Data and the Employer elects to cancel the contract on that ground, the employer may demand a sum of R500,00 per day, or the employer may take other action whether by way of a claim for loss or damage suffered by the employer arising out of such breach.

PS 9.21 Payment Certificates

The service provider shall be required to complete a progress report before he will be allowed to complete the standard payment certificate required to be submitted with his tax invoice. To this end the service provider shall make himself available for a progress reporting training session to be facilitated by the Employer.

PS 9.22 Use of Documents by the Employer

All information (communications, designs, drawings, documents or reports) provider to the Employer by the service provider, in the course of performing the service required for this contract, are intended to ensure that the projects are implemented successfully.

PS 9.23 Property provided for the service providers use

The service provider shall provide all physical resources, including properties, for the successful execution of the project.

PS 9.24 Proof of compliance with the law
The service provider shall ensure that he complies to all prevailing legislation that applies to the provision of his services as part of this contract and indemnifies the employer where he deliberately neglects compliance with such legislation.

PS10 HEALTH AND SAFETY

The employer’s Occupational Health and Safety (OH&S) Specifications have been included under Part 3 of this document. The contractor shall comply with all requirements of the OH&S specifications. The Contractor will not be permitted to commence construction until such time as their completed SHREQ file has been approved by Rand Water.

The work under this contract is defined as “Construction Work” and regulated under the Occupational Health and Safety Act, 1993 (latest amendment) and the Contractor shall adhere to all the legislative requirements as per Construction Regulations 2003.

The Contractor shall provide for the cost of the health and safety measures in the Bill of Quantities.

The Contractor shall notify the Provincial Director in writing of the construction activities before work commences, if required.

The Site Representative shall be present on site during working hours and any orders or instructions, which the Engineer may give to the Site Representative, shall be deemed to have been given to the Contractor.

The Contractor shall develop and demonstrate to Rand Water a suitable and sufficiently documented Health and Safety plan based on the safety specification.

The Contractor shall if called upon to do so, submit a preliminary Health and Safety Plan, failing to do so may lead to the disqualification of this tender.

PS11 HEALTH AND SAFETY SPECIFICATION

The employer’s Occupational Health and Safety (OH&S) Specifications have been included under Part 4 this document. The contractor shall comply with all requirements of the OH&S specifications. The Contractor will not be permitted to commence construction until such time as their completed SHREQ file has been approved by Rand Water.

a) The Contractor shall appoint and notify the Engineer in writing, a competent Site Representative, with the duty of supervising the construction work.

b) The Contractor shall appoint, and notify the Engineer in writing, a competent person to perform a risk assessment before construction work commences, during construction work and which shall form part of the Health and Safety Plan.

c) The Contractor shall appoint and notify the Engineer in writing, a competent person responsible for the preparation of a fall protection plan, amending, maintaining and adherence thereto.

d) The Contractor shall execute the necessary steps to prevent uncontrolled collapse of new or existing structures and no part shall be loaded in a manner that would render it unsafe.
e) The Contractor shall appoint and notify the Engineer in writing, a competent person responsible that all formwork and support work structures are adequately designed, erected, supported, braced and maintained.

f) The Contractor shall appoint and notify the Engineer in writing, a separate competent person with relevant experience for each of the operations whose first duty will be to, and who shall, supervise all stages in the operation. The operations are:

   i) Excavation, blasting and trimming of the excavations, backfilling and formation of embankments.
   ii) Supply of concrete aggregates and the batching, mixing, transporting, placing, compacting and curing of concrete.
   iii) Loading, unloading, transport and installation of steel pipes including areas where pipe jacking has occurred.
   iv) Cutting and welding of steel pipes
   v) Installation of valves, dirt boxes and water meters

g) All scaffolding shall comply with the Occupations Health and Safety Act 1993 (latest amendment).

h) The Contractor shall appoint and notify the Engineer in writing, a competent person responsible for suspended platform and that all erectors, operators and inspectors are competent to carry out their work.

i) Every material hoist and its tower shall be constructed of sound material in accordance to the Construction Regulations 2003 (latest amendments).

j) All explosive power tools shall comply to and be in accordance to Construction Regulations 2003 (latest amendment).

k) Notwithstanding the provisions of the Driven Machinery Regulations (Government Notice No. R533, latest amendment), the Contractor shall ensure that work is carried out in a safe manner where tower cranes are used.

l) The Contractor shall ensure that all construction vehicles and mobile plant are maintained, operated and used in a safe manner by competent operators.

m) Notwithstanding the provision of the Electrical Installations Regulations (Government Notice R2920 latest amendment) and the Electrical Machinery Regulations, (Government Notice R1953 latest amendment), the Contractor shall take the necessary steps to provide a safe environment for construction work to proceed.

n) Notwithstanding the provisions for the use and storage of flammable liquids as determined in the General Safety Regulations (Government Notice No. R1031, latest amendment), flammable liquids shall be stored in such a manner to prevent fires and explosions.
o) The Contractor shall provide lifejackets for workers where construction work is done near or over water.

p) Notwithstanding the provisions of the Environment Regulations for Workplaces (Government Notice No. R2281, latest amendment), implement and maintain suitable housekeeping.

q) Notwithstanding the provisions for the stacking of articles in the General Safety Regulations (Government Notice R1031, latest amendment) the Contractor shall appoint a competent person in writing, responsible for supervising all stacking and storage on site.

r) Subject to the provisions of the Environment regulations for Workplaces (Government Notice No. R2281, latest amendment), the Contractor shall take appropriate measures to avoid risk of fire.

s) Notwithstanding the provisions of the Facilities Regulations (Government Notice No. R1593, latest amendment), the Contractor shall provide clean and maintained facilities as required.

t) The Contractor shall take all reasonable steps to ensure co-operation between all sub-contractors to enable each sub-contractor to comply with provisions of the Act.
PS12 ENVIRONMENTAL AUTHORIZATION (ROD) AND ENVIRONMENTAL MANAGEMENT PLAN (EMP)

PS 12.1 Introduction

This is a generic Environmental Management Plan (EMP) based on information, conditions and specifications of typical Rand Water construction activities and is not restricted to a single or specific site of construction.

Should further site information and/or environmental requirements become available as part of the Environmental Impact Assessment (EIA) process, it will be included to form part of this EMP where necessary.

Provisions already included within the General and Specific Conditions of Contract have not been included in this EMP. The guidelines contained in this EMP and the provisions contained within the General and Special Conditions will apply. The guidelines should be implemented as appropriate for each work site.

The Contractor shall comply with the requirements described in this EMP and any additions and/or alterations hereto.

All maintenance, construction and associated activities should be confined to the applicable servitude and identified or indicated areas for construction purposes.

PS 12.2 Objectives

The objectives of the EMP are to:

a) Ensure that the maintenance and construction of the Works are carried out within the concepts of Integrated Environmental Management; and
b) Identify measures, which, may be necessary to manage and ensure mitigation of environmental impacts associated with the maintenance and construction of the Works.
PS 12.3 Scope
The management of impacts on the environment is categorized as indicated below:

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PS 12.3.1 Soil Preservation

i. If any Borrow Pit is to be established it should be done in accordance with the Minerals Act No. 51 of 1993, as amended. An Environmental Impact Assessment must take place prior to the development of any borrow pit.

ii. Topsoil (minimum 300 mm) should be temporarily stockpiled separately from subsoil or rocky material when areas are cleared (the topsoil contains both the seedbed and the nutrient supply necessary for plant growth: if mixed with subsoil layers the usefulness of the topsoil for rehabilitation of the site will be lost).

iii. The stockpiled topsoil should be replaced as the final soil layer.

iv. No imported topsoil should be used as the final soil layer.

v. The surface topsoil should not be used for bedding material.

vi. Stockpiled topsoil should not be compacted; this includes the movement of any form of vehicle over the stockpiles.

vii. Stockpiled soil should be protected by erosion-control berms if exposed for a period of greater than 14 days during the wet season.

viii. Soil stockpiles should be located away from rivers, streams, drainage lines and areas of temporary or permanent inundation.

ix. Soil should be exposed for the minimum time possible once cleared of vegetation to avoid prolonged exposure of soils to wind and water erosion.

x. Topsoil stockpiles must not be contaminated with oil, diesel, petrol, waste or any other foreign matter, which may inhibit the later growth of vegetation and micro-organisms in the soil.

xi. Vehicular access must be limited across rocky outcrops and ridges.

xii. Appropriate measures must be taken to stabilize all cut and fill surfaces on completion of construction.

xiii. Erosion and donga crossings must be dealt with as river crossings. Appropriate soil erosion and control procedures must be applied to all embankments that are disturbed and destabilized.

xiv. Soil contaminated with oil must be appropriately treated and disposed of at a permitted landfill site or regenerated using bio-remediation methods.

xv. Run-off must be reduced and controlled by channeling water into existing surface drainage system.

xvi. No impediments to natural water flow other than approved erosion control Works should occur.
12.3.2 Water, rivers, streams and wetlands

i. Construction disturbances in the vicinity of riverside areas, riverbeds and river crossings must be restricted to the absolute minimum.

ii. Adequate sedimentation control measures shall be instituted at any river crossings where excavations or disturbance of riverbanks, riverbeds or drainage lines of wetlands may take place.

iii. Sedimentation weirs shall be placed downstream of the crossing.

iv. During construction at river crossings as much as possible of the full flow of the river should be allowed to pass downstream. In-river bed diversions should be used rather than the construction of new channels.

v. During construction through a wetland, the majority of the flow of the wetland should be allowed to pass downstream.

vi. Due to the sensitivity of the riverbanks, erosion control measures must be employed both during and after construction. Erosion matting must be used on all exposed/disturbed riverbanks and these must allow for the re-growth of the natural vegetation.

vii. The surface of the work area should be re-profiled so that the pre-excavation drainage patterns and hydrology are restored.

viii. Use appropriate structures and methods to confine accidental spillages such as the construction of berms and pans, or through the application of surface treatments that neutralize the toxic effects prior to the entry into a watercourse.

ix. Oil absorbent fibres must be used to contain oil spilt in water.

x. Vehicular traffic across wetland areas must be avoided.

xi. Dumping of foreign materials and/or object in rivers, streams and wetlands is not allowed.

xii. The wetland area and/or river must not be drained, filled or altered in any way including alteration of a bed and/or, banks, without prior consent from the DWS. The necessary licenses must be obtained in terms of Section 21 and 22 of the National Water Act, 36 of 1998 from DWS.

xiii. No fires or open flames are allowed in the vicinity of the wetland, especially during the dry season.

xiv. No swimming, washing (including vehicles and equipment), fishing or related activity is permitted in a river stream or wetland.

PS12.3.3 Air Pollution

i. Dust generation should be kept to a minimum by the implementation of dust suppression measures where appropriate. Special care should be taken in areas where the route passes close to inhabited areas.

ii. Water used for the purpose of dust suppression must be used in quantities that will not result in the generation of run-off.

iii. Speed limits must be implemented in all areas, to limit the levels of dust pollution.

iv. Waste must be disposed of, as soon as possible at a municipal transfer station, skip or on a permitted landfill site. Waste must not be allowed to stand on site to decay, resulting in mal-odours.

v. No fires are allowed as smoke from such fires could cause a nuisance to landowners and other parties in the vicinity of the construction site.

PS12.3.4 Pollution control

i. Soil and water pollution through fuels, oils or other substances must be avoided.

ii. No maintenance work on earth moving equipment, vehicles or other large machinery should take place within the vicinity of river or stream crossings, wetlands or other
sensitive sites as may be identified during the EIA process. Such work should only take place on and within a designated workshop area.

iii. Littering, discarding or burying of any material (excluding the pipeline) on site should not be allowed.

iv. All machinery is to be maintained and in good working order so as to prevent soil or water pollution from oil, fuel or other leaks.

v. Contaminated water should be appropriately disposed of and should not be allowed to discharge to the surrounding environment. This includes water used for cleaning of pipes and which may contain rust, chemical residues, etc.

PS12.3.5 Noise and other disturbances

i. Construction activities should be restricted to between 07:00 and 17:00 Monday to Friday, unless otherwise approved by the Engineer, subject to the Contractor having obtained appropriate consent of the affected landowners and affected parties.

ii. The Contractor must inform all adjacent landowners of any after-hour construction activities and any other activity that could cause a nuisance e.g. the application of chemicals to the work surface.

iii. No loud music is allowed on site and in construction camps.

PS12.3.6 Social and cultural

i. Open liaison channels should be identified and developed to ensure that all queries, complaints from all affected persons/parties may be addressed with the shortest possible delay. This is particularly important in the vicinity of habitation.

ii. If work is to take place on privately owned land, i.e. not belonging to Rand Water, the landowners should be informed of all work to take place and permission should be obtained before any work commences.

iii. Access to the site should be restricted to employees of the Contractor.

iv. Construction staff should be educated as to the need to refrain from destruction of animals and plants, as well as from indiscriminate defecation, waste disposal and or pollution of local soil and water resources.

v. Contractors to ensure that labourers remain within the servitude and construction areas, especially at sensitive sites such as river crossings, wetland areas and koppies.

vi. Machine/vehicle operators should receive clear instructions to remain within identified access routes and operational/construction areas. Penalties should be introduced to ensure that this requirement is adhered to.

vii. Staff should be informed that access to adjacent/private properties is strictly off-limits, and that it will be deemed a serious offence if any person is found trespassing (i.e. no fences should be jumped at any time and no gates are to be opened without permission from the relevant landowner.

viii. The Contractor’s crew must be easily identifiable by means clothing, identification cards or other methods.

ix. Sub-Contractors and their employees must comply with all the requirements of this document and supporting documents e.g. the Contract document that applies to the Contractor. Absence of specific reference to the sub-contractor in any specification does not imply that the sub-contractor is not bound by this document.

x. The Contractor must arrange for all his employees and those of his sub-contractors to be informed of the requirements of the environmental report before the commencement of construction to ensure:

a) A basic understanding of the key environmental features of the work site and environments, and

b) Familiarity with the requirements of this document and the site-specific report.
xi. The Contractor must maintain a detailed complaints register, together with solutions and appropriate actions taken where necessary, which must be forwarded to the authorities on request.

xii. The contractor should ensure proper supervision of employees at all times.

PS12.3.7 Aesthetics

i. Measures to limit damage to the natural environment will be sustained by the Contractor.

ii. Trees and tall shrubs must be protected from damage to provide a natural visual shield.

iii. The clearing of all sites must be kept to a minimum and surrounding vegetation must, as far as possible, be left intact as a natural shield.

iv. Marking and painting of natural features will not be allowed.

v. Above ground structures (valve chambers, hammer tanks, reservoirs, etc.) should be located in areas where the visual impact from roads, houses etc is minimized.

vi. Above ground structures could be treated or painted to blend in with the natural environment.

vii. Cut and fill areas, river and stream crossings and other soil stabilization Works must be constructed to blend in with the natural environment.

viii. Natural outcrops, rocky ridges and other natural linear features, must not be bisected. Vegetation on such features must, as far as possible, not be cut unless absolutely necessary for construction.

ix. Excavated material must be flattened (not compacted) or removed from site. No heaps of spoil material must be left on site once the Contractor has moved from site.

x. Any complaints regarding the appearance of the construction site must be recorded and addressed promptly by the Contractor.

PS12.3.8 Archaeology and cultural Sites

i. All finds of human remains must be reported to the nearest police station.

ii. Human remains from the graves of victims of conflict, or any burial ground or part thereof which contains such graves and any other graves that are deemed to be of cultural significance may not be destroyed, damaged, altered, exhumed or removed from their original positions without a permit from the South African Heritage and Resource Agency (SAHRA).

iii. Work in areas where artefacts are found must cease immediately.

iv. Under no circumstances must the Contractor, his/her employees, his/her subcontractors or his/her sub-contractors’ employees remove, destroy or interfere with archaeological artefacts. Any person who causes intentional damage to archaeological or historical sites and/or artefacts could be penalized or legally prosecuted in terms of the National Heritage Resources Act, 25 of 1999.

v. All known and identified archaeological and historical sites must be left untouched. A fence at least 2m outside the extremities of the site must be erected to protect the site.

vi. Work in the area can only be resumed once the site has been completely investigated and the Engineer has given his consent to do so.

PS12.3.9 Fauna and flora

i. It is possible that red data animal and plant species may occur within the construction area and it is imperative that disturbance be minimized and that labourers do not pouch any animals.

ii. Construction activities should avoid destruction of areas of extensive animal habitation.

iii. If animal habitats, e.g. warrens, have to be destroyed, this should be done with prior approval from the environmental site officer or the environmental consultants.
iv. Excavations left open during construction should be checked periodically (especially once the rain season begins) such that animals falling in can be safely removed and released away from construction activities.

v. No species of animal may be poached, snared, hunted, captured or wilfully damaged or destroyed.

vi. Snakes and other reptiles that may be encountered on the construction site must not be killed unless the animal endangers the life of an employee.

vii. Anthills and/or termite nests that occur must not be disturbed unless it is unavoidable for construction purposes.

viii. Disturbances to nesting sites of birds must be minimized.

ix. Disturbances to nesting, breeding and roaming sites of animals in or adjacent to wetland areas must be minimized.

x. The Contractor must ensure that the work site is kept clean and free from rubbish, which could attract pests.

xi. Only vegetation falling directly in demarcated access routes or construction/operational areas should be removed to provide essential access for construction purposes.

xii. The spread of alien vegetation must be minimized.

xiii. A minimum servitude width should be used on koppie slopes.

**PS12.3.10 Infrastructure**

a) **Services**

i. The relevant authorities must be notified of any interruptions of services. In addition, care must be taken to avoid damaging any services.

ii. The integrity of property fences must be maintained.

iii. All crossings of services must be protected, raised or relocated with the consent of the relevant authority.

b) **Storage**

i. Proper storage facilities should be provided for the storage of oils, grease, fuels, chemicals and any hazardous materials to be used during construction.

ii. These storage facilities (including any tanks) should be stored on an impermeable surface and surrounded by a bund wall, in order to ensure that accidental spillage does not pollute local soil or water resources.

c) **Equipment**

i. Refuelling and maintenance of vehicles should occur within specified depots only. Working/fuel transfer areas within these depots should be underlain by an impermeable surface and should have grease traps to ensure that no spillage of greases, oils or fuels occur into local soil or water resources.

ii. All equipment must be inspected regularly for oil or fuel leaks before it is operated. Leakages must be repaired on mobile equipment or containment trays placed underneath immobile equipment until such leakage has been repaired.

d) **Hazardous materials**

i. An inventory of any hazardous chemicals/substances (including that within equipment), along with a description of possible ill effects and treatment of health-related afflictions resulting from accidents, should be kept in the storage area as well as by the appropriate manager.
ii. Workers should at all times be made aware of the health risks associated with any hazardous substances used (e.g. smoking near refueling depots), and should be provided with appropriate protective clothing/equipment in case of spillages or accidents.

e.) Traffic and access

i. Any traffic diversions should be undertaken with the approval of all relevant authorities and in accordance with all relevant legislation.

ii. Wherever possible traffic diversion should only take place on existing disturbed areas and remain within the existing road reserve.

iii. Traffic diversion routes may need to be rehabilitated as per the rehabilitation guidelines as described by the relevant authority.

iv. Access routes to the servitude and work site should be controlled such that only vehicles and persons directly associated with the work at a particular section of the pipeline have access.

v. Temporary access roads must not be opened until required and must be restored to its former state as soon as the road is no longer needed.

f.) Construction camp and stockpile areas

i. The siting of construction camp(s), offices, workshops, maintenance and refueling sites and materials storage areas should not be in the vicinity of sensitive sites e.g. areas of periodic water logging (at any point in time), draining lines, rivers, stream, wetlands, steep slopes and areas of extensive animal habitation.

ii. These facilities should be constructed in areas, which are already disturbed (e.g. adjacent to existing/old buildings; within an existing servitude).

iii. The erection of signs alongside or near roads should comply with all relevant legislation and meet with the approval of the relevant authorities.

iv. Stockpiling of pipes, bedding, padding and other material must not be carried out near sensitive areas such as river and stream crossings, wetland areas, steep slopes and koppies or other areas, which may be identified by the environmental consultants as part of the EIA process.

v. Stockpile areas must remain within the appropriate servitude.

g.) Other

i. Cement and other potential environmental pollutants should be stored and mixed on an impermeable substratum. There should be no opportunity for environmental contamination.

ii. The Contractor must ensure that accidental spillage does not pollute soil and water resources.

iii. Chemical toilet facilities should be managed and serviced by a qualified company. No disposal or leakage of sewerage should occur on or near the site or during its transport.

iv. All material imported for use on site, e.g. for fills, cement mixing etc. should be obtained from a legal, commercial source. No waste or mine dump material may be used on site without prior approval from the environmental consultant.

PS12.3.11 Safety

b) General

i. Measures must be taken during thunderstorms to protect workers and equipment from lightning strikes.

ii. All tall structures must be properly earthed and protected against lightning strikes.
b.) **Fire**

i. Smoking should be prohibited in the vicinity of flammable substances.

ii. The contractor should ensure that fire-fighting equipment is available on site, in particular where flammable substances are being stored or used.

iii. Any welding or other sources of heating of materials should be done in a controlled environment wherever possible and under appropriate supervision, in such a manner as to minimize the risk of veld fires and/or injury to staff.

iv. A fire started for comfort (warmth) is prohibited, due to the risk of veld fires and risk to adjacent property owner’s lands.

v. No waste material must be burned.

vi. No fires or open flames are allowed on site unless directly used for construction purposes, e.g. acetylene blowtorch.

c.) **Excavations**

i. Excavations should only remain open for a minimum period of time and during this time they must be clearly demarcated so as to prevent accidental ingress of people, animals or vehicles.

ii. Where there is any obvious well used path or tracks which cross the work area, care must be taken to ensure thoroughfare without injury or prejudice to those using the path.

iii. Open trenches and excavations must be clearly demarcated. If excavations place the public at risk these sites must be fenced.

iv. The residents directly affected by open trenches must be notified of the dangers. This will be done during the site-specific phase.

d.) **Blasting**

i. If any blasting is to take place all surrounding landowners and businesses, as appropriate, should be informed of the blasting plan at least two (2) weeks prior to blasting.

ii. Full precautions (mats etc.) should be taken during all blasting operations to avoid missile damage to society and the environment, in particular any riparian (riverine) vegetation.

iii. Any areas where the blasting residue (nitrates etc.) could accumulate should be avoided or washed out.

iv. All the provisions of the Explosives Act, 26 of 1956 and the Minerals Act, 50 of 1991 must be complied with.

**PS12.3.12 Waste**

c.) **Solid**

i. Littering on site and the surrounding areas is prohibited.

ii. Clearly marked litterbins must be provided on site. All bins must be cleaned of litter regularly.

iii. All domestic waste generated in the site camp(s) should be disposed of in a proper manner off site, and only at legal dumping sites.

iv. All construction waste should be either a) removed from site and disposed of at an appropriate municipal dumping site, or b) temporarily stored in a clearly demarcated area on site for future use. The position of such a site should be approved by the
Environmental Consultants or Environmental Site Officer prior to the disposal of such wastes.
v. Contaminated soil must be treated and disposed of at a permitted waste disposal site, or be removed and the area rehabilitated immediately.
vi. Any spoil generated in the process of maintaining, repairing or laying of the pipelines should only be stockpiled within the appropriate servitude or within areas approved by the environmental consultants or environmental site officer.
vii. Spoil which is to remain on site after the completion of the contract must be shaped, trimmed and vegetated as soon as possible.
viii. All waste generated during construction, other than natural materials, e.g. soil and rock, should be disposed of in a proper manner off site, i.e. at a registered site.

b.) Liquid

i. All wastes generated by the ablution and kitchen facilities shall be disposed of in a proper manner off site.
ii. The site should be serviced by properly managed and maintained toilet facilities. Chemical toilet facilities should be managed and serviced by a qualified commercial company.
iii. The Contractor is to ensure that permanent on-site toilet facilities are properly maintained and are in working order. No disposal, or leakage, of sewage should occur on or near the site.
iv. The waste generated under i) and ii) above must be discharged into a municipal sewer system, at a discharge point and in a manner approved by the local authority.
v. All waste oils, greases, fuels etc. should be collected and disposed of in an appropriate manner off site. The contents of grease traps or other waste oil, grease and/or fuel disposal/storage containers, should under no circumstances be voided to the surrounding area.

c.) Hazardous

i. No hazardous materials must be disposed of in the veld or anyplace other than a registered landfill for hazardous material. Hazardous waste must be stored in containers with tight lids that must be sealed and must be disposed at an appropriately permitted hazardous waste disposal site. Such containers must not be used for purposes other than those originally designed for.
ii. The Contractor must maintain a hazardous material register.

PS12.3.13 Rehabilitation

i. Once construction is completed, all redundant infrastructure, waste and construction materials should be removed from site by the Contractor and disposed of in an appropriate manner, i.e. at a registered site.
ii. Disturbed areas, which are to remain free of infrastructure, should be rehabilitated to a state comparable to the surrounding vegetation (this should be determined and prescribed by the environmental consultant).
iii. Areas compacted by vehicles during construction may have to be scarified (ripped) to allow penetration of plant roots and the re-growth of natural vegetation.
iv. Large disturbed areas may need to be rehabilitated as per a rehabilitation plan. This may make provision for the control or removal of invasive vegetation at specified time intervals.
v. All drainage deficiencies including abandoned pit latrines and waste pits must be corrected.
vi. Borrow pits must be re-shaped into even slopes and surfaces to blend with the natural terrain and topsoil must be replaced.
A copy of the Environmental Management Plan has been included as part of Annexure 3 issued as part of this Tender Document. The Contractor shall comply with all requirement set out in the EMP.

**PS 12.5 Method Statements**

In terms of the Site Specific Environmental Management Plan (PS12.4) at least the following method statements will be required:

- Method statements for protocols to be followed in the event of:
  - Contamination of natural water resources from spills.
  - Contamination of soils from spills
  - Fire on the site.
- Method statement for cement and concrete batching.
- Method statement for diesel tanks and refueling procedures.
- Method statement for crew camps and construction laydown areas.
- Method statement for solid waste management.
- Method statement for dust control.
- Method statement for management of topsoil.
- Method statement for workshop maintenance and cleaning of plant.
PS13 APPLICABLE STANDARDIZED SPECIFICATIONS

Although not bound in or issued with this document, the following SABS 1200 Standardized Specification for Civil Engineering Construction 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 Standardized Specifications and their related SABS 0120 Code of Practice that apply equally and shall keep a copy of each on site for reference by him and the Engineer for the duration of the Contract.


SABS 1200 Specifications applicable are:

- SABS 1200 A – 1986 : General
- SABS 1200 AB – 1986 : Engineer’s Office
- SABS 1200 C – 1980 : Site Clearance
- SABS 1200 DA – 1988 : Earthworks (Small Works)
- SABS 1200 DB – 1989 : Earthworks (Pipe Trenches)
- SABS 1200 DK – 1996 : Gabions and Pitching
- SABS 1200 DM – 1981 : Earthworks (Roads, Sub-grade)
- SABS 1200 GA – 1982 : Concrete (Small Works)
- SABS 1200 GE – 1984 : Precast Concrete (Structural)
- SABS 1200 HA – 1990 : Structural Steelwork (Sundry Items)
- SABS 1200 LB – 1983 : Bedding (Pipes)
- SABS 1200 LE – 1982 : Stormwater Drainage
- SABS 1200 LG – 1983 : Pipe Jacking
- SABS 1200 ME – 1983 : Subbase
- SABS 1200 MFL – 996 : Base (Light Pavement Structures)
- SABS 1200 MM – 1984 : Ancillary Roadworks


Specifications applicable to TS1 unloading, laying, jointing etc. of pipes, supply and installation of specials and installation of valves etc. are:


American Petroleum Institute Standard 5L : Specifications for line pipe
SANS 1217 (latest available) : Internal and external organic coating protection for buried steel pipelines.
PS 14 APPLICABLE TECHNICAL SPECIFICATIONS (RAND WATER)

The following Rand Water Technical Specifications shall apply to this Contract, as per Portion 3 of the Scope of Work. The Contractor shall be in possession of these Technical Specifications and shall keep a copy of on site for reference by him and the Engineer for the duration of the Contract.

- PIPELINES INSTALLATION FABRICATION AND TESTING TECHNICAL SPECIFICATION
- SPECIFICATION FOR SLUICE-, AIR-, REFLUX-, BUTTERFLY-, RESILIENT SEAL GATE- AND BALL VALVES AND POWERED ACTUATORS.
- RAND WATER FLOAT CONTROL VALVES SPECIFICATION
- RAND WATER PRESSURE REDUCING VALVES SPECIFICATION

The applicable Technical specifications are bound in this document as Portion 3 of the Scope of Work.

PS 15 APPLICABLE SPECIFICATIONS (DEPARTMENT OF PUBLIC WORKS)

If required by the Engineer, the following Department of Public Works Specifications shall apply to this Contract, as per Portion 3 of the Scope of Work. The Contractor shall be in possession of these Specifications and shall keep a copy of on site for reference by him and the Engineer for the duration of the Contract.

PW344: Appropriate Development of Infrastructure on Dolomite: Manual for Consultants

The applicable specifications can be obtained from the Department: Public Works – Republic of South Africa or from their website: www.dpw.gov.za

PS 16 DELIVERABLES AND WORK BREAKDOWN STRUCTURE

The Contractor shall be responsible for the provision of the following deliverables and work, which in turn must comply fully with the supplied drawings, schedule of quantities, Rand Water’s applicable specifications, and in particular the specification supplied as part of the Tender.

PHASE 1: COMPILATION AND SUBMISSION OF PRELIMINARY DOCUMENTATION

Detailed Project Programme: Provide the Engineer with a detailed project programme within 14 (fourteen) days of signing the Contract.

Declaration of Insurance: Submit to the Engineer the completed Schedule: Declaration of Insurances, together with copies of the insurance policies concerned within 14 (fourteen) days of signing the Contract.

Surety: Provide to the Engineer a surety, issued on an official letterhead of a bank or insurance company having an office in the Republic of South Africa, within 14 (fourteen) days of delivery of signing the Contract.
Appointment of OHS Site Representative: Submit to the Engineer a copy of the appointment and acceptance document; of the full-time employee that shall be the Contractor’s Site Representative in terms of the OHS act requirements within 14 (fourteen) days of delivery of signing the Contract.

Health and Safety Plan: Compile a Health and Safety Plan in compliance with the OHS ACT and construction regulations, 2003. This document shall be submitted to the Rand Water Site OHS Officer for approval, within 14 (fourteen) days of delivery of signing the Contract. A copy of the approved document shall be submitted to the Engineer.

Risk Assessment Plan: Submit to the Engineer a comprehensive risk assessment plan, within 14 (fourteen) days of delivery of the Letter of Acceptance.

Quality Assurance Plan: Submit to the Engineer a comprehensive proposal for a quality assurance plan (in accordance with the requirements of SANS – ISO 9000), within 14 (fourteen) days of delivery of signing the Contract.

Team Members Document: Submit to the Engineer a team member list, within 14 (fourteen) days of delivery of the Letter of Acceptance, which has at minimum the following information:

- Team member’s name.
- Team member’s ID numbers and copies of ID documents.
- Team member’s job description.
- Team member’s qualifications, certifications and experience.
- Team members contact details.

Site Induction: Arrangement with the Rand Water Site OHS Officer for an induction date and attendance the Site’s Induction Course all of the Contractor’s (and sub-contractor’s) team members who will be working on the site. Proof of successful completion of the Induction course by all team members shall be submitted to the Engineer within 14 (fourteen) days of the completion of this induction. This proof shall have at a minimum a list of all the members that have attended the induction together with their ID numbers and signatures as well as the signature of the Site OHS Officer who conducted the induction. The Contractor must ensure that all his site construction management and supervision team, including the labour force and plant operators have undergone a medical assessment in accordance with the OHS Act with respect to their roles on site. These medical assessments must be submitted to the Engineer and or Rand water’s safety Officer for his acceptance prior to anybody mobilising

Site Access Certificate: Following approval of the Health and Safety Plan submitted to the Rand Water Site OHS Officer, obtain a Site Access Certificate from the Site Executive Manager

PHASE 2 – SITE ESTABLISHMENT AND BUILDING CONSTRUCTION

Establish on site (following the obtaining of a Site Access Certificate from the Executive Manager – Rand Water).

PHASE 3 – PROCUREMENT, PREPARATION, TESTING AND DELIVERY PHASE

Procurement of all equipment needed, including, but not limited to valves and all specials and fittings. The preparation of Inspection and Factory Acceptance Testing of the valves and fittings, in conjunction with Rand Water personnel at the place of manufacture.

Preparations for and delivery of all equipment to site as per specifications. All equipment delivered to site shall be safely stored by and shall be the responsibility of the Contractor.

Preparations for and delivery of the approved spares and tools to Rand Water’s stores or workshops.
PHASE 4: INSTALLATION AND COMMISSIONING PHASE

Supply and install all fittings, sluice valves, air valves with vacuum break valves, and pipework.

Complete and repair the protective coatings as follows: Polyurethane external coating and Epoxy internal lining.

Backfill the trenches with fill and dispose of surplus material and reinstate the top surface area.

Construct and/or install valve chambers and all associated steel work required within the chambers.

Obtain a Construction Acceptance Certificate from the Engineer after completion of the construction, installation and preliminary commissioning work.

Successfully commission and put the complete pipeline in to operation in conjunction with Rand Water staff.

PS 17 DISPOSAL OF SPOIL OR SURPLUS MATERIAL (Read with SANS 1921 – 1: 2004 clause 4.10)

No indiscriminate spoiling of material will be allowed. All surplus or unsuitable material shall be spoiled in designated areas as identified and acquired by Contractor. Contractor to be responsible for identification, negotiations and final agreements with relevant authorities, stock pile yards, etc.

Waste material, empty cement pockets, pipes, manhole rings, etc., are not to be left lying at the site of operation.

PS 18 TRAINING

The Contractor shall provide in-task training of local labour during the construction of the Works. In-task training shall consist of training and guidance of team leaders, assistants, and labour in those construction activities where the labour is engaged. The in-task training shall cover all training and guidance required to ensure that the leaders and labour are able to carry out the project tasks in accordance with the requirements of the project specification. The in-task training shall be carried out by the Contractor’s own key and skilled personnel.

The Contractor shall allow for all the necessary material, staff, liaison, support, etc so as to ensure that the local labour obtains the required in-task training. The Employer shall satisfy himself that the Contractor’s training covers all the requirements of the in-task training according to the Industrial Relations Guidelines, Principles and Requirements for Rand Water Tenders, where applicable

PS 19 FREEHAUL AND OVERHAUL

Notwithstanding any clauses in any Standardized Specification or any Particular Specification or Standard Specification Section dealing with the definition, measurement and/or payment for transport, freehaul and/or overhaul, no measurement or payment for overhaul will be made. All haulage will be considered to be freehaul and the cost thereof will be deemed to be covered by the rates for the provision or disposal of the applicable material.

PS 20 AS-BUILT INFORMATION

PS 20.1 Requirements
PS 20.1.1 A registered Surveyor to undertake the work (preferably registered with PLATO-The South African Council for Professional and Technical Surveyors)
PS 20.1.2 The survey to be in WG 29 projection
Note: Survey controls to be supplied by Rand Water’s Land and Rights Section
PS 20.1.3 Accuracy within 0.1 m (Y,X,Z) meters
PS 20.1.4 Survey every 50m (Y,X,Z)
• Top of a pipe
• Natural Ground Level (NGL)
• All bend points of pipe and a minimum of three (3) points along the curve of pipe bend
• Change of grade of pipe
• Survey all existing/new and exposed services with a minimum of two (2) points
• All valve chamber positions – all corners
• Start and end of culvert
• Pipe Jacking positions
PS 20.1.5 Spreadsheet to be supplied to Rand Water’s Land and Rights Section
• All points and description in ascii format (csv, txt, lst, etc)
• Description of valves
• Culvert details (Width, length, depth and invert level)
• Pipe Jacking details
PS 20.1.6 Survey all valve chamber positions of existing pipes within the servitude
PS 20.1.7 CADD plan showing all surveyed information
PS 20.1.8 Survey Working Plan
PS 20.1.9 Any other data that is beneficial to the project

PS 21 CCTV (N/A)

Provide side-scanning, that captures detailed visual data from every square mm of pipe wall at speeds up to 21 meter per minute. This image data, called a side scan, is then presented in multiple views (side, forward, thumbnail and virtual 3D) that can be rapidly and thoroughly analyzed offline by an engineer.

Minimum Requirements:
• High-resolution visual detail from every mm of pipe wall.
• Inspect at 15 meter per minute —no stopping to pan, tilt or zoom.
• Faster review and annotation than with video.
• Links to GIS data.
• Automatic identification of cross connection, air valves, scour and joints.
• Thumbnail, side, forward and 3D navigation.
• Compact data for easy storage/transfer
• Ovality measurement.
• Pipe profiling

Contractor is to provide full ownership of the physical and intellectual property of the CCTV survey records to the Rand Water.
Begin each survey from a zero datum point defined as the centre of the manhole or pipe node. Record the record and length of each weld before lining and after lining. Complete survey along the entire asset length(s) from one manhole or access point setup wherever possible. If after reasonable effort the camera cannot proceed, complete the survey by starting a second survey from the manhole or access points at the other end of the asset length.

Cross-reference distances, survey directions and start and finish manhole or access points Complete as many asset length surveys as possible from the one manhole or access points. Note: distance counter must be zeroed at the start of each asset length.
All CCTV reports in colour, video footage and photos of each survey are to be supplied to Rand Water together on the same DVD. The format of this DVD must be compatible for viewing on a standard computer. Each DVD is to be sequentially numbered with a distinct identification number e.g. LD001, LD003 etc.

Record the following information at top left side of the video screen for each separate CCTV survey:
- CCTV Contractor’s name
- Location
- Manhole or access points or node where survey started (use LCC manhole or access points equipment numbers).
- Asset equipment number of pipe.
- Direction of survey (upstream, downstream).
- Pipe diameter, material
- Type of pipeline
- Date of survey
- DVD Number

Record the camera distance in metres on the right hand side of the video screen. Record the pipe gradient as a percentage at the bottom of the screen. Record each defect without moving the camera for a minimum of 3 seconds. Record each lateral connection by looking along centreline (of the connection) without moving the camera for a minimum of 3 seconds and view from different angles to enable a full assessment of the connection.

Pan the camera as required to get a clear and complete view of the defect (displaced joint, multiple cracks, encrustations etc.)

Provide a written Condition Assessment Report with the following information: Where applicable
- Estimate of flow depth as a percentage of total pipe diameter (any changes in depth along the survey length to be noted).
- Depth to manhole or access points invert (use a tape measure to determine).
- All defects, cracks, holes, open joints, infiltration, exfiltration.
- All connections, noting if capped off, intruding, live, standard proprietary brand fitting or non-standard.
- Changes in pipe material or size.
- Buried or uncharted manhole or access points, inspection openings or any other structures.
- Obstacles such as roots, encrustations, debris, rubbish, gravel.
- Build-up and encrustation on pipes such as silt, fatty products, calcification.
- Pipeline conditions considered to be unsafe.
- Pipe location where it differs from the alignment shown on the plans.
- Video times and distances (in metres) at start, finish, all connections and defects.

When CCTV surveying from a manhole/access hole, list the node numbers directly upstream and downstream of the manhole/access hole location as start and finish points. Show on the report that the survey was started from a manhole/access hole and indicate how far the manhole/access hole was from the theoretical start node (this can be noted in the comments if necessary). If the theoretical start node cannot be located, then sketch on the plan the location of the manhole/access hole relative to buildings, fences etc. Depths of the pipe invert level at the manhole/access hole to be recorded.

Zero point for all surveys must be the centre of a pipe node (usually the manhole or access points centreline, but can be a junction) and all measurements must be referenced back to this datum. The depth to the invert of the pipe being surveyed must be recorded on the condition assessment report.
This applies to both start and finish manhole or access points (provided that finish manhole or access points is not buried).

All survey reports must record a complete start and finish node number (Asset ID) and equipment number for the asset length.

Provide one photograph of major defects, or when a survey is abandoned. Photographs to show as much of the pipe as possible (avoid close up of the defect), general condition shot is preferable for cracks etc.

Camera image quality of DVD must be superior to that of video tape quality. Any compression should not make the image fuzzy or pixelated when viewed at full screen size. Lighting is to be sufficient to illuminate the pipe so that features are easily recognisable, yet not create lens flare or glare on the recording.

**PS 22 HYDROSTATIC TESTING OF PIPES AND SPECIALS**

Pipes and specials shall be subject to an approved hydrostatic test to a test pressure determined as follows:

\[
P = \frac{2000 tf}{D}
\]

Where,

- \(P\) = the test pressure in kPa.
- \(F\) = 85 per cent of the guaranteed minimum yield strength in Mpa for the steel plate.
- \(D\) = the outside diameter of the pipe in mm
- \(t\) = wall thickness in mm.

Hydrostatic testing shall not be carried out until all aspects of fabrication have been completed. Documentation of the hydrostatic testing is to be submitted to the Engineer.

Instruments and testing equipment used for measurement of pressure, volume and temperature should be certified for accuracy, repeatability and sensitivity. Gauges and recorders should be checked prior to testing and calibration certificate not older than 6 months must be submitted for every test.

The pressure shall be applied steadily by approved means and maintained without variation sufficiently long for proof and inspection. The description of the testing apparatus and parameters shall be given in Returnable Schedules.

Should water sweat or ooze from any part or any defects of any nature be discovered the pipe shall be emptied and the defects made good. The pipe shall then be tested again. Should a pipe, after repair, fail to pass the second hydraulic test the Engineer may order its rejection.

The fact that any pipe and fittings may have passed the hydraulic test at the works shall not exempt the Contractor from his liability under the General Conditions of Contract.

If a pipe special/fitting fails to pass any of the above tests it shall be rejected but the Engineer may permit repairs or alterations to be made to enable the pipe special to pass the test.

**CONTRACT No_______**

**HYDROSTATIC TEST CERTIFICATE**
# Pipe Test Contract

<table>
<thead>
<tr>
<th>PIPE TEST CONTRACT</th>
<th>METHOD</th>
<th>DATE</th>
<th>TEST SECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rand Water Formula</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PIPE DIAMETER (OD)</th>
<th>LENGTH OF TEST SECTION</th>
<th>TEST PRESSURE</th>
<th>ALLOWABLE LEAKAGE RATES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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</tbody>
</table>

1. Rand Water – Clause TS 8
0.1 x Diameter x length x Test pressure x 24 /30

<table>
<thead>
<tr>
<th>TIME: 30 min</th>
<th>TIME: 60 min</th>
<th>TIME: 12 hours</th>
<th>TIME: 24 hours</th>
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<tbody>
<tr>
<td>VOLUME CUMULATIVE</td>
<td>VOLUME CUMULATIVE</td>
<td>VOLUME CUMULATIVE</td>
<td>VOLUME CUMULATIVE</td>
</tr>
<tr>
<td>MEASURING DEVICES:</td>
<td>RECORDER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>METER</td>
<td>VOLUME:</td>
<td>.....</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>PRESSURE GAUGE(S)</th>
<th>DIAMETER</th>
<th>DIVISIONS</th>
<th>CALIBRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>TYPE:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MANUFACTURER:</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>TEST PUMP TYPE:</th>
<th>PRESSURE GAUGE(S) TYPE:</th>
<th>METER VOLUME:</th>
</tr>
</thead>
<tbody>
<tr>
<td>MANUFACTURER:</td>
<td></td>
<td>.....</td>
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</table>

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<thead>
<tr>
<th>TIME: 30 min</th>
<th>TIME: 60 min</th>
<th>TIME: 12 hours</th>
<th>TIME: 24 hours</th>
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</thead>
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<tr>
<td>VOLUME CUMULATIVE</td>
<td>VOLUME CUMULATIVE</td>
<td>VOLUME CUMULATIVE</td>
<td>VOLUME CUMULATIVE</td>
</tr>
<tr>
<td>FILLING SOURCE OF WATER SUPPLY</td>
<td>LEAKAGES</td>
<td>CH (m)</td>
<td></td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------</td>
<td>--------</td>
<td></td>
</tr>
<tr>
<td>START DATE</td>
<td>TIME</td>
<td></td>
<td></td>
</tr>
<tr>
<td>END DATE</td>
<td>TIME</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>NAME</th>
<th>SIGNATURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONTRACTOR</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>RESIDENT ENGINEER</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>PIPELINE ASSETS</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>DESIGN ENGINEER</td>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>OPERATIONS</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Testing Checklist :</td>
<td>Yes or No</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>• Has all the pipeline construction on test section been completed, inspected and signed off?</td>
<td></td>
</tr>
<tr>
<td>• Has it been verified by QA/QC that the proper pipe material, diameters, DR’s, flange ratings, fittings ratings, are in accordance with the drawings and specifications?</td>
<td></td>
</tr>
<tr>
<td>• Has the last fusion joint been allowed to cool sufficiently to ambient temperature?</td>
<td></td>
</tr>
<tr>
<td>• Has the pipeline been cleaned of all construction debris and foreign matter?</td>
<td></td>
</tr>
<tr>
<td>• Are the facilities available for preparations for testing?</td>
<td></td>
</tr>
<tr>
<td>• Have local authorities/ citizens been notified of the intent to conduct hydro-testing? • Are all foreign construction materials removed from the trench in contact with the pipe?</td>
<td></td>
</tr>
<tr>
<td>• Are there any point loads on any fittings? (remove them)</td>
<td></td>
</tr>
<tr>
<td>• Are the pipelines supported by backfill or otherwise restrained by sandbags to prevent lateral movement or axial contraction under test pressure?</td>
<td></td>
</tr>
<tr>
<td>• Where cast concrete has been used, has the concrete cured in excess of 7-days?</td>
<td></td>
</tr>
<tr>
<td>• Will the hydro-test be scheduled to occur in dry weather, so that leaks may be detected? (testing in wet weather or in water filled trenches is not recommended)</td>
<td></td>
</tr>
<tr>
<td>• Have the proper environmental and regulatory permits been obtained for access to sufficient volumes of fill water, post-test water analysis and treatment, and proper disposal of the test water?</td>
<td></td>
</tr>
<tr>
<td>• Has the pipeline elevation profile and filling procedure been analyzed for the fill velocity potential against dynamic surge pressure during filling, which might over-pressure local components, especially in low elevations?</td>
<td></td>
</tr>
<tr>
<td>• Has the volumetric rate of fill, fill method, and fill procedure been finalized?</td>
<td></td>
</tr>
</tbody>
</table>
• Has the rate of initial pressurization, prior to full pressure hydro-test, been finalized?

• Has the test plan manual been approved, circulated to all operators, and understood by all participants in pre-test safety and quality meeting? (sign-in sheet)

• Are some bolted joints going to be left exposed for visual inspection and possible re-torquing during or after testing?

**PS 23 RAND WATER DATA PACK GUIDELINES**

The pipe manufacturer shall submit to the Engineer the steel maker’s certificates covering all steel used. These certificates shall indicate the coil and heat number, the process of manufacture clearly indicating that the steel is manufactured as per API 5L standard and the mechanical properties of the steel, the chemical analysis which includes the manufacturer’s product specification ranges for the selected grade.

The pipe manufacturer shall submit the mechanical properties/tests determined from specimens taken from finished pipe welds, chemical analysis from independent laboratories from the finished pipe welds, batch numbers from supplier of coating and lining used, dry film thickness, visual inspections and measurements, non-destructive testing reports, hydrostatic test reports, dust and debris reports, dew point and steel substrate temperature before coating and lining as well as salt tests.

All these requirements shall be specified and compiled into a data-pack for each pipe. Each pipe data-pack shall be bound or stapled together and all data-packs filed for submission to Rand Water at the end of the project. Checking and signing of the data-packs by the Engineer’s representative shall be an on-going process during pipe manufacturing as it affects payments for finished pipes. Soft copies of the data-packs shall be made available to Rand Water periodically during manufacturing, on request.

<table>
<thead>
<tr>
<th>Data Pack Checklist and Reports</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cover Page: Project Name, Pipe Number, Dimensions (OD x thickness), Inspector</td>
</tr>
<tr>
<td>2. Coil Certificate</td>
</tr>
<tr>
<td>3. Dimensional measurements &amp; Visual Report</td>
</tr>
<tr>
<td>4. Hydrostatic Test &amp; X-ray/UT Reports</td>
</tr>
<tr>
<td>5. Blast Profile Report (microns)</td>
</tr>
<tr>
<td>7. Salt Test Report</td>
</tr>
<tr>
<td>8. Dust and Debris Report</td>
</tr>
<tr>
<td>9. Dry Film Thickness Reports (Coating and Lining)</td>
</tr>
<tr>
<td>10. Batch Numbers and Mixing Ratio (Base and Activator) – Coating and Lining</td>
</tr>
<tr>
<td>11. Mechanical Test Reports (Tensile and Bend Tests) – Independent Laboratory</td>
</tr>
<tr>
<td>12. Chemical Composition Report – Independent Laboratory</td>
</tr>
<tr>
<td>13. Dates and signatures to be included for all the reports in 1 to 12</td>
</tr>
<tr>
<td>14. Release and Dispatch Dates</td>
</tr>
</tbody>
</table>
PS 24 LIST OF DRAWINGS

The drawings issued to tenderers as part of the tender documents must be regarded as provisional and preliminary for the tenderer’s benefit to generally assess the scope of work. The work shall be executed in accordance with the latest available revision of the drawings approved for construction.

At the commencement of the Contract, the Engineer shall deliver to the Contractor copies of the construction drawings and any instructions required for the commencement of the Works. From time to time thereafter during the progress of the Works, the Engineer may issue further drawings or revisions for construction purposes as may be necessary for the adequate construction, completion and defects correction of the Works.

The following drawings (on page 86) form part of the Tender Document and are separately issued as part of Annexure 4. These drawings are for tender purposes only. A set of construction drawings will be issued to the Contractor on the commencement date.
<table>
<thead>
<tr>
<th>Drawing Number</th>
<th>Drawing Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>RA28830/0</td>
<td>H26 PIPELINE – AIR VALVE REPLACEMENT AT CHAINAGE 6195.31</td>
</tr>
<tr>
<td>RA28831/0</td>
<td>H26 PIPELINE – T-PIECE REPLACEMENT AT CHAINAGE 8903.34</td>
</tr>
<tr>
<td>RA28832</td>
<td>300MM DIA BRONBERG DOWNPIPE</td>
</tr>
<tr>
<td><strong>TYPICAL DETAILS</strong></td>
<td></td>
</tr>
<tr>
<td>A11791</td>
<td>STANDARD FLANGE DIMENSIONS</td>
</tr>
<tr>
<td>RA27329</td>
<td>DETAILS OF EXTERNAL MASS CONCRETE ACCESS STEPS</td>
</tr>
<tr>
<td>11852/1748</td>
<td>BRONBERG BALANCING RESERVOIR – GENERAL ARRANGEMENT AND CONCRETE DETAILS OF BREAK PRESSURE CHAMBER</td>
</tr>
<tr>
<td>RA12639</td>
<td>DETAILS OF STILLING PIPE SPECIALS FOR BRONBERG BREAK PRESSURE CHAMBER</td>
</tr>
<tr>
<td>A9858</td>
<td>STANDARD DETAILS OF GRSB RAIL AT ACCESS MANHOLES</td>
</tr>
<tr>
<td>11860</td>
<td>MANHOLE COVER AND FRAME</td>
</tr>
<tr>
<td>A8879</td>
<td>DETAILS OF CAST IN FRAME FOR VALVE CHAMBER</td>
</tr>
<tr>
<td><strong>REFERENCE DRAWINGS</strong></td>
<td></td>
</tr>
<tr>
<td>SO01865</td>
<td>RIETVALLEI – BRONBERGE – H26 PLAN AND LONG SECTION CHAINAGE 4000-6000m</td>
</tr>
<tr>
<td>SO01866</td>
<td>RIETVALLEI – BRONBERGE – H26 PLAN AND LONG SECTION CHAINAGE 6000-8000m</td>
</tr>
<tr>
<td>SO01867</td>
<td>RIETVALLEI – BRONBERGE – H26 PLAN AND LONG SECTION CHAINAGE 8000-8910.78m</td>
</tr>
<tr>
<td>MA05512</td>
<td>BRONBERG BALANCING RESERVOIR – REINFORCEMENT DETAIL OF BREAK PRESSURE CHAMBER SLAB LEVEL 1495.500</td>
</tr>
</tbody>
</table>

**NOTE:** ALL DRAWINGS ARE ATTACHED AS ANNEXURE 4, AND FORMS PART OF THE TENDER DOCUMENT.
PORTION 2 – VARIATIONS AND ADDITIONS TO THE STANDARDISED SPECIFICATIONS

PSA 3 MATERIALS

PSA 3.1 Quality

Where there is a standardization mark programme for any material, all such material supplied shall bear the official standardization mark.

Alternative materials or equipment proposed by the Contractor shall be tested. The test, as well as the materials or equipment, shall be approved by the Engineer prior to any such materials or equipment being built into the Works and all costs involved in testing shall be deemed to be included in the rates tendered.

PSA 4 PLANT

PSA 4.2 Contractor’s Office, Stores and Services

The Contractor’s camp shall be kept neat and clean at all times and all surplus or rejected material shall be removed from the site.

The Contractor will not be allowed to provide living accommodation for staff at the Contractor’s Site Camp. Overnight accommodation for security staff will be allowed.

PSA 5 CONSTRUCTION

PSA 5.1 Survey

PSA 5.1.1 Setting out of the Works

The Contractor shall establish his/her own pegs and reference lines from which the work can be set out. Bench marks will be established on site by Rand Water.

PSA 5.9 Methods of Construction (Sub-clauses 5.3, 5.4, 5.5 and 5.7)

Except where acceptance of the Contractor’s proposed methods of construction is stated in the letter in which the tender is accepted, acceptance of the tender does not signify acceptance of such methods of construction and does not in any way relieve the Contractor of any of his responsibilities for the Works, and it shall not be used as a basis for claiming compensation where the proposed methods of construction do not comply with the requirements of the specifications and are not approved subsequent to the award of the Contract.

PSA 5.10 Accommodation and Temporary Deviation of Traffic (Read with SANS 1921-2 Part 2)

The Contractor shall ensure that the excavations are protected at all times and adequately lit at night in terms of the Occupational Health and Safety Act. The Contractor shall provide, erect and maintain temporary road traffic signs that conform to the requirements of the “South African Road Traffic Signs Manual” as published by the CSIR in positions where required.

An adequate number of warning lights and/or flagmen and appropriate barricades, clearly visible to oncoming traffic, shall be provided at all times. If steel drums are used, they shall be ballasted with soil, sand, or stones and shall be white on the outside with reflective...
material. Nothing will be allowed to be placed on top of the drums and shall be maintained in a clean and effective condition.

The Contractor shall:

i. Construct and maintain such temporary accesses, roads, walkways, bypasses and/or parking areas as may be required to safely accommodate vehicular and pedestrian traffic from portions of the road affected by construction.

ii. Provide and maintain across-trench access to all stands and properties at all times.

iii. Where half-width construction is approve or appropriate, arrange his work that the traffic will at all times have free one-lane access to at least half the width of the roadway.

iv. Whatever possible, where half width construction is used, ensure that the whole road is open at night and to a good and safe trafficable condition

v. Ensure that the usable width of the road or by-passes is at least 6m for two-way traffic or at least 4m per lane for single-lane traffic.

vi. Provide measures, to the satisfaction of the Engineer, to control dust nuisance for the duration of construction, these measures may include, but is not limited to, spraying of water or placing of asphalt to the appropriate thickness.

vii. Maintain such by-passes for the duration of construction to a condition fit to safely accommodate road traffic.

viii. Demolish such by-passes on completion of construction and reinstate the area to its original condition on completion of construction.
PSA 8 MEASUREMENT AND PAYMENT

PSA 8.3.5 Health and Safety Plan

The sum shall cover the Contractor’s cost to provide a health and safety plan as well as any additional safety measures and/or appointments as may be required in terms of PS 10 and PS 11 or as ordered by the Engineer. Separate payment will be made for the fixed-charge and time-related components of the cost in terms of Clause 8.2 of SANS 1200 A.

Unit: Sum

PSA 8.3.6 Environmental Management Plan

The sum shall cover the Contractor’s cost to comply with the requirements of the Environmental Management Plan (See PS12) as well as any additional safety measures and/or appointments as may be required in terms of PS 10 and PS 11 or as ordered by the Engineer. Separate payment will be made for the fixed-charge and time-related components of the cost in terms of Clause 8.2 of SANS 1200 A.

Unit: Sum

PSA 8.3.7 Department of Public Works (If Applicable)

The sum shall cover the Contractor’s cost to comply with the specifications of the Department of Public Works, PW34: Appropriate Development of Infrastructure on Dolomite: Manual for consultants, as well as any additional safety measures and/or appointments as may be required in terms of PS 10 and PS 11 or as ordered by the Engineer.

Unit: Prov. Sum

PSA-8.7 Dayworks

Day works are covered in a separate Particular Specification and are therefore measured in dedicated section.

PSA 8.8.2 Accommodation and Temporary Deviation of Traffic

The sum shall cover the cost to supply and operate plant and machinery, supply and place materials and other measures and cost of labour for the deviation/accommodation of traffic to comply with all requirements as described in PSA 5.10. Separate payment will be made for the fixed-charge and time-related components of the cost in terms of Clause 8.2 of SANS 1200 A.

Unit: Sum

PSA 8.8.3 Protection of Railway line until Construction in vicinity is complete

The sum shall cover the cost to supply and operate plant and machinery, supply and place materials and other measures and cost of labour for the deviation/accommodation of traffic to comply with all requirements as described in PSA 5.11.

Unit: Sum

PSA 8.8.7 Dealing with Water

The sum shall cover the cost to keep the pipe trench, jacking’s and excavations free from water at all times during construction.

Unit: Sum
PSA 8.8.8 Discontinue operations and transfer plant, equipment and labour

The rate to discontinue operations at a point along the route of the pipeline and transfer plant, equipment and labour to a new point, shall include everything necessary to close down in sequence the various operations in the construction train and transfer them in sequence to the new point.

The Bill of Quantities includes items for a transfer over a plant and equipment route distance of up to 2km and a transfer over a route distance exceeding 2km. For purposes of classification the distance shall be measured along the shortest practical route along which the plant and equipment can be transported.

The rate shall cost the cost to comply with all requirements as described in PSA 5.12.

---------------------------------------------
Unit: No

PSA 8.8.9 Moving of equipment over road crossings and railway lines (If Applicable)

No additional payment will be made for moving equipment around or over these features in order to make connections to these pipe crossings.

PSA 8.8.10 Protection of road surfaces

The rate shall include for selecting, transporting and spreading suitable material in the 300mm thick protective layer and maintaining it while the excavation of the trench, installation of the pipe and backfilling operations are in progress. The rate shall also include the collection into piles, loading the material and the final cleaning of the road surfaces. Separate payment will be made for the fixed-charge and time-related components of the cost in terms of Clause 8.2 of SANS 1200 A.

---------------------------------------------
Unit: m²

PSA 8.8.11 Standing time

The rate shall include for overheads, plant charges, wages and all other costs incurred when the Contractor is unable to carry out the work of the contract, for reasons beyond his control.

---------------------------------------------
Unit: Days

PSA 8.8.12 Continue operations in confined and reduced working space width

The work will be measured by length over the distance that the work has to be carried out within a confined and reduced working space width.

The rate shall cover the cost of confining or limiting operations at a point along the route of the pipeline to a reduced working space width as instructed by the Engineer to a minimum of 10 m wide, including transfer of plant, equipment and labour and shall include everything necessary to confine the various operations in the construction train and continue the operations as required.

The Bill of Quantities includes for confined operations to be carried out over a route distance of up to 5 km in length. For purposes of classification the distance shall be measured along the shortest practical route along which the plant and equipment can travel.

The rate shall comply with all requirements as described in PSA 5.14

---------------------------------------------
Unit: m

PSA 8.9 Freehaul and Overhaul
Notwithstanding any clauses in any Standardized Specification or any Particular Specification or Standard Specification Section dealing with the definition, measurement and/or payment for transport, freehaul and/or overhaul, no measurement or payment for overhaul will be made. All haulage will be considered to be freehaul and the cost thereof will be deemed to be covered by the rates for the provision or disposal of the applicable material.

PSA 8.10 Specified Work Activity

The specific work activity identified in the Bill of Quantities, will be measured in the unit scheduled in the Bill of Quantities.

The sum or rate for such work activity:

- Shall cover the cost of all materials, labour and plant required to execute and complete the work activity as specified or described in the Bill of Quantities or as shown on the drawing(s), and/or, where appropriate, shall
- Cover the cost of all requirements and obligations with respect to the work activity as specified or described in the Bill of Quantities.

PSA 8.11 Cost of Health and Safety

The payment items for Occupational Health & Safety are contained in the Commercial Part of the Tender Document i.e. Bill of Quantities. A pro-forma BOQ is given below as a guide to the items the Contractor should allow for in his pricing.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation of Contractor’s Site Specific Health and Safety Plan</td>
<td>The rate for this item must cover all expenses incurred in preparing the Contractor’s project specific Health and Safety Plan as required by the Client’s Site specific Health and Safety Specification in this document</td>
<td>Lump Sum</td>
</tr>
</tbody>
</table>
| Principal Contractor’s initial obligations in respect of the Occupational Health and Safety Act and Construction Regulations | The full amount will be paid in one instalment only when the Client’s Agent has verified and approved the following
  (a) The Principal Contractor has notified the Provincial Director of the Department of Labour in writing of the project, Annexure A to the Regulations.
  (b) The Principal Contractor has made the required initial Appointments of Employees and Contractors.
  (c) The Client has approved the Principal Contractor’s project Health and Safety Plan.
  (d) The Principal Contractor has set up his Health and Safety File. | Lump Sum   |
<p>| Principal Contractor’s time related obligations in respect of the Occupational Health and Safety Act and Construction Regulations | The amount shall represent full compensation for that part of the Principal Contractor’s general obligations in terms of the Occupational Health and Safety Act and Regulations which are mainly a function of time. Payment will be made when the Client’s Agent has verified the Principle Contractor’s compliance as part of the audit. This will include the updating and administration of the Health and Safety file | Month      |</p>
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provision of Personal Protective Equipment (PPE)</td>
<td>The rates for these items shall include for the procurement, delivery, storage, distribution and all other actions required for the supply of PPE to the employees of the Principle Contractor, full or part time, requiring them. Contractors are responsible for their on costs in this regard. Any items of PPE not included on the list will be paid for only after the Engineer has agreed to their acquisition.</td>
<td>Lump Sum</td>
</tr>
<tr>
<td></td>
<td>Items listed will include, among others which may be noted, are: hard hats, reflective vests, reflective bibs, high visibility overalls, protective foot wear, fall arrestor harness and tethers, gloves, ear muffs, earplugs and dust masks of appropriate type. Normal items such as standard overalls, waterproof clothing, gum boots and standard workshop safety equipment such as welding masks and goggles will not be paid for.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Payment will be based on the issues register for PPE as kept by the Construction Health and Safety Officer, backed up by paid invoices if requested.</td>
<td></td>
</tr>
<tr>
<td>Provision of full time Construction Health and Safety Officer</td>
<td>The Tender sum shall include for the cost of a Construction Health and Safety Officer on a full time basis, his overheads, transport and all others items necessary for the proper carrying out of his duties, which include the induction and training of all persons on site. If a part time safety officer is appointed, by agreement with the Employer, then the amount Tendered will be prorated according to the amount of time spent on the project.</td>
<td>Lump Sum</td>
</tr>
<tr>
<td>Costs of Medical Surveillance</td>
<td>This item shall covers all costs in involved in the obtaining of baseline, periodic (at least annually) and exit medical certification and conducting medical surveillance for all workers and especially operators of Construction vehicles and mobile plant as contemplated in CR 21(d) (ii); Workers at Heights, Regulation 8 (2) (b) of the Construction Regulations and Workers exposed to hazardous chemicals including bituminous fumes under Regulation 7 of the HCSR; for temporary workers and workers exposed to noises at or above the limits given in the Noise-induced Hearing Loss regulations, as stipulated above.</td>
<td>Lump Sum</td>
</tr>
<tr>
<td></td>
<td>Workers in the permanent employ of the Contractor will only be paid for if their certificates require updating. Chest x-rays will be required in the case of workers who may be exposed to high concentrations of dust (silica).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C.06 a) Initial (baseline) medical examinations, including audiometric and lung function testing.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C.06 b) Periodic examinations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C.06 c) Exit examinations</td>
<td></td>
</tr>
<tr>
<td>Induction Training</td>
<td>This item shall cover all costs incurred for the health and safety inductions as set out on Regulation 7 of the</td>
<td>Unit</td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
<td>Unit</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>------</td>
</tr>
<tr>
<td>Construction regulations and the proof of induction required. Payment will be made on the figures contained in the induction section of the Health and Safety File.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provision of First Aid Boxes including emergency safety equipment such as fire extinguishers</td>
<td>The rate for this item shall cover all costs incurred in the provision and maintaining of first aid boxes as well as other emergency safety equipment which includes, but will not be limited to the provision of fire extinguishers.</td>
<td>Unit</td>
</tr>
<tr>
<td>Transportation of Workers</td>
<td>The Lump sum tendered under this Item shall cover all costs involved in the safe transportation of workers as outlined above. Payment will be made in equal amounts for the duration of the contract.</td>
<td>Lump Sum</td>
</tr>
<tr>
<td>Welfare Facilities</td>
<td>Adequate toilets and hand washing facilities, clean, safe drinking water, sheltered eating facilities, showering and changing facilities for each sex</td>
<td>Lump Sum</td>
</tr>
<tr>
<td>Occupational Hygiene Surveys</td>
<td>The lump sum tendered for this item shall cover the costs of the anticipation, recognition, evaluation, control and prevention of hazards from work that may result in injury, illness, or affect the wellbeing of workers. These hazards or stressors are typically divided into the categories biological, chemical, physical, ergonomic and psychosocial.</td>
<td>Lump Sum</td>
</tr>
<tr>
<td>Training</td>
<td>The Lump sum tendered under this Item shall cover all costs involved in Occupational Health and Safety Training Requirements: (as required by the Construction Regulations and as indicated by the SHE Specification Document &amp; the Risk Assessment/s and recommendations by the Health and Safety Committee.</td>
<td>Lump Sum</td>
</tr>
<tr>
<td>Security requirements</td>
<td>The Lump sum tendered under this Item shall cover all costs involved in providing a Security Guardhouse for security guards on-site with ablution facilities where appropriate, a Visitor's register and Occurrence. Two way radio or cell phone to report emergencies to the relevant authorities, site safeguarding and full security uniform worn at all times.</td>
<td>Lump Sum</td>
</tr>
<tr>
<td>Employee Wellness Programs</td>
<td>This item shall cover costs of programs implemented improve the health of the labour force, mentally, physically and socially.</td>
<td>Lump Sum</td>
</tr>
<tr>
<td>Submission of the Health and Safety File (hard and soft copies)</td>
<td>Expenditure under this item shall be made in accordance with the general conditions of contract. This amount will be paid only once the Principal Contractor has met all his obligations in respect of the Occupational Health and Safety Act and the Construction Regulations and has submitted his Health and Safety File complete as envisaged on this specification to the Client’s satisfaction.</td>
<td>Lump Sum</td>
</tr>
</tbody>
</table>

**PSA 8.12 Cost of Environment**

The payment items for Environmental issues are contained in the Commercial Part of the Tender Document i.e. Bill of Quantities. A pro-forma BOQ is attached to this SHE Specification as a guide to the items the Contractor should allow for in their pricing.
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
</tr>
</thead>
</table>
| Signage                                 | The rate for this item must cover all expenses incurred in preparing signage at the entrance of the site offices indicating the following information  
  - The contractor’s contact numbers  
  - Authorisations details  
  - ECO details  
  - Emergency numbers and provision for: – snake removal, bee removal, fire, large hydrocarbon spillages, sewerage spillages  
  Signage measuring 30mmx30mm must also be made available for no go areas. | Lump Sum         |
| Pollution prevention                    | The rate for this item shall include costs for identification and reduction or elimination of activities, areas, or processes which create excessive waste products or pollutants. It shall include but not be limited to the provision of adequately serviced ablution facilities, Screening for unsightly works and water cart/s for adequately watering down the site. | Lump Sum         |
| Erosion control and silt management     | The amount shall represent the costs associated with the practice of preventing or controlling wind or water erosion during construction. The erosion control measures must effectively prevent water pollution, soil loss, wildlife habitat loss and human property loss. The rate shall also include the costs of silt control where devices shall be designed to keep eroded soil on a construction site, so that it does not wash off and cause water pollution to a nearby stream, river, lake, or dam. | Lump Sum         |
| Work in sensitive areas                 | The Tender sum shall include for the cost associated with the protection of areas where the natural environment can easily be harmed. Control measures will be as indicated in the EMPr.                                                      | Lump Sum         |
| Waste disposal provision                | The Tender sum shall include for the cost for proper disposition of discarded or discharged material where it be hazardous or non-hazardous waste, in accordance with local environmental guidelines or laws.                       | Lump Sum         |
| Administration and documentation        | The rate for this item must cover all expenses incurred in the preparing and maintenance of an environmental file which includes but will not be limited to permits and licenses, EMPr, Environmental audit reports, Complaints register, Agreements with landowners, Noncompliance notifications, Waste disposal documentation, Safety data sheets for all chemicals | Lump Sum         |
PSA 8.16 As built

The sum shall cover the Contractor's cost of all materials, labour and plant required to execute and complete the work activity as specified under PS 13 or described in the Bill of Quantities or as shown on the drawing(s), and/or, where appropriate, shall cover the cost of all requirements and obligations with respect to the work activity

--------------------------------------------------------------------------------------------------------
Unit: Sum
PSAB 3 MATERIALS

Delete the first sentence and substitute the following:

The Contractor shall supply and furnish two air-conditioned “Kwikjack” or similar (6m x 3m) removable offices for the use of the Engineer and his/her staff, and one air-conditioned “Kwikjack” (9m x 3.4m) conference facility for conducting meetings.

Add to the Sub-clause:

In addition to the furnishings listed under sub-items (a) to (i), the following shall be provided and properly maintained:

(j) electrical installation (per office) to include sufficient fluorescent lighting and three 15A plug points, plus two adequately sized air conditioning units (for heating and cooling) for each unit;
(k) covered parking for five vehicles
(l) un-covered parking space for two vehicles
(m) two “Barhold” or similar wall mounted racks each with 6 clamps suitable for hanging A0 sized drawings
(n) one large conference table (not plastic)
(o) ten additional chairs
(p) additional two desks having a top of size at least 1.5m x 0.9m and at least one lockable drawer per unit;
(q) acceptable venetian blinds for all windows;
(r) microwave oven;
(s) white boards (3m x 2m) with four colour markers per Office / Conference Facility;
(t) two pin boards (2m x 1m) per Office / Conference Facility;
(u) one refrigerator of at least 315 litre capacity;
(v) one kettle of at least 2 litre capacity, one tea / coffee set comprising six cups and saucers, six mugs, six teaspoons, one teapot, one sugar bowl and one milk jug
(w) Fire extinguisher 9.0kg all purpose (per office and conference facility)

PSAB 4 PLANT

PSAB 4.1 Telephone

Delete sub-clause and substitute the following:

An approved smart phone (cellular phone), shall be provided by the Contractor for the sole use of the Engineer's Representative. The Contractor will be required to pay the connection charges, service fees, rent, insurance’s, operation and maintenance costs, including all consumption and call charges with regard to the above, with the provision that the total cellular phone call charges do not exceed R1000.00 per month.
PSAB 4.2 Survey Equipment (New Clause)

Add new Sub-Clause:

The Contractor shall provide the following survey equipment on the Site for use by the Engineer from the commencement to the completion of the Works:

- One automatic reading Engineer’s level plus tripod;
- One leveling staff (5m long, 1 cm graduations);
- One staff angle bubble;
- One metal change-point for leveling;
- One separate plumb-bob;
- One spirit level (one metre long);
- One hammer (2kg) with steel or wooden pegs as necessary;
- One 50 m steel tape;
- One 5.0 m (or longer) retractable steel tape.

The Contractor shall keep the equipment continuously insured against any loss, damage, or breakage and he/she shall indemnify the Engineer and the Employer against any claims in this regard. Upon completion of the Works the survey equipment as listed above shall revert to the Contractor.

The Contractor shall maintain the equipment in good working order and keep it clean until the completion of the Works. The Engineer’s level is to be calibrated at an accredited facility on a quarterly basis.

PSAB 5 CONSTRUCTION

PSAB 5.2 Engineer’s Office

Add to the Sub-Clause:

The toilet facilities provided for the sole use of the Engineer or his/her representative(s) shall be of the chemical type, maintained in a hygienic and sanitary condition and shall be removed on completion of the Works. The facilities provided shall conform to the local health authority’s requirements as applicable and the Contractor shall pay all sanitary fees and charges.

PSAB 5.4 Telephone

Delete the sub-clause.

PSAB 5.5 Survey Assistants

Delete the first sentence and substitute the following:

The Contractor shall make available to the Engineer two assistants as and when required for use on and about the site, on survey and other work associated with the project directed by the Engineer at all reasonable times.
PSC 5 CONSTRUCTION

PSC 5.1 Areas to be Cleared and Grubbed

Only the approved minimum area required for the execution of the Works, including areas on which material shall be stockpiled for later reuse or on which material shall be dumped and spread, shall be cleared and grubbed.

Where excavations are required under existing concrete or bricked paved areas, the existing concrete surfacing shall be neatly cut with a suitable blade and the concrete or brick surfacing shall be carefully removed, stacked and cleaned for reuse. Where excavations take place under road surfaces, the bitumen surfaces shall be neatly cut with a suitable blade and the surfacing material removed within the limits of the excavation and discarded at the disposal site.

For pipe trenches, generally a sufficiently wide strip equal to the trench width plus the estimated allowance for trench side slopes plus the width of the stockpiled backfill, bedding and topsoil materials (Where relevant) and a 600 mm width (Which shall be maintained alongside the trench) plus the width of access to the trench, shall be cleared. The area to be cleared shall also allow for working space for a pipe laying platform, an access road, pipe storage strip and pipe storage mounds alongside the trench for pipe laying operations.

PSC 5.6 Conservation of Topsoil

Topsoil to a depth of 150mm, if available, shall be removed from the areas to be cleared and grubbed and stockpiled on approved sites for later use. Until required for later use, the stockpiles of topsoil material shall be stabilized by watering or other approved means.

PSC 5.9 Clear and grub site for trench construction

See PSC 5.1.

PSC 5.10 Remove and grub large trees and tree stumps of girth over 1m

As far as practical, trees are to remain in position. The Contractor may remove trees that prevent access or construction with the prior approval of the Engineer. Large trees within the road reserve must be carefully removed and planted at a temporary site for later replanting by others on completion of the installation of the pipeline (See PS2.6).
PSC 8.2.12 Crossing Fences or Walls

When it is necessary to cross a fence/wall a 5m wide double gate is to be installed in the existing fence and 20m of fence is to be refurbished as shown on Drawing A4085. The rate shall cover the cost of all activities, plant, material, and labour time to comply with the drawing requirement.

Unit: No

PSC 8.2.13 Fire breaks

Measurement will be in square metres over the area instructed by the Engineer.

Unit: Sq. m

PSC 8.2.14 Supply and erect fences and gates for working strip

It is necessary to protect the working area from public and animals. Hence, prior commencing works, 1.8m high cattle proof temporary fence shall be erected on both sides of the temporary working strip or servitude with gates. The rate shall cover the cost of all activities, plant, material, and labour to erect and dismantle the fence and gates for reuse.

Unit: m
PSDA EARTHWORKS (SMALL WORKS) (SABS1200DA-1989)

PSDA 5 CONSTRUCTION

PSDA 5.2.6 Freehaul and Overhaul

See PS19 and PSA 8.9

PSDA 8 MEASUREMENT AND PAYMENT

PSDA 8.3.3 Overhaul

See PS19 and PSA 8.9

PSDA 8.3.9 Survey of Surrounding Structures before Blasting/Demolishing (New Sub-Clause)

The rate shall cover the cost to examine and measure up any buildings, houses or structures in the vicinity of the proposed blasting/demolishing and establish and record together with the owners thereof the extent of cracking or damage that may exist before commencement of blasting operations.

Unit: Sum

PSDA 8.3.10 Photographic Record (New Sub-Clause)

The rate shall cover the cost of providing a photographic record of neighbouring structures before blasting/demolishing commences.

Unit: Sum
PSDB EARTHWORKS (PIPE TRENCHES) (SABS1200DB-1989)

PSDB 5 CONSTRUCTION

PSDB 5.6.8 Transport for Earthworks for Trenches

See PS 19 and PSA 8.9

PSDB 5.11 Shoring

The Contractor shall have shoring materials on site at all times for additional shoring as being ordered by the Engineer. Shoring shall be installed and maintained in the positions and for the duration as approved by the Engineer.

PSDB 5.12 Soft Materials and Rock

The material is classified in the price schedules under 2 headings, i.e. soft material and rock and the following shall be determining factors in the classification of the material:

Soft Material: shall mean all material not classified below, and shall include all material that is pickable and can be excavated by machinery or appropriate capacity and power for the rate of excavation required, including hard clay, ouklip, calcareous material and sort rock that has not been consolidated into a hard un-pickable mass, and closely to medium jointed andesites. No intermediate material will be classified.

Rock: shall mean all rock that is partially jointed or un-weathered and shall include oxidised hard shale, hard fireclay, hard coal conglomerate, hard homogenous ouklip, granite, quarts, dolomite, etc or materials of similar hardness which in the opinion of the Engineer can only be removed by drilling and blasting. Solid boulders in excess of 0.5 m$^3$ shall be classified as rock.

PSDB 8 MEASUREMENT AND PAYMENT

PSDB 8.3.2.(b)(1) Extra-over item (a) above for 1) Intermediate excavation

No intermediate excavation will be classified.

PSDB 8.3.2.(b)(2) Extra-over item (a) above for 2) Hard rock excavation

Hard rock excavation shall be classified as per SABS 1200 D 3.1.2I.

The decision of the Engineer as to the classification of the material shall be final and binding and any objection to the classification shall be made before the trench is backfilled. The quantities listed in the Bill of Quantities are purely provisional and payment will be made on the actual volume of each class of material as determined after the trench has been opened.  

----------------------------------
Unit: m$^3$

PSDB 8.3.3.1(d) Make up deficiency in backfill material – sieve from excavated material

The Engineer may instruct the Contractor to sieve excavated material to make it suitable for backfill or bedding.

----------------------------------
Unit: m$^3$

PSDB 8.3.3 Excavation ancillaries

PSDB 8.3.3.3 Compaction in Road Reserves
Delete the heading and substitute:

Compaction in areas subject to road traffic

d) Under roadways to 93% MOD AASTHO----------------------------- Unit: m³

(b) Elsewhere to 93% MOD AASTHO------------------------------- Unit: m³

PSDB 8.3.3.4 Overhaul

See PS 19 and PSA 8.9

PSDB 8.3.6.2 Top soil

Add the following clause. The rate shall cover the cost of excavating from stockpiles (See clause 8.3.11 of SANS 1200 DB), hauling and spreading in terms of SABS 1200DA 5.2 to a compacted depth of 300mm.

--------------------------------- --------------------------------- --------------------------------- Unit: m²

PSDB 8.3.5(b) Services that adjoin a trench: Overhead Power Cables

The rate shall cover the cost of all measures to be taken in order to comply with all requirements of the relevant authorities to protect the service from damages, to ensure the stability of the poles and cables and to ensure the safety of the labourers, the public or any other person for the duration of construction.

--------------------------------- --------------------------------- --------------------------------- Unit: m

PSDB 8.3.5(b) Services that adjoin a trench: Overhead Telephone Cables

The rate shall cover the cost of all measures to be taken in order to comply with all requirements of the relevant authorities to protect the service from damages, to ensure the stability of the poles and cables and to ensure the safety of the labourers, the public or any other person for the duration of construction.

--------------------------------- --------------------------------- --------------------------------- Unit: m

PSDB 8.3.5(b) Services that adjoin a trench: Underground Telephone Cables

The rate shall cover the cost of all measures to be taken in order to comply with all requirements of the relevant authorities to protect the service from damages, and to ensure the safety of the labourers, the public or any other person for the duration of construction.

--------------------------------- --------------------------------- --------------------------------- Unit: m

PSDB 8.3.8 Excavate by hand

The rate shall cover the cost of labour for hand excavation to expose all services in soft material. Measurement will be in cubic metres to the length and levels as instructed by the Engineer.

--------------------------------- --------------------------------- --------------------------------- Unit: m³

PSDB 8.3.9 Backfill with soil cement fill

The rate shall be for the supply of cement, mixing, placing and compaction of the material. The soil shall be selected from the trench excavation. Measurement will be in cubic metres to the length and levels instructed by the Engineer or as detailed on relevant Drawings.
PSDB 8.3.10 Backfill the trench and other excavations with crusher run material

The rate shall include for the supply and placing of the material as specified in the Bill of Quantities or indicated on the Drawings. Measurement will be in cubic metres to the length and levels instructed by the Engineer or as detailed on relevant Drawings.

Unit: m³

PSDB 8.3.11 Placing of geotextile filter blanket

The rate shall include for the supply and placing of the geotextile as specified in the Bill of Quantities or indicated on the Drawings. The rate shall include for losses as a result of overlaps (200 mm minimum) and over-excavated trench widths. Measurement will be in square metres.

Unit: m²

PSDB 8.3.12 Excavate to expose existing steel pipes, backfill and compact

(a) Excavation in all material to completely expose existing steel pipe in preparation for cross connection installation and inline valve installation:

(i) For total excavation depth not exceeding 1,0m
---------------------------------------------------------- Unit: m

(ii) For total excavation depth exceeding 1,0m but not exceeding 2,0m
---------------------------------------------------------- Unit: m

The rate shall be for excavation in all materials to expose the existing pipe for cross connection installation and inline valve installation. The excavation shall be excavated by a combination of mechanical and manual means that will avoid damage to the pipe.

PSDB 8.3.13 Testing

Provisional sum for additional geotechnical investigations (including analysis of bedding, compatibility tests, etc) by nominated specialists, where ordered by the Engineer.

Unit: m³

PSDB 8.3.12 Kerbing

Provisional sum for reinstatement of kerbing as ordered by Engineer

Unit: m³

PSDB 8.3.12 Reinstatement of surfaces

Provisional sum for reinstatement of surfaces as ordered by Engineer

Unit: m³
PSGA CONCRETE – SMALL WORKS (SABS1200GA-1982)

PSGA 8 MEASUREMENT AND PAYMENT

PSGA-8.1.2 Reinforcement

Replace subclause 8.1.2.2 with the following:

PSGA 8.1.2.2

Mild steel and high tensile steel will be measured by mass for the diameters or range of diameters as scheduled.

Welded mesh will be scheduled separately for each type and mass per square metre of mesh.”

Replace subclause 8.1.2.3 with the following:

PSGA 8.1.2.3

The unit rate for steel bars shall cover the cost of supply, cutting, bending, placing in position, and fixing of the reinforcing and supporting steel scheduled. The rate shall also include the provision of all spacer devices and binding wire, as well as the cost of tests in terms of SANS 920.

The unit rate for welded mesh shall cover the supply, cutting and placing of mesh, as well as the cost of all waste due to laps.”

PSGA 8.2.5 Sumps

The rate shall cover the cost to form the sump as well as the supply and installation of the standard cast-in frame and sump cover.

PSGA 8.2.6 Access Manholes

The rate shall cover the cost to form the manhole for the standard Rand Water manhole cover and frame.

PSGA 8.9 Hydrophilic Water bar

The rate shall cover the cost to supply and install the hydrophilic waterbar “Sika swell 2507H”, or similar approved waterbar, around pipes through concrete walls.

PSGA 8.10 Air Valve Chamber (Precast concrete sections)

The rate shall cover the cost for the Contractor to supply and operate all plant and machinery and supply all material and the cost of labour for the excavation for the construction of and the backfilling and reinstatement around the air valve chamber:

- Build air valve chambers using precast sections in accordance with drawing RA28830.
- Supply, deliver and install pipe specials, fittings and valves (including flanges as RW specification) for air valve chamber.
- Rand Water will supply manhole cover and frame (refer to Drawing No. 11860).

**PSGA 8.11 Air Valve Chamber (Reinforced concrete) NOT APPLICABLE**

The rate shall cover the cost for the Contractor to supply and operate all plant and machinery and supply all material and the cost of labour for the excavation for the construction of and the backfilling and reinstatement around the air valve chamber:
- Build 2.2m high air valve chamber from reinforced concrete in accordance with drawing XXXXXX.
- Rand Water will supply manhole cover and frame (refer to Drawing No. 11860).

**PSGA 8.12 Raise Air Valve Chamber**

The Engineer may instruct the Contractor to raise the air valve chamber in increments of 500mm. The rate shall cover the cost for the Contractor to supply and operate all plant and machinery and supply all material and the cost of labour for the raising of the air valve chamber.

**PSGA 8.13 Scour Valve Chamber (NOT APPLICABLE)**

The rate shall cover the cost for the Contractor to supply and operate all plant and machinery and supply all material and the cost of labour for the excavation, for the construction of and the backfilling and reinstatement around the scour valve chamber:
- Build scour valve chambers using precast sections in accordance with drawing (no drawings since drawings are not applicable as this valve is not required). This will include:
  - a 250mm precast starter ring
  - a 250mm finishing ring. The finishing ring on the outfall section shall have 5 no. 150 diameter openings to be at least 300mm above NGL
  - all grab rails specified
  - a valve support for 200mm diameter valve as per drawing A12210
  - galvanised access irons
  - all concrete work specified including pipe encasement 2.5mm long
- Rand Water will supply and the Contractor will install:
  - manhole cover and frame (refer to drawing no 11860).
- Supply, deliver and install pipe specials, fittings and valves (including flanges as RW specification) for air valve chamber.
- Reno mattress will be measured separately.

**PSGA 8.14 Raise Scour Valve Chamber (Not Applicable)**

The Engineer may instruct the Contractor to raise the air valve chamber in increments of 500mm. The rate shall cover the cost for the Contractor to supply and operate all plant and machinery and supply all material and the cost of labour for the raising of the scour valve chamber.
PSGA 8.15 Marker Beacons (Not Applicable)

The rate shall cover the cost to take delivery at Central Depot (located 10km south of the head office of Rand Water at the Zwartkoppies pump station), transport to site, offload, store, handle and install marker beacons in the positions along the pipe route as indicated by Rand Water.

Unit: No
PSHA STRUCTURAL STEELWORK (SUNDRY ITEMS) (SABS1200HA-1990)

PSHA 8 MEASUREMENT AND PAYMENT

PSHA 8.3.7 Grab rails

The rate shall cover the cost of manufacturing or supplying, installing and fixing the grab rails including any welding (where applicable), grouting in and all bolts complete with nuts and washers, complete as indicated on the Drawings.

Unit: No

PSHA 8.3.8 Valve Support

The rate shall cover the cost of manufacturing or supplying, installing and fixing the valve support including any welding (where applicable), grouting in and all bolts complete with nuts and washers, complete as indicated on the Drawings.

Unit: No

PSHA 8.3.9 Steel Platform (Not Applicable)

The rate shall cover the cost of manufacturing or supplying, installing and fixing the steel platform, complete as indicated on the Drawings, (no drawings since drawings are not applicable as this valve is not required) including

- structural steelwork, flooring, kick plates, cleats etc
- any welding (where applicable), grouting in and all bolts complete with nuts and washers.

Unit: No

PSHA 8.3.10 Manhole frames and covers

The rate shall cover the cost for the collection and installation of the standard Rand Water manholes. (Refer to Drawing No. 11860)

Unit: Sum
PSLB BEDDING – (PIPES) (SABS1200LB-1983)

PSLB 8 MEASUREMENT AND PAYMENT

PSLB 8.1.3 Volume of Bedding Materials

Add the following to LB 8.1.3

e) The volume calculated for bedding material shall exclude the volume pipe.

PSLB 8.1.6 Freehaul

See PS 19 and PSA 8.9

PSLB 8.2.1 Provision of Bedding from Trench Excavation

Delete the two paragraphs “The rate shall cover...” and “... around the pipeline.” And replace with the following:

The rate shall cover the cost of acquiring, from the pipeline excavation, bedding material that complies with the relevant requirements of the specification and of delivering it to points alongside the trench spaced to suit the Contractors methods of working. The rate shall also cover the cost of handling bedding material from alongside the trench and placing it under and around the pipe.

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Unit: m$^3$

PSLB 8.2.2.2 From borrow pits

Amend Sub-Clause LB 8.2.2.2 to read as follows:

The rate shall cover the cost of acquiring the required bedding material, that complies with the relevant requirements of the specification, from borrow pits selected by the Contractor (subject to approval by the Engineer) and of delivering it to points alongside the trench spaced to suit the Contractors methods of working. The rate shall also cover the cost of handling the bedding material from alongside the trench and placing it under and around the pipe.

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Unit: m$^3$

PSLB 8.2.2.3 From commercial sources

The rate shall cover the cost of acquiring the required bedding material, that complies with the relevant requirements of the specification, from commercial sources and of delivering it to points alongside the trench spaced to suit the Contractors methods of working. The rate shall also cover the cost of handling the bedding material from alongside the trench and placing it under and around the pipeline.

--------------------------------

Unit: m$^3$

PSLB 8.2.2.4 From commercial sources (In dolomitic zones where the trench floor is inadequate)

The rate shall cover the cost of acquiring the required bedding material, that complies with the relevant requirements of the specification, from commercial sources and of delivering it to points alongside the trench spaced to suit the Contractors methods of working and of disposing of displaced material. The rate shall also cover the cost of handling bedding material from alongside the trench and placing it under and around the pipeline.

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Unit: m$^3$
PSLB 8.2.5 Overhaul

See PS 19 and PSA 8.9

PSLG PIPE JACKING (SABS 1200 LG – 1983)

PSLG 2 INTERPRETATIONS

PSLG 2.3 Definitions

Add the Sub-Clause:

The Works. All the components making up the entire jacking operation including construction of both thrust and reception pits as well as the excavation, placing and jacking of the pipes together with all support activities.

PSLG 3 MATERIALS AND WORKMANSHIP

PSLG 3.1 PIPES FOR JACKING

Delete the Sub-Clause and substitute with the following:

Pipes for jacking shall be SC Type reinforced concrete manufactured in accordance with SABS 677: Concrete Non Pressure Pipes as published in General Notice 463 of 9 July 1982 to the D load specified on the drawings. All pipe joints shall be sealed. The actual diameters of the pipes shall not be less than the nominal diameters given on the drawings or stated in the schedule.

In addition to withstanding the specified two (or three), edge bearing test-load, the pipes shall be capable of withstanding, without damage during jacking, the maximum longitudinal force to be transmitted by the Contractor's jacks and method of operation.

The design of the pipes shall be determined by the Contractor to suit the proposed method of construction but shall not be less than the class of pipe or type of pipe stated on the drawings or determined by the Engineer. The pipes shall incorporate extended modified Ogee type joints which shall be seated by means of a rubber ring. On longer pipe jacks it may be necessary to use a rebated butt joint to withstand the higher jack forces. However, the decision of type of joint to use is that of the Contractor. Irrespective of joint type used the Contractor must adhere to the joint sealing details given in PSLG 3.1.2 below.

At least one hole shall be formed in the crown of each pipe to allow for the injection of both a lubricant, if required, and a final grout. The final layout of grout holes is the Contractor’s responsibility.

The Contractor must ensure that the pipes shown on the drawings and mentioned in the documents can be jacked the full distance mentioned in the Scope of Work.
PSLG 3.1.1 Intermediate Jacking Pipes (New Sub-Clause)

In circumstances where it is desirable to use jacking pipes intermediate between manholes or junctions the number and type of such intermediate jacking pipes is to be determined by the Contractor. The joint between pairs of intermediate jacking pipes shall be protected externally by a cylindrical mild steel sleeve of wall thickness at least 8mm, which shall overlap the pipes on either side of the joint for a distance of at least 150mm. The joint is to allow a substantial and permanent caulked seal within the joint.

PSLG 3.1.2 Joints and Seals (New Sub-Clause)

It is the Contractor’s choice as to type of joint used in the pipes to be jacked. However, applied forces used to jack the pipes must be uniformly distributed around the joint to avoid damaging the joint. Pipes that are delivered to site with damaged joints must be rejected by the Contractor.

A seal is required at each joint to minimise ingress of water. Ingress of water into the jacked pipes stemming from the joints should not exceed 5 litres per minute in total. The chipboard packing used to distribute stresses on the joints should be raked out to a depth of 25mm on the inside all round and sealed with a durable flexible sealing agent such as bituseal, thioflex or similar.

PSLG 5 CONSTRUCTION

PSLG 5.1.1 Authority to Jack Pipelines under Roads and Railway Lines

The Employer will obtain permission from the relevant authorities for jacking under roads and railway lines. However, the Contractor is to confirm that such permission has been granted before commencing work.

PSLG 5.1.2 Competence

Jacking and excavation shall be supervised and undertaken by persons fully conversant with this work.

PSLG 5.1.4 Contractor Solely Responsible

Add to the Sub-Clause:

No approval of any material or plant and its operation, or of any construction procedure to be used will imply any relaxation of the requirements governing the quality of the materials or of the finished work or relieve the Contractor of his/her responsibilities under the Contract.

PSLG 5.2.3 Recording of Movements

PSLG 5.2.3.1 General

Delete the Sub-Clause and substitute with the following:

The Contractor shall take movement measurements correct to 1,0mm and shall record any change in the line and level of road and railway line before the start of the Contract and at such intervals as directed by the Engineer for a period up to 12 months after the issue of the Completion Certificate. However, no more than 15 sets of reading will be required in this period. A copy of these measurement records shall be made available to the Engineer.
PSLG 5.2.3.2 Working under roadways

Add to the Sub-Clause:

The Contractor shall bear full responsibility for any consequential damage to persons and property resulting from subsidence.

PSLG 5.2.3.3 Working under railway lines (New Sub Clause)

Before jacking under railway lines the Contractor shall take elevation readings at the top (Crest) of the fill embankment and at the toe of the ballast as well as on top of each railway line along the centre line of the pipe jack and at intervals of 1 500 mm apart up to a distance of 9m from the pipe centre line. The profile of the railway embankment must be measured and recorded from toe to toe (of the embankment) before pipe jacking starts.

The intervals at which movement readings are to be taken over a period of 12 months is the same as mentioned above for roads (PSLG 5.2.3.1).

PSLG 5.2.3.4 Remedial Measures (New Sub-Clause)

All remedial measures will be carried out and completed to the standards set by the various controlling authorities.

Roads – Remedial measures plus time related professional costs needed to reinstate roads and fill embankments will be the Contractor's liability. Remedial measures are those relating to the need to put right settlement and movement of road surfaces, formation layers or fill embankments including providing all road safety markers, traffic control, or signs and all associated needs of the road authority to allow remedial work to proceed without danger to workers or traffic. The Contractor must arrange all matters regarding remedial work with the road authority. In most instances these measures will comprise jacking up concrete roads using grout and regrading to original elevation formation layers and premix surfacing as well as mending drainage fixtures where these have been damaged. All the remedial work will be directed by the Engineer to his/her satisfaction and approval.

Railways – Remedial measures plus time related professional costs needed to reinstate railway lines and fill embankments will be the Contractor's liability. Remedial measures are those relating to the cost of realigning railway lines, regrading of ballast, and stabilizing fill embankments. All the remedial work will be directed by the Engineer to his/her satisfaction and approval. A provisional sum is given in the Bill of Quantities to cover the cost of strapping railway lines and provided for a signalman to activate speed deregulation.

PSLG 5.4 EXCAVATION

PSLG 5.4.1 General

Except as required in terms of 5.2.5 SABS 1200 LG 1983 the provisions of SABS 1200 DA shall apply.

PSLG 5.4.2 Thrust Pits

In the second paragraph, delete the words "Factories, Machinery and Building Work Act, 1941 (Act 22 of 1941)" and replace with the words "Occupational Health and Safety Act 1995"

Add to the Sub-Clause:
Claims arising out of any accidents or incidents in or adjacent to these access pits will not be considered by the Employer.

Stormwater control measures around these pits are also necessary to prevent water ingress into the pits. Provision must be made by the Contractor to keep both thrust and reception pits free of seepage and stormwater.

Thrust pits will in general only be permitted at positions indicated on the drawings or where manholes or junctions are required. Jacking pits shall be of sufficient size to accommodate the jacking operation and any manhole structure to be constructed upon completion of the jacking. The approximate dimensions of the pits shall be agreed with the Engineer before work commences. The Contractor will be required to design and construct all thrust blocks, bases and other temporary Works required to maintain the stability of the pits and shall demolish and remove these upon completion of the jacking operation and the Contractor shall take into account all such limiting factors when preparing his/her tender.

PSLG 5.4.2.1 Intermediate Jacking Pits (New Sub-Clause)

In circumstances where it is desirable to use jacking pits intermediate between manholes or junctions indicated on the drawings, the number and type of such intermediate jacking pits is to be determined by the Contractor. Such intermediate jacking pits will only be permitted where conditions of access and working space permit.

Full details of the intermediate jacking pits and the junction box constructed as a closure between the ends of the jacked pipes are to be submitted with the tender.

PSLG 5.4.3 Jacking of Pipeline

PSLG 5.4.3.1 General

Add to the Sub-Clause:

A lead pipe with a rebated front end over which the trailing end of the shield is fitted should be the first concrete pipe used. This should minimize over break. The extent of the payment line for grouting between the outer face of the sleeve and the excavation face will be limited to 10% of the outside diameter of the sleeve. Therefore, the excavation payment line will be outside diameter for the different sections of sleeves.

No material may be removed in advance of the leading edge of the shield in unstable or loose materials.

As the pipe is advanced, excavation is to take place within the lead pipe under the full time supervision of a responsible foreman to ensure that the end of the shield is always fully plugged with earth at a safe angle of repose within the pipe. The Contractor shall ensure that there is not uncontrolled flow of sand, mud or earth into the pipe which could result in imperilling excavation personnel or the formation of cavities above or around the sleeve pipe. If at any stage during the jacking operation such conditions arise the Contractor shall immediately plug the pipe and stabilize the material before proceeding with further work.

Should it be necessary, the Contractor shall allow for stabilizing the soil by dewatering, chemical grouting, or any other approved means. The design of the shield shall be such as to permit the face to be completely or partially closed by boarding or similar to control material flow from the face.
During weekend or holiday stoppages the Contractor must make sure that a plug of soil is left in the shield.

PSLG 5.4.3.6  Continuous Jacking (New Sub-Clause)

In order to minimize problems due to the build-up of skin friction on a static pipe, the pipes are to be jacked continuously unless agreed to otherwise with the Engineer, allowing for overnight stoppage.

PSLG 5.5  JACKING PROCEDURE

PSLG 5.5.1  Procedure

Add to the Sub-Clause:

Each jack shall be fitted with a pressure gauge suitable calibrated such that the actual jacking forces can be read at any time.

Suitable packing of hard materials shall be inserted between the abutting vertical ends of the pipes in order to transfer the jacking force. The packing shall constitute a complete circle and be sufficiently wide to transfer the applied load.

A suitable adjustable shield is to be fitted to the front of the lead pipe. The shield is to incorporate cutting edges which can be varied by control jacks to maintain the pipe on line and level.

Pipe jacking may generally be carried out either up-grade or down-grade to suit the Contractors requirements subject to the approval of the Engineer, and provided that provision is made by the Contractor for the necessary drainage required.

PSLG 5.5.2  Lubrication of Structure during Jacking

Add to the Sub-Clause:

To ease pipe friction, the Contractor shall make provision for the injection of bentonite or other approved lubricant.

PSLG 5.6.1  Backfilling (New Sub-Clause)

Both thrust and reception pits must be backfilled as per the Geotechnical report recommendation. Backfill compaction rates must not be less than 90 percent Modified AASHTO with the top 1.5m of backfill being compacted to a minimum 92% Modified AASHTO. The backfill must be built up to at least 500mm above the natural ground level to prevent stormwater pounding around the excavation pits.

PSLG 5.7  Grouting and Plugging

Add to the Sub-Clause:

The grout shall consist of cement/sand grout with mix ratio of 1:2 with plasticizer or as per the instruction.

PSLG 5.9  Markers (New Sub-Clause)
On completion of the pipe jacking activities the Contractor shall place standard Rand Water marker concrete posts at the start and end of each pipe jacking section. The marker posts shall be collected at the Rand Water Central Depot (located 10km south of the head office of Rand Water opposite the Zwartkoppies pump station), transported to site, offloaded, stored, and installed.

PSLG 5.10  Recording Jacking Parameters (New sub-clause)

Throughout the jacking operation the Contractor is requested to take and record the following measurements.

f) A plot of pressure (kN/m²) and total force (kN) originating from the combined force of all hydraulic jacks used to move pipes versus accumulative length of jacked pipe. As soon as a lubricant is used it must be recorded on the plot. If heavy ground water seepage is noted this must also be recorded on the plot. A time scale in days should also be used in conjunction with jacked length of pipe. It is also important to record start up force required to move pipes after a delay, i.e. after weekend.

g) The dimensions of the thrust block used must be recorded as well as the accumulative thrust force on the block (kN) together with lateral movement of the thrust block (mm).

A copy of these measurement records shall be made available to the Engineer.

PSLG 6  TOLERANCES AND MEASUREMENT

PSLG 6.2  Permissible Deviations

In the first line delete “100mm” and substitute with “50mm”.

PSLG 8  MEASUREMENT AND PAYMENT

PSLG 8.2.1  Jacking Establishment

In the second paragraph add the words “and any intermediate jacking pits” after the words “thrust and reception pits”.

PSLG 8.2.6  Supply and Install Pipes by Pipe Jacking Method, Complete with Excavations

Add to the Sub-Clause:

The rate shall include for grouting any voids around the pipe annulus which are a result of the pipe jacking operation.

PSLG 8.2.10  Standing Time for Pipe Jacking Gang and the Jacking Equipment

In the first paragraph, delete the words “Wage Act, 1957 (Act 5 of 1957)” and replace with the words “Basic Conditions of Employment Act No. 75 of 1997”.

PSLG 8.2.12  Permanent Sealing

The unit of measurement will be cubic meter of pipe from open end to open end.
The rate will include all labour, equipment and materials to rake out and place a flexible seal in the pipe joints.

**PSLG 8.2.13  Brick Wall Closure**

The unit of measurement will be the number per pipe diameter.

The rate shall cover all labour, materials and equipment used to construct the brick ends at the opening of all pipes.

**PSLG 8.2.14  Geotechnical Investigation**

a) Allow provisional sum for additional geotechnical investigation for pipe jacking purposes where ordered by the engineer (Prov.)

b) Contractors mark-up on Item
PORTION 3 – TECHNICAL SPECIFICATIONS

(REFER TO ANNEXURE 1)

The following Technical Specifications are attached as annexure 1(a-d) and form part of this tender and shall form part of the contract.

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<td><strong>B.</strong></td>
<td>SPECIFICATION FOR INSTALLATION OF SLUICE-, AIR-, REFLUX-, BUTTERFLY-, RESILIENT SEAL GATE- AND BALL VALVES AND POWERED ACTUATORS.</td>
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PART 3 – SHERQ SPECIFICATION
(REFER TO ATTACHED ANNEXURE 2)
PART 4 - ENVIRONMENTAL MANAGEMENT PLAN ("EMP") & ENVIRONMENTAL AUTHORISATION ("EA") (WHERE APPLICABLE)

(REFER TO ATTACHED ANNEXURE 3)
PART 5 - SITE INFORMATION

C5.1 SITE INFORMATION

C5.1.1 SUBSOIL INVESTIGATION

Not Applicable

C5.1.2 AVAILABLE ENVIRONMENTAL DOCUMENTS

i. ROD and the WULA not applicable.
ii. The Project Specific Environmental Management Plan has been attached under Part 4 of the tender document.

C5.1.3 TRAFFIC IMPACT ASSESSMENT

Not Applicable

Traffic will be affected at intersections along the pipeline route and various roads. Mitigation measures to minimize the impacts were identified and must be implemented during construction.

C5.1.4 PUBLICALLY AVAILABLE INFORMATION

None available.

C5.1.5 SERVICES

C5.1.5.1 Existing Services on pipeline route

Approximate positions of existing services are available and will be made available to the tenderer. Exact positions of existing services must be confirmed on site prior to commencement of excavations. The contractor shall ensure that the positions of these services are correctly identified and all safety precautions are taken prior to excavation. Also refer to requirements of PS 8.

C5.1.5.2 Facilities for Contractor

(a) Accommodation

No housing is available. The contractor shall make his own arrangements to house his employees outside of the boundaries of the site and transport them to the Works. The Contractor shall ensure that he complies with all the laws and regulations applicable to labour, accommodation and amenities and shall make his own arrangements with the authorities to house his employees.

(b) Sanitation

The Contractor shall provide toilet facilities on the site in the form of chemical closets for the use of persons employed on the Works. All toilet facilities provided shall be efficient, sanitary, non-offensive and all sanitary fees payable to any local authority shall be paid by the Contractor.
(c) **Water**

No water is available on site. The contractor shall make his own provision for water.

(d) **Compressed Air**

No compressed air is available on the site. The contractor shall make provision for his requirements.

(e) **Electricity**

No electricity is available on site. The Contractor shall make his own arrangements for the supply of electricity to the working area subject to the approval of the Engineer.

The site power cable rating and installation shall comply with SABS 0142.

(f) **Roads**

The Contractor shall provide and maintain, at his cost, any temporary access roads, deviations, gangways and drains as may be necessary for the proper execution of the Works and shall confine his traffic to these roads and the roads indicated by the Engineer.

C5.1.6 **POSSESSION OF SITE**

The written order to commence the work will be deemed to give the Contractor possession of the site. In the event of any portion of the work or completion of the contract being delayed due to Rand Water delaying the Contractor in taking possession of the site, an extension of time may be allowed by the Engineer. Rand Water shall not be liable for any payment in respect of such delays.
H26 T-PIECES, AIR VALVES AND LARNER JOHNSON FLOAT VALVES REPLACEMENT

DRAWINGS

The following Drawings shall form and be read as part of the Contract and the drawings will be available on the briefing date and at the Rand Water Head Office reception after the briefing date.

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ANNEXURE A

LOCALITY PLAN
LOCAL CONTENT DECLARATION
(REFER TO ANNEX B OF SATS 1286:2011)

LOCAL CONTENT DECLARATION BY CHIEF FINANCIAL OFFICER OR OTHER LEGALLY RESPONSIBLE PERSON NOMINATED IN WRITING BY THE CHIEF EXECUTIVE OR SENIOR MEMBER/PERSON WITH MANAGEMENT RESPONSIBILITY (CLOSE CORPORATION, PARTNERSHIP OR INDIVIDUAL)

IN RESPECT OF BID NO. ........................................................................................................................................

ISSUED BY: (Procurement Authority / Name of Institution): ...........................................................................................................

NB

1 The obligation to complete, duly sign and submit this declaration cannot be transferred to an external authorized representative, auditor or any other third party acting on behalf of the bidder.

2 Guidance on the Calculation of Local Content together with Local Content Declaration Templates (Annex C, D and E) is accessible on http://www.thdti.gov.za/industrial development/ip.jsp. Bidders should first complete Declaration D. After completing Declaration D, bidders should complete Declaration E and then consolidate the information on Declaration C. Declaration C should be submitted with the bid documentation at the closing date and time of the bid in order to substantiate the declaration made in paragraph (c) below. Declarations D and E should be kept by the bidders for verification purposes for a period of at least 5 years. The successful bidder is required to continuously update Declarations C, D and E with the actual values for the duration of the contract.

I, the undersigned, ……………………………………………………………………………. (full names), do hereby declare, in my capacity as ……………………………………………………….. of ……………………………………………………………………………(name of bidder entity), the following:

(a) The facts contained herein are within my own personal knowledge.

(b) I have satisfied myself that:

   (i) the goods/services/works to be delivered in terms of the above-specified bid comply with the minimum local content requirements as specified in the bid, and as measured in terms of SATS 1286:2011; and

(c) The local content percentage (%) indicated below has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in
If the bid is for more than one product, the local content percentages for each product contained in Declaration C shall be used instead of the table above. The local content percentages for each product has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E.

(d) I accept that the Procurement Authority / Institution has the right to request that the local content be verified in terms of the requirements of SATS 1286:2011.

(e) I understand that the awarding of the bid is dependent on the accuracy of the information furnished in this application. I also understand that the submission of incorrect data, or data that are not verifiable as described in SATS 1286:2011, may result in the Procurement Authority / Institution imposing any or all of the remedies as provided for in Regulation 14 of the Preferential Procurement Regulations, 2017 promulgated under the Preferential Policy Framework Act (PPPFA), 2000 (Act No. 5 of 2000).

SIGNATURE: _______________________ DATE: ___________

WITNESS No. 1 _______________________ DATE: ___________

WITNESS No. 2 _______________________ DATE: ___________
SBD 4

DECLARATION OF INTEREST

1. Any legal person, including persons employed by the state¹, or persons having a kinship with persons employed by the state, including a blood relationship, may make an offer or offers in terms of this invitation to bid (includes a price quotation, advertised competitive bid, limited bid or proposal). In view of possible allegations of favouritism, should the resulting bid, or part thereof, be awarded to persons employed by the state, or to persons connected with or related to them, it is required that the bidder or his/her authorised representative declare his/her position in relation to the evaluating/adjudicating authority where:-

- the bidder is employed by the state; and/or

- the legal person on whose behalf the bidding document is signed, has a relationship with persons/a person who are/is involved in the evaluation and or adjudication of the bid(s), or where it is known that such a relationship exists between the person or persons for or on whose behalf the declarant acts and persons who are involved with the evaluation and or adjudication of the bid.

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

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

2.2 Identity Number:
………………………………………………………………………………………….

2.3 Position occupied in the Company (director, trustee, shareholder²):
………………………………………………………………………………………….

2.4 Company Registration Number:
………………………………………………………………………………………….

2.5 Tax Reference Number:
………………………………………………………………………………………….

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

2.6.1 The names of all directors / trustees / shareholders / members, their individual identity numbers, tax reference numbers and, if applicable, employee / personal numbers must
be indicated in paragraph 3 below.

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

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

2.7 Are you or any person connected with the bidder presently employed by the state? YES / NO

2.7.1 If so, furnish the following particulars:

Name of person / director / trustee / shareholder / member: ..............................................................
Name of state institution at which you or the person connected to the bidder is employed: ..............................................................

Position occupied in the state institution: ..............................................................

Any other particulars:

2.7.2 If you are presently employed by the state, did you obtain the appropriate authority to undertake remunerative work outside employment in the public sector? YES / NO

2.7.2.1 If yes, did you attach proof of such authority to the bid document? YES / NO

(Note: Failure to submit proof of such authority, where applicable, may result in the disqualification of the bid.

2.7.2.2 If no, furnish reasons for non-submission of such proof:

..............................................................
2.8 Did you or your spouse, or any of the company's directors / trustees / shareholders / members or their spouses conduct business with the state in the previous twelve months?  
YES / NO

2.8.1 If so, furnish particulars:
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2.9 Do you, or any person connected with the bidder, have any relationship (family, friend, other) with a person employed by the state and who may be involved with the evaluation and or adjudication of this bid?  
YES / NO

2.9.1 If so, furnish particulars.
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2.10 Are you, or any person connected with the bidder, aware of any relationship (family, friend, other) between any other bidder and any person employed by the state who may be involved with the evaluation and or adjudication of this bid?  
YES/NO

2.10.1 If so, furnish particulars.
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2.11 Do you or any of the directors / trustees / shareholders / members of the company have any interest in any other related companies whether or not they are bidding for this contract?  
YES/NO

2.11.1 If so, furnish particulars:
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1. Full details of directors / trustees / members / shareholders.
2. DECLARATION

I, (NAME)………………………………………………………………………
THE UNDERSSIGNED

CERTIFY THAT THE INFORMATION FURNISHED IN PARAGRAPHS 2 and 3 ABOVE IS CORRECT.
I ACCEPT THAT THE STATE MAY REJECT THE BID OR ACT AGAINST ME IN TERMS OF PARAGRAPH 23 OF THE GENERAL CONDITIONS OF CONTRACT SHOULD THIS DECLARATION PROVE TO BE FALSE.

…………………………………  ………………………………………
Signature                          Date

…………………………………  ………………………………………
Position                          Name of bidder