



## JOHANNESBURG CITY PARKS AND ZOO

### DEVELOPMENT OF OLIFANTSVLEI CEMETERY

**BID No: JCPZ/CID03/2026**

#### JOHANNESBURG CITY PARKS AND ZOO

Registration No: 2000/028782/08

City Parks House, Ground Floor  
40 De Korte Street  
Braamfontein  
Johannesburg

#### Project Enquiries:

Name: Solomon Sumbane  
Telephone: 067 774 7326  
Email: [ssumbane@jhbcityparks.com](mailto:ssumbane@jhbcityparks.com)

#### JOHANNESBURG CITY PARKS AND ZOO

Registration No: 2000/028782/08

P O Box 2824  
Johannesburg  
2000

The Senior Manager SCM  
Supply Chain Management Unit  
Telephone: 011-712 6625  
Email: [dhlatswayo@jhbcityparks.com](mailto:dhlatswayo@jhbcityparks.com)

**Name of Bidder** \_\_\_\_\_

**Price Including VAT** \_\_\_\_\_  
(VAT REGISTERED ☐ / NON-VAT VENDOR ☐

**(Price In-words)** \_\_\_\_\_

Joint Venture ☐  
Not a Joint Venture ☐  
(Tick applicable box)

**Contract Period: 06 Months**

**CIDB Grading: 6CE or Higher**

**Compulsory Briefing session: Venue: Cemetery Office Block, Cnr Golden Highway (R553) & Stockwell Avenue, Nancefield - Olifantsvlei Cemetery**  
**Date: 15 October 2026 Time: 12:00pm-13:00pm**

**The closing date and time for receipt of tenders is Wednesday, 11 November 2026 at 12h00pm. Telegraphic, telephonic, telex, facsimile and late tenders will not be accepted.**

**NB: Bid Submission Dates;**  
09-11-2026 (08:00 – 16:00pm)  
10-11-2026 (08:00 – 16:00pm)  
11-11-2026 (08:00 – 12:00pm before the closing time)

**QUALIFICATION CRITERIA FOR FURTHER EVALUATION**

To qualify for consideration, potential service providers **MUST** provide and **ADHERE** to the following Mandatory requirements (Failure to adhere to these requirements will lead to elimination):

- Attendance of the compulsory site briefing session.
- Completion in full of the Bill of Quantity (BOQ) as per tender document.
- Valid CIDB Grading 6CE or Higher.
- Valid and registered Guarantor
  - Guarantor issued letter for the minimum 10% construction value

**Provide CRS Number (CIDB Number): \_\_\_\_\_ CIDB Grade: \_\_\_\_\_**

**NB: ONLY BIDDERS WHO COMPLY WITH THE ABOVE REQUIREMENTS WILL BE CONSIDERED FURTHER FUNCTIONALITY (REFER TO THE TERMS OF REFERENCE)**

SIGNATURE OF BIDDER: .....

CAPACITY UNDER WHICH THIS BID IS SIGNED: .....

DATE: .....

# Johannesburg City Parks and Zoo

## Contents

| N°                                                                                                      | Heading                                               |
|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| <b>The Tender</b>                                                                                       |                                                       |
| <b>Part T1: Tendering procedures</b>                                                                    |                                                       |
| T1.1                                                                                                    | Tender Notice, Invitation to Tender and Functionality |
| T1.2                                                                                                    | Tender Data                                           |
| <b>Part T2: Returnable documents</b>                                                                    |                                                       |
| T2.1                                                                                                    | List of Returnable Documents                          |
| T2.2                                                                                                    | <b>Returnable Schedules</b>                           |
| <b>The Contract</b>                                                                                     |                                                       |
| <b>Part C1: Agreement and Contract Data</b>                                                             |                                                       |
| C1.1                                                                                                    | Form of offer and acceptance                          |
| C1.2                                                                                                    | Contract data                                         |
| C1.3                                                                                                    | Form of Guarantee                                     |
| <b>Part C2: Pricing Data</b>                                                                            |                                                       |
| C2                                                                                                      | Bill of Quantities                                    |
| <b>Part C3: Scope of Work</b>                                                                           |                                                       |
| C3                                                                                                      | Refer to BOQ                                          |
| <b>Part C4: Occupational Health, Safety, Environment and Quality Specifications</b>                     |                                                       |
| <b>MBD 1 – Invitation to Bid</b>                                                                        |                                                       |
| <b>MBD 3.1 – Pricing Schedule for Firm Price</b>                                                        |                                                       |
| <b>MBD 4 – Declaration of Interest</b>                                                                  |                                                       |
| <b>MBD 5 – Declaration For Procurement Above R10 Million (All Applicable Taxes Included)</b>            |                                                       |
| <b>MBD 6.1 – Preference Points Claim Form In Terms Of The Preferential Procurement Regulations 2022</b> |                                                       |
| <b>MBD 8 – Declaration of Bidder's past Supply Chain Practices</b>                                      |                                                       |
| <b>MBD 9 – Certificate of Independent Bid Determination</b>                                             |                                                       |

**NB: ALL DECLARATIONS AND MBD FORMS SHOULD BE COMPLETED AND SIGNED.**



## JOHANNESBURG CITY PARKS AND ZOO

Johannesburg City Parks and Zoo, the greening, conservation and cemetery management agency for the City of Johannesburg Municipality, invites **CIDB Grade 6CE or Higher** only contractors from suitably registered companies in the construction and landscaping field for Development of Olifantsvlei Cemetery over a period of **06 months**. Bids are to be submitted in line with the bill of quantities (BOQs).

80/20 preferential procurement point system will be applied and preference will be given to bidders who are able to demonstrate the following:

### Stage 1: Compliance on Qualification Criteria (Mandatory Requirements)

### Stage 2: Functionality

### Stage 3: Price

|                                                                                                 |    |
|-------------------------------------------------------------------------------------------------|----|
| Specific goals:                                                                                 | 80 |
| Specific Goals 1: Business owned by 51% or more – Women                                         | 20 |
| Specific Goals 2: Enterprises located within the City of Johannesburg Metropolitan Municipality | 10 |

### Stage 4: Administrative Requirements

## MANDATORY REQUIREMENTS

To qualify for consideration, potential service providers **MUST** provide and **ADHERE** to the following Mandatory requirements (Failure to adhere to these requirements will lead to elimination):

- Attendance of the compulsory site briefing session.
- Completion in full of the Bill of Quantity (BOQ) as per tender document..
- Valid CIDB Grading 6CE or Higher.
- Valid and registered Guarantor
  - Guarantor issued letter for the minimum 10% construction value (to be verified with the issuing institution).

## ADMINISTRATIVE REQUIREMENTS

The potential service providers shall provide and **ADHERE** to the following administrative requirements:

- Provide valid Companies' proof of address and/ or Director's proof of residence – If there are two or more directors, all must submit proof of residence (Only latest municipal statement not older than three (3) months (not in arrears for more than 90 days) or valid lease agreement in their area of jurisdiction.
- Valid Class V COIDA from Department of Labour (Letter of good standing).
- Provide valid Public Liability Insurance Cover
- Provide Proof of registration with CSD (Central Supplier Database) at National Treasury compliant with all regulatory requirements;
- Provide a valid Joint Venture (JV) agreement signed by all parties with all individual parties' mandatory documents submitted; if applicable.
 

A good joint venture agreement:

  - should clearly and comprehensively set out the contributions to be made by each member towards the activities of the joint venture in securing and executing the contract and should allocate monetary values to such contributions.
  - should record the percentage participation by each member in all aspects of the fortunes of the joint venture, including risks, rewards, losses and liabilities.
  - should provide for meaningful input by all members to the policy making and management activities of the joint venture.
  - should provide for the establishment of a management body for the joint venture.
  - should provide measures to limit, as far as possible, losses to the joint venture by the default of a member.

- should promote consensus between the members whilst ensuring that the activities of the joint venture will not be unduly hindered by failure to achieve it;
- should provide for rapid, cheap and easy interim dispute resolution and for effective final dispute resolution, if required; and
- should be sufficiently flexible to allow for joint ventures which differ in nature, objectives, inputs by members, management systems, etc.
- Completion of the entire tender document as issued or downloaded - Completed and Signed Municipal Bidding Documents (MBDs) stipulated in the tender document.
- Authority of Signatory to sign tender documents.
- Proof of the company registration issued by the Companies and Intellectual Property Commission (CIPC).
- Valid SARS issued tax pin code.

Where a bidder's bid response fails to comply fully with any of the administrative requirements above, JCPZ may at its discretion allow the bidder an opportunity to submit and/or complete and/or supplement the information and/or documentation provided **within a grace period of seven (7) days from a day when a letter of request was issued to respond, of which failure to adhere to that timeline should result to elimination.** *This rule is not applicable to Functionality requirements.*

**NOTE: This allowance will only be given to the top five (5) potential service providers where only one service provider is required, and where a panel is required, this discretion shall apply to only the qualifying or shortlisted or recommended service provider(s) after all other evaluation stages (e.g. mandatory requirements and functionality evaluation) were finalised. NB: If any of the required documents to support functionality are not supplied by closing date of this tender, it will result in bidder not scoring points.**

The physical address for submission of bid documents is: Johannesburg City Parks and Zoo Head Office, City Parks House, Ground Floor, 40 De Korte Street, Braamfontein, Johannesburg. Tender documents may be downloaded from [www.jhbcityparksandzoo.com](http://www.jhbcityparksandzoo.com) or [www.etenders.gov.za](http://www.etenders.gov.za) for free from Tuesday, 13 October 2026 (Close of business).

The lowest, or any tender will not necessarily be accepted and Johannesburg City Parks and Zoo reserves the right to accept any tender either in whole or in part. Telegraphic, email, telephonic, telex, facsimile and late bids will not be accepted. Bids may only be submitted on the bid document provided by JCPZ. It is the responsibility of the service provider to deposit the tender submission to the correct tender box at the address provided above. The bid validity will be **120 days from the closing date** and might be extended when there is a need.

Johannesburg City Parks and Zoo is committed to combat fronting. Insofar as it is legally permitted to do so, and provided that service delivery will not be severely influenced, contracts executed by fronting enterprises will be cancelled, the service provider in question will be blacklisted on its database of service providers and reported to the applicable authorities.

**Fraud hotline number: 0800 002 587**

For more information on bids and quotations visit our website [www.jhbcityparksandzoo.com](http://www.jhbcityparksandzoo.com) .

# Johannesburg City Parks and Zoo

## T1.2 Tender Data

The conditions of tender are the Standard Conditions of Tender as contained in Annex F of the CIDB Standard for Uniformity in Construction Procurement (January 2009) as published in Government Gazette No 31823, Board Notice 12 of 2009 of 30 January 2009. (See [www.cidb.org.za](http://www.cidb.org.za)).

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

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

| Clause number | Tender Data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| F1.1          | The employer is Johannesburg City Parks and Zoo                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| F1.2          | <p>The Tender Documents issued by the Employer comprise the following documents:</p> <p><b>THE TENDER</b></p> <p><b>Part T1: Tendering procedures</b><br/> T1.1 - Tender notice, invitation to tender and Functionality<br/> T1.2 - Tender data</p> <p><b>Part T2: Returnable documents</b><br/> T2.1 - List of returnable documents<br/> T2.2 - Returnable schedules</p> <p><b>THE CONTRACT</b></p> <p><b>Part C1: Agreements and Contract data</b><br/> C1.1 - Form of offer and acceptance<br/> C1.2 - Contract data<br/> C1.3 - Form of Guarantee</p> <p><b>Part C2: Pricing data</b><br/> C2.1 - Pricing instructions<br/> C2.2 - Bill of Quantities</p> <p><b>Part C3: Scope of work</b><br/> C3 - Scope of Work</p> <p><b>Part C4: Site information</b><br/> C4 - Site information</p> <p>The tender documents issued by the employer comprise:</p> <p><b>Volume 1: Tendering procedures</b><br/> T1.1 Tender notice and invitation to tender<br/> T1.2 Tender data</p> <p><b>Volume 2: Returnable documents</b><br/> T2.1 List of returnable documents<br/> T2.2 Returnable schedules<br/> C1.1 Form of offer and acceptance<br/> C1.2 Contract data (part 2)<br/> C2.2 Activity schedules / Bills of Quantities</p> |

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| F.1.2                | <p><b>Volume 3: The contract</b><br/> <b>Part C1: Agreements and contract data</b><br/> C1.2 Contract data (part 1)<br/> C1.3 Form of Guarantee</p> <p><b>Part C2: Pricing data</b><br/> C2.1 Pricing instructions</p> <p><b>Part C3: Scope of work</b><br/> C3 Scope of work</p> <p><b>Part C4: Site information</b><br/> C4 Site information</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| F.1.4                | The employer's agent is : N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| F.2.1                | <p>Only those tenderers who are registered with the CIDB, or are capable of being so prior to the evaluate on of submissions, in a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations, for a <b>CIDB Grade 6CE or higher</b> class of construction work, are eligible to have their tenders evaluated.</p> <p>Joint ventures are eligible to submit tenders provided that:</p> <p>every member of the joint venture is registered with the CIDB;</p> <p>the lead partner has a contractor grading designation in the <b>CIDB Grade 6CE or higher</b> class of construction work; and</p> <p>the combined contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a contractor grading designation determined in accordance with the sum tendered for a <b>CIDB Grade 6CE or higher</b> class of construction work or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations.</p> |
| F.2.7                | <p>The arrangements for a compulsory clarification meeting are as stated in the Tender Notice and Invitation to Tender.</p> <p>Tenderers must sign the attendance list in the name of the tendering entity. Addenda will be issued to and tenders will be received only from those tendering entities appearing on the attendance list.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| F.2.12               | No alternative tender offers will be considered                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| F.2.13.3             | Parts of each tender offer communicated on paper shall be submitted as an original, plus 0 copies.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| F.2.13.5<br>F.2.15.1 | <p>The employer's details and address for delivery of tender offers and identification details that are to be shown on each tender offer package are:</p> <p><b>Location of tender box:</b> Johannesburg City Parks and Zoo Head Office, City Parks House, Ground Floor.</p> <p><b>Physical address:</b> 40 De Korte Street, Braamfontein, Johannesburg</p> <p><b>Identification details:</b> Tender reference number, Title of Tender and the closing date and time of the tender</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| F.2.13.9             | Telephonic, telegraphic, telex, facsimile or e-mailed tender offers will not be accepted.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| F.2.15               | The closing time for submission of tender offers is as stated in the Tender Notice and Invitation to Tender.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| F.2.16               | The tender offer validity period is <b>120 working days</b> from the closing date and might be extended when there is a need.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| F.2.18               | The tenderer shall, when requested by the Employer to do so, submit the names of all management and supervisory staff that will be employed to supervise the Labour Intensive portion of the works together with satisfactory evidence that such staff members satisfy the eligibility requirements.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| F.2.23   | <p>The tenderer is required to submit with his tender the following documents:</p> <p>Tax Compliance Status (TCS) Certificate issued by the South African Revenue Services.<br/> Proof of residence (Provide Latest municipal account or Valid Lease Agreement)<br/> Company registration documents (Ck document)<br/> Valid COID Certificate (Class V) (Letter of Good standing)<br/> Valid CIDB Grade (Provide CRS number)<br/> Previous Experience on similar work successfully executed by the contractor (Provide Proof-References &amp; Letters)</p> <p>Other supporting documents:</p> <p>BBBEE Certificate<br/> Public Liability Insurance<br/> Owners ID Copies<br/> Capacity to complete the project within shortened timeframe.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| F.3.4    | <p>Tenders will be opened immediately after the closing time for tenders at <b>12h00PM on 11 November 2026.</b><br/> <b>Location: Johannesburg City Parks and Zoo Head Office, Ground Floor</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| F.3.11.2 | <p>The procedure for the evaluation of responsive tenders is Method 4</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| F.3.13   | <p>Tax Compliance Status (TCS) Certificate issued by the South African Revenue Services or has made arrangements to meet outstanding tax obligations;<br/> the tenderer submits a letter of intent from an approved insurer undertaking to provide the Performance Bond to the format included in Part T2.2 of this procurement document;<br/> the tenderer is registered with the Construction Industry Development Board in an appropriate contractor grading designation;<br/> the tenderer or any of its directors/shareholders is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004 as a person prohibited from doing business with the public sector;<br/> the tenderer has not:</p> <ul style="list-style-type: none"> <li>i) abused the Employer's Supply Chain Management System; or</li> <li>ii) failed to perform on any previous contract and has been given a written notice to this effect;</li> </ul> <p>the tenderer has completed the Compulsory Enterprise Questionnaire and there are no conflicts of interest which may impact on the tenderer's ability to perform the contract in the best interests of the employer or potentially compromise the tender process and persons in the employ of the state are permitted to submit tenders or participate in the contract;</p> |
| F.3.13   | <ul style="list-style-type: none"> <li>a) the tenderer is registered and in good standing with the compensation fund or with a licensed compensation insurer;</li> <li>b) the employer is reasonably satisfied that the tenderer has in terms of the Construction Regulations, 2003, issued in terms of the Occupational Health and Safety Act, 1993, the necessary competencies and resources to carry out the work safely.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| F.3.17   | <p>The number of paper copies of the signed contract to be provided by the employer is 1.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|          | <p>JCPZ Risk Tolerance:</p> <p>A risk analysis shall be undertaken on the bidder with the highest number of PPPFA points. JCPZ Considers the risk exposure levels to be considerable on bidders that have been awarded in excess of two contracts each exceeding the amount of R1 500 000.00 and or have been awarded a contract in excess of R15 000 000.00 from JCPZ in the current financial year.</p> <p>JCPZ reserves the right to award a contract to a bidder who has exceeded the above-mentioned threshold.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

# Johannesburg City Parks and Zoo

## T2.1 List of Returnable Documents

The tenderer must complete the following returnable documents:

### 1. Returnable Schedules required only for tender evaluation purposes:

BBBEE Certificate  
Record of Addenda to Tender Documents  
Compulsory Enterprise Questionnaire  
Certificate of authority for joint ventures (where applicable)  
Schedule of Subcontractors  
Proposed Amendments and Qualifications  
Schedule of Plant and Equipment  
Schedule of the Tenderer's Experience

### 2. Other documents required only for tender evaluation purposes:

Certificate of Contractor Registration issued by the Construction Industry Development Board  
Where the tendered amount inclusive of VAT exceeds R 10 million:  
audited annual financial statement for 3 years, or for the period since establishment if established during the last 3 years, if required by law to prepare annual financial statements for auditing;  
certificate certifying that the tenderer has no undisputed commitments for municipal services towards a municipality or other service provider in respect of which payment is overdue for more than 30 days;  
**particulars of any contracts awarded to the tenderer by an organ of state during the past five years, including particulars of any material non-compliance or dispute concerning the execution of such contract;**  
a statement indicating whether any portion of the goods or services are expected to be sourced from outside the Republic, and, if so, what portion and whether any portion of payment from the municipality or municipal entity is expected to be transferred out of the Republic.

### 3. Returnable Schedules that will be incorporated into the contract:

Preference Schedule (direct preferences) / Preferencing Schedule (contract participation goals)  
Environmental Conditions and Contractor's Undertaking  
Occupational Health and Safety Conditions

### 4. Other documents that will be incorporated into the contract

### 5. The offer portion of the C1.1 Offer and Acceptance

### 6. C1.2 Contract Data (Part 2)

### 7. C2. Bills of quantities

## **A. SPECIAL CONDITIONS**

### **A.1. Information provided by the bidder**

JCPZ reserves the right to verify the information provided by the bidder, and if found to be false or misrepresented, this may disqualify the bid in whole or in part.

### **A.2. Cancellation of the Bid**

If there is cancellation of the bid; the cancellation of bid notice shall be published the same way as the advert on JCPZ's website, newspapers as well as the National Treasury e-tender portal.

### **A.3. Addendum**

If there is any amendment(s) to the tender document, Addendum shall be published on JCPZ's website as well as the National Treasury e-tender portal. All prospective bidders should therefore ensure that they visit the said sites regularly and before they submit their bid response to ensure that they are kept updated on any amendments in this regard.

### **A.4. JCPZ reserves the right to award or not to award contracts and tenders at its discretion:**

- (i) JCPZ does not bind itself to accept the lowest priced bids;
- (ii) JCPZ will not accept tender offers if a bidder/tenderer failed to perform on any previous JCPZ contract/s and has been given a written notice to this effect or contract was terminated;
- (iii) JCPZ will terminate any contract/s as per the termination clause/s in the form of contract/s concluded due to poor performance e.g. GCC, service level agreements etc.
- (iv) JCPZ reserves the right to negotiate prices submitted by bidders (where applicable).

### **A.5. Contract default and penalties**

Where it appears that the supplier is not executing the contract in accordance with the true intent and meaning thereof, or that he is refusing or delaying to execute the contract or that he is carrying on the work at such rate of progress as to ensure delivery by the "date of delivery" that the time has expired within which delivery should have taken place, general poor performance or in the event of any other failure or default or has misrepresented information provided, JCPZ shall:

- (i) notify the supplier to make good the failure or default (i.e. this does not apply to suppliers/contractors who deliberately provide incorrect, fraudulent or misleading information).
- (ii) terminate the contract after expiration of the notice period, if his/her performance has not improved or the failure has not been remedied.
- (iii) impose a monetary penalty for any loss JCPZ may have suffered where required in terms of the contract terms.
- (iv) automatically appoint the second-best supplier or agent to perform such work as the initial supplier may have neglected to do.
- (v) advise the CIDB to note the poor performance or termination, where it is construction related work.

### **A.6. Bid Validity Period**

Proposals/Bids shall remain valid and open for acceptance for a period 120 days from the closing date, and any agreed extension of the validity period.

### **A.7. Extensions to the Validity Period**

JCPZ may, in exceptional circumstances, request the Bidder for an extension of the validity period, prior to the expiry of the proposal/bid validity period. The request and the response thereto shall be made in writing. A Bidder agreeing to the request will not be permitted to modify its Proposal/Bid.

### **A.8. Objections and complaints (Appeals)**

- In terms of section 62 of the Municipal Systems Act, any person aggrieved by decisions or actions taken in the implementation of the JCPZ supply chain management system, may lodge a written objection or complaint or query against the decision or action to the Accounting Officer within 21 days of the date of the notification of the decision or action.

- A dispute, objection, complaint or query may be referred to the relevant provincial treasury if:
  - (a) the dispute, objection, complaint or query is not resolved within 60 days; or
  - (b) no response is forthcoming within 60 days.
- If the provincial treasury does not or cannot resolve the matter, the dispute, objection, complaint or query may be referred to the National Treasury for resolution.

#### **A.9. Negotiations with preferred bidders**

A supply chain management policy may allow the accounting officer to negotiate the final terms of a contract with bidders identified through a competitive bidding process as preferred bidders, provided that such negotiation:

- (a) does not allow any preferred bidder a second or unfair opportunity;
- (b) is not to the detriment of any other bidder; and
- (c) does not lead to a higher price than the bid as submitted.

#### **A.10. Certified copies of original document**

Certified copy of the original should be commissioned as the true copy of the original in terms of the applicable relevant laws in South Africa.

#### **A.11. Completion of bid documents**

Completion of bid documents must be done using non-erasable ink, preferably black.

#### **A.12. Submitting a bid**

All bidders must submit bids in the original/official form as downloaded. Bidders are required to submit a bid for providing all the works, services or goods as identified in the bid advertisement or document unless stated otherwise as an additional condition in the conditions of the bid.

#### **A.13. Alterations to bid document**

Bidders must not make alterations or additions to the bid documents except to comply with instructions issued by JCPZ or if necessary to correct errors made by the bidder such as price/calculations. All such alterations must be initialled or authenticated by the authorized signatory to the bid. Corrections may not be made using correction fluid, correction tape or the like.

#### **A.14. Cost of the bidding**

JCPZ will not compensate bidder/s for any cost incurred in the preparation and submission of a bid.

#### **A.15. Standardized prices/rates**

JCPZ shall, insofar as possible, ensure that a standardized prices/rates are applied/used when establishing the panel of suppliers, whereby prospective bidders were required to submit/provide quotes for the bid.

#### **A.16. Due diligence**

Due diligence on market-related pricing may be conducted. JCPZ reserves the right to disqualify bid offers that are under-quoted and or are above market value. In this case, the bidder may be required to submit supporting documentation to JCPZ to prove that the pricing is not under-quoted or above market value.

#### **A.17. Compliance with all applicable legislative requirements**

Appointed service provider would be required to comply with all applicable legislative requirements during the term of the contract.

**PAGE TO WHICH A PROOF OF BUSINESS REGISTRATION MUST BE ATTACHED:**

Please attach a copy of your Business registration to this page.

**ATTACH AUDITED ANNUAL FINANCIAL STATEMENTS TO THIS PAGE**

Provide audited annual financial statements for the past three years or since their establishment if established during the past three years.

If the bidder is not obligated by law to prepare annual financial statements for audit purposes, they shall submit their annual financial statements for the previous three financial years or if established for a shorter period from the date of establishment.

**PAGE TO WHICH A PROOF OF RESIDENCE (LATEST MUNICIPAL ACCOUNT) MUST BE ATTACHED:**

Provide valid Companies' proof of address and/ or Director's proof of residence (Only latest municipal statement not older than three (3) months (not in arrears for more than 90 days) or valid lease agreement in their area of jurisdiction;

Please attach any of the following to this page:

1. In the case where the bidder owns the property from which the bidder's business operates from, an original or a copy of the most recent municipal account must be submitted.  
Or
2. In the case where the bidder does not own the property an original or copies of the most recent municipal account of all shareholder/s must be submitted.  
Or
3. In the case where the bidder is a tenant for the purpose of its business establishment, the bidder to provide a valid lease agreement.

**PAGE TO WHICH A VALID COID CERTIFICATE MUST BE ATTACHED:**

Please attach a valid COID Certificate from department of labour to this page.

**PAGE TO WHICH COMPLETION CERTIFICATES MUST BE ATTACHED:**

Please attach a completion certificates to this page.

**Record of Addenda to tender documents**

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

|  | Date | Title or Details |
|--|------|------------------|
|  |      |                  |
|  |      |                  |
|  |      |                  |
|  |      |                  |
|  |      |                  |
|  |      |                  |
|  |      |                  |
|  |      |                  |
|  |      |                  |

Attach additional pages if more space is required.

Signed \_\_\_\_\_ Date \_\_\_\_\_

Name \_\_\_\_\_ Position \_\_\_\_\_

Tenderer \_\_\_\_\_

## Certificate of Authority for Joint Ventures (Attach JV Agreement)

This Returnable Schedule is to be completed by joint ventures.

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

| NAME OF FIRM | ADDRESS | DULY AUTHORISED SIGNATORY                             |
|--------------|---------|-------------------------------------------------------|
| Lead partner |         | Signature: .....<br>Name: .....<br>Designation: ..... |
|              |         | Signature: .....<br>Name: .....<br>Designation: ..... |
|              |         | Signature: .....<br>Name: .....<br>Designation: ..... |
|              |         | Signature: .....<br>Name: .....<br>Designation: ..... |

## Schedule of Proposed Sub-contractors

We notify you that it is our intention to employ the following Subcontractors for work in this contract.

If we are awarded a contract, we agree that this notification does not change the requirement for us to submit the names of proposed Subcontractors in accordance with requirements in the contract for such appointments. If there are no such requirements in the contract, then your written acceptance of this list shall be binding between us.

We confirm that all Subcontractors who are contracted to construct a house are registered as home builders with the National Home Builders Registration Council.

|  | <b>Name and address of proposed Subcontractor</b> | <b>Nature and extent of work</b> | <b>Previous experience with Subcontractor</b> |
|--|---------------------------------------------------|----------------------------------|-----------------------------------------------|
|  |                                                   |                                  |                                               |
|  |                                                   |                                  |                                               |
|  |                                                   |                                  |                                               |
|  |                                                   |                                  |                                               |
|  |                                                   |                                  |                                               |

Sign: .....

Date: .....

Name: .....

Position: .....

Tenderer: .....

## Schedule of Plant and Equipment

The following are lists of major items of relevant equipment that I / we presently own or lease and will have available for this contract or will acquire or hire for this contract if my / our tender is accepted.

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

| Quantity | Description, size, capacity, etc. |
|----------|-----------------------------------|
|          |                                   |

Attach additional pages if more space is required.

(b) Details of major equipment that will be hired or acquired for this contract if my / our tender is acceptable.

| Quantity | Description, size, capacity, etc. |
|----------|-----------------------------------|
|          |                                   |

Attach additional pages if more space is required.

Sign: .....

Date: .....

Name: .....

Position: .....

Tenderer: .....

### Schedule of the Tenderer's Experience

| Employer, contact person and telephone number | Description of contract | Value of work inclusive of VAT (Rand) | Date completed |
|-----------------------------------------------|-------------------------|---------------------------------------|----------------|
|                                               |                         |                                       |                |

The following is a statement of similar work successfully executed by myself / ourselves:

## Proposed Amendments and Qualifications

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

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

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

Sign: .....

Date: .....

Name: .....

Position: .....

Tenderer: .....

# Johannesburg City Parks and Zoo

## C1.1 Form of Offer and Acceptance

### Offer

---

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

.....

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

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

#### THE OFFERED TOTAL OF THE PRICES IS:

**Total Amount Excl.Vat** : R .....

**VAT** : R .....

**Total Amount Incl.Vat** : R .....

..... Rand (in words Inclusive of Vat);

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

Signature ..... Date .....

Name .....

Capacity .....

#### for the tenderer

(Name and .....  
address of .....  
organization) .....

.....

Name and .....  
signature .....  
of witness .....

## Acceptance

By signing this part of this form of offer and acceptance, the employer identified below accepts the tenderer's offer. In consideration thereof, the employer shall pay the contractor the amount due in accordance with the conditions of contract identified in the contract data. Acceptance of the tenderer's offer shall form an agreement between the employer and the tenderer upon the terms and conditions contained in this agreement and in the contract that is the subject of this agreement.

The terms of the contract, are contained in:

Part C1: Agreements and contract data, (which includes this agreement)  
Part C2: Pricing data  
Part C3: Scope of work.  
Part C4: Site information

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

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

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

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

Signature ..... Date .....  
Name .....  
Capacity .....  
**for the**  
**Employer** .....  
.....

*Johannesburg City Parks and Zoo, 40 De Korte street, Braamfontein*

Name and .....  
signature .....  
of witness ..... Date .....

**Schedule of Deviations**

1 Subject

Details

2 Subject

Details

3 Subject

Details

4 Subject

Details

5 Subject

Details

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

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

# Johannesburg City Parks and Zoo

## C1.2 Contract Data

The Conditions of Contract are the *JBCC Series 2000 Minor Works Agreement (Edition 5.1)*, published by the Joint Building Contracts Committee. Copies of these documents may be obtained from the Association of South African Quantity Surveyors (011-3154140), the Master Builders Association (011-205 9000) the South African Association of Consulting Engineers (011-463 2022) or the South African Institute of Architects (011-486 0684).

Each item of data given below is cross-referenced to the clause in the Conditions of Contract to which it mainly applies.

| Clause                   | Data                                                                                                                                                                                                                                                                                                               |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.1                      | The <b>Employer</b> is.                                                                                                                                                                                                                                                                                            |
| 1.2                      | Name: JOHANNESBURG CITY PARKS AND ZOO<br><br>The address of the <b>Employer</b> is:<br>Address (physical): 40 De Korte Street, Braamfontein, Johannesburg.<br>Address (postal): PO BOX 2824, Johannesburg, 2000<br>Telephone: 011-712 6600.<br>Facsimile: 011-403 4495.<br><br>Registration number: 2000/028782/08 |
| 1.1                      | The <b>contract sum</b> is the offered total of prices inclusive of VAT as stated in the Form of Offer and Acceptance                                                                                                                                                                                              |
| 1.7                      | The governing <b>law</b> is the law of South Africa                                                                                                                                                                                                                                                                |
| 3.3<br>31.16.2           | Waver of the <b>contractor's</b> lien or right on continuing possession is required.                                                                                                                                                                                                                               |
| 3.6                      | The original signed set of <b>contract documents</b> is to be held by the <b>employer</b> .                                                                                                                                                                                                                        |
| 10.1.1<br>12.6           | Contract works insurance is to be affected by the contractor.                                                                                                                                                                                                                                                      |
| 10.1.2<br>11.1-3<br>12.6 | Supplementary insurance is required. Such insurance shall comprise a Coupon Policy for Special Risk issued by the South African Special Risk Insurance Association.                                                                                                                                                |
| 14.1                     | <b>The contractor is to provide a Fixed construction guarantee 10% of the contract sum.</b>                                                                                                                                                                                                                        |
| 15.3                     | The period for the commencement of the <b>works</b> after the <b>contractor</b> takes possession of the site is 5 working days.                                                                                                                                                                                    |
| 15.4<br>28.0             | Completion of the <b>works</b> in <b>06 months</b> is required.                                                                                                                                                                                                                                                    |

|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 22.2             | The type of work and extent of work to be undertaken by <b>direct contractors</b> is refer to specifications.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 24.3.1<br>30.1-3 | For the works <b>as a whole</b> :<br>The <b>penalty per calendar day</b> is 0.2% of the contract value excluding VAT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 31.3             | There is no latest day of the month for the month for the issue of an interim payment certificate.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 31.5.3<br>32.13) | <b>The contract value shall not be adjusted according to CPAP.</b> The base month for the application of CPAP is the month prior to the closing of the tender, and the following alternative indices are applicable:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 40               | Disputes resolution shall be by adjudication or                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 40               | Disputes determinations shall be by arbitration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                  | <p><b>The variations to the General Conditions of Contract are:</b></p> <p>Replace the following definitions in <b>DEFINITIONS AND INTERPRETATIONS</b> with the following wording:</p> <p><b>AGREEMENT</b> means the agreement arising from the signing of the Form of Offer and Acceptance by the <b>parties</b>.</p> <p><b>CONTRACT SUM</b> means the total of prices in the Form of Offer and Acceptance.</p>                                                                                                                                                                                                                                                                                                                           |
|                  | Delete "in terms of the JBCC Payment Certificate" in the definition for Payment Certificate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                  | Delete clause 1.6.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                  | <p>Replace clause 3.2 with the following:</p> <p>3.2 The <b>contractor</b> shall provide:</p> <p>3.2.1 A <b>construction guarantee</b> where so required in the <b>contract data</b>.</p> <p>3.2.2 An <b>advance payment guarantee</b> where so required in the <b>contract data</b>. The guarantee shall be according to the JBCC Advance Payment Guarantee form in the amount as stated in the Contract Data.</p>                                                                                                                                                                                                                                                                                                                        |
|                  | <p>Replace 14.1 with the following:</p> <p>14.1 The Contractor shall provide the type of <b>construction guarantee</b> stated in the <b>contract data</b>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                  | Replace the word " <b>priced document</b> " in 19.1 and 19.2 with " <b>agreement</b> "                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                  | <p>Replace sub-clauses 21.1.2 to 21.1.4 and 21.2 to 21.6 with the following:</p> <p>The <b>contractor</b> and <b>principal agent</b> shall appoint a <b>selected subcontractor</b> in accordance with the provisions of the Scope of Work.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                  | <p>Replace 40.2 with the following:</p> <p>40.2 Where such disagreement is not resolved within ten (10) <b>working days</b> of receipt of such notice it shall be deemed to be a dispute and shall be referred by the party which gave such notice to adjudication, where the adjudication will be conducted in terms of the edition of the JBCC Rules for Adjudication current at the time when the disputes was declared.</p> <p>Replace "an <b>arbitrator</b>" at the end of 40.3.3 "with either" arbitration where the <b>arbitrator</b> is to be appointed by the body whose rules shall apply, or court proceedings as stated in the <b>contract data</b>.</p> <p>Replace "arbitration" at the end of 40.3.4 with "court of law"</p> |

# Johannesburg City Parks and Zoo

## C1.3 Form of Guarantee

Contract No .....

WHEREAS **The Johannesburg City Parks and Zoo** (hereinafter referred to as the Employer") entered into, a Contract with:

.....  
(hereinafter called "the Contactor") on the ..... day of ..... 20.....,  
for .....

at

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

AND WHEREAS ..... has/have at the request of the Contractor, agreed to give such guarantee;

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

The Employer shall, without reference and / or notice to us, have complete liberty of action to act in any manner authorized and/or contemplated by the terms of the said Contract, and/or to agree to any modifications, variations, alterations, directions or extensions of the completion date of the works under the said Contract, and that its rights under this guarantee shall in no way be prejudiced nor our liability hereunder be affected by reason of any steps which the Employer may take under such Contract, or of any modification, variation, alterations of the completion date which the Employer may make, give, concede or agree to under the said Contract.

This guarantee shall be limited to the payment of a sum of money.

The Employer shall be entitled, without reference to us, to release any guarantee held by it, and to give time to or compound or make any other arrangement with the Contractor.

This guarantee shall remain in full force and effect until the issue of the Certificate of Completion in terms of the Contract, unless we are advised in writing by the Employer before the issue of the said Certificate of his intention to institute claims, and the particulars thereof, in which event this guarantee shall remain in full force and effect until all such claims have been paid or liquidated.

Our total liability hereunder shall not exceed the Guaranteed Sum of .....  
..... Rand (in words); R ..... (in figures)

The Guarantor reserves the right to withdraw from this guarantee by depositing the Guaranteed Sum with the beneficiary, whereupon our liability hereunder shall cease.

We hereby choose our address for the serving of all notices for all purposes arising here from as

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

IN WITNESS WHEREOF this guarantee has been executed by us at .....  
on this ..... day of ..... 20 .....

Signature .....

Duly authorized to sign on behalf of .....

Address .....  
.....  
.....

As witnesses:

- 1 .....
- 2 .....

# Johannesburg City Parks and Zoo

## C1.3 Construction Guarantee

### GUARANTOR DETAILS AND DEFINITIONS

Guarantor means .....

Physical address .....  
.....

Guarantor's signatory 1 ..... Capacity .....

Guarantor's signatory 1 ..... Capacity .....

Employer means **The** .....

Contractor means .....

Agent means .....

Works means .....

Site means .....

Agreement means the JBCC Series 2000 Principal Building Agreement

Contract Sum i.e. the total of prices in the Form of Offer and Acceptance inclusive of VAT

Amount in figures R .....

Amount in words ..... (Rand)

Guaranteed Sum means the maximum aggregate amount of R .....

Amount in words ..... (Rand)

- 1 The Guarantor's liability shall be limited to the amount of the Guaranteed Sum as follows:

| <b>GUARANTOR'S LIABILITY</b>                                                                                            | <b>PERIOD OF LIABILITY</b>                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Maximum Guaranteed Sum (not exceeding 10 % of the contract sum) in the amount of:<br>.....<br>..... (Rands)<br>(R.....) | From and including the date of issue of this Construction Guarantee and up to and including the date of the only practical completion certificate or<br><br>From and including the date of issue of this Construction Guarantee and up to and including the date of the only practical completion certificate or the last practical completion certificate where there are sections, upon which this Construction Guarantee shall expire. |

- 2 The Guarantor hereby acknowledges that:

- 2.1 Any reference in this Guarantee to the Agreement is made for the purpose of convenience and shall not be construed as any intention whatsoever to create an accessory obligation or any intention whatsoever to create a suretyship.
- 2.2 Its obligation under this Guarantee is restricted to the payment of money.
- 3 Subject to the Guarantor's maximum liability referred to in clauses 1, the Guarantor hereby undertakes to pay the Employer the sum certified upon receipt of the documents identified in sub-clauses 3.1 to 3.3:
- 3.1 A copy of a first written demand issued by the Employer to the Contractor stating that payment of a sum certified by the Principal Agent in an interim or final payment certificate has not been made in terms of the Agreement and failing such payment within seven (7) calendar days, the Employer intends to call upon the Guarantor to make payment in terms of sub-clause 3.2.
- 3.2 A first written demand issued by the Employer to the Guarantor at the Guarantor's physical address with a copy to the Contractor stating that a period of seven (7) calendar days has elapsed since the first written demand in terms of sub-clause 4.1 and that the sum certified has still not been paid therefore the Employer calls up this Guarantee and demands payment of the sum certified from the Guarantor
- 3.3 A copy of the said payment certificate which entitles the Employer to receive payment in terms of the Agreement of the sum certified in clause 3.
- 4 Subject to the Guarantor's maximum liability referred to in clause 1, the Guarantor undertakes to pay the Employer the Guaranteed Sum or the full outstanding balance upon receipt of a first written demand from the Employer to the Guarantor at the Guarantor's physical address calling up this Guarantee stating that:
- 4.1 The Agreement has been cancelled due to the Contractor's default and that the Guarantee is called up in terms of clause 4. The demand shall enclose a copy of the notice of cancellation; or
- 4.2 A provisional sequestration or liquidation court order has been granted against the Contractor and that the Guarantee is called up in terms of clause 4. The demand shall enclose a copy of the court order.
- 5 It is recorded that the aggregate amount of payments required to be made by the Guarantor in terms of clauses 3 and 4 shall not exceed the Guarantor's maximum liability in terms of clause 1.
- 6 Where the Guarantor is a registered insurer and has made payment in terms of clause 4, the Employer shall upon the date of issue of the final payment certificate submit an expense account to the Guarantor showing how all monies received in terms of the Guarantee have been expended and shall refund to the Guarantor any resulting surplus.

All monies refunded to the Guarantor in terms of this Guarantee shall bear interest at the prime overdraft rate of the Employer's bank compounded monthly and calculated from the date payment was made by the Guarantor to the Employer until the date of refund.

- 7 Payment by the Guarantor in terms of clause 3 or 4 shall be made within seven (7) calendar days upon receipt of the first written demand to the Guarantor.
- 8 The Employer shall have the absolute right to arrange his affairs with the Contractor in any manner which the Employer deems fit and the Guarantor shall not have the right to claim his release from this Guarantee on account of any conduct alleged to be prejudicial to the Guarantor
- 9 The Guarantor chooses the physical address as stated above for all purposes in connection herewith.
- 10 This Guarantee is neither negotiable nor transferable and shall expire in terms of clause 1, or payment in full of the Guaranteed Sum or on the Guarantee expiry date, whichever is the earlier, where after no claims will be considered by the Guarantor. The original of this Guarantee shall be returned to the Guarantor after it has expired.
- 11 This Guarantee, with the required demand notices in terms of clauses 3 or 4, shall be regarded as a liquid document for the purpose of obtaining a court order.
- 12 Where this Guarantee is issued in the Republic of South Africa the Guarantor hereby consents in terms of Section 45 of the Magistrate's Courts Act No 32 of 1944, as amended, to the jurisdiction of the Magistrate's Court of any district having jurisdiction in terms of Section 28 of the said Act, notwithstanding that the amount of the claim may exceed the jurisdiction of the Magistrate's Court.

Signed at ..... Date .....

Guarantor's  
Signatory 1 .....

Guarantor's  
Signatory 2 .....

Witness 1 ..... Witness 2 .....

Guarantor's seal or stamp



## **Johannesburg City Parks and Zoo**

### **C2: Pricing Data**

#### **C2.2: Bill of Quantities**

DEVELOPMENT OF OLIFANTSVLEI CEMETERY - CELL G PHASE 3

| SECTION 1200          |        | GENERAL REQUIREMENTS AND PROVISIONS                                                                                                                                                                  |          |              |              |              |
|-----------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------------|--------------|--------------|
| ITEM                  | METHOD | DESCRIPTION                                                                                                                                                                                          | UNIT     | QTY          | RATE         | AMOUNT       |
| B12.02(a)             | LIC    | Excavation for location, protecting, or shifting of existing services, protecting, or shifting of existing services                                                                                  |          |              |              |              |
|                       |        | a) Excavating material within the following depth ranges below ground level for the exposing of/for searching for services:<br>0m to 1.5m<br>(i) Soft Material                                       | m³       | 100          |              |              |
|                       |        | (ii) Hard Material                                                                                                                                                                                   | m³       | 10           |              |              |
|                       |        | (b) Relocation and protection of existing servicesas ordered by the engineer                                                                                                                         | Prov Sum | 1            | R 30 000,00  | R 30 000,00  |
| B12.02(b)             | LIC    | Backfilling of excavations made for locating, protecting, adjusting or shifting existing services.                                                                                                   |          |              |              |              |
|                       |        | (a) Using the excavated materials                                                                                                                                                                    | m³       | 100          |              |              |
|                       |        | (b) Using imported selected materials                                                                                                                                                                | m³       | 10           |              |              |
|                       |        | (b) Extra over items B12.03 (a), and (b) for stabilizing with 3% Ordinary Portland Cement.                                                                                                           | m³       | 10           |              |              |
| 12.03                 |        | Quality control tests ordered by the Engineer.                                                                                                                                                       | Prov Sum | 1            | R 50 000,00  | R 50 000,00  |
| 12.04                 |        | Handling cost and profit in respect of item B12.03                                                                                                                                                   | %        | R 50 000,00  | 10,00%       | R 5 000,00   |
| 12.05                 |        | Remuneration of Community Liaison Officer (CLO) for the duration of the contract @ R8750 per month (payment in line item is subject to confirmation by specified professional and proof of payment). |          |              |              |              |
|                       |        | (a) Construction of Phase 3                                                                                                                                                                          | Month    | 6            | R 8 750,00   | R 52 500,00  |
| 12.06 (a)             |        | Remuneration for SHE Officer for the duration of the contract.                                                                                                                                       |          |              |              |              |
|                       |        | (i) Construction of Phase 3                                                                                                                                                                          | Month    | 6            |              |              |
| 12.06 (b)             |        | Provision for Independent Environmental Control Officer for the duration of the contract (payment in line item is subject to confirmation by specified professional and proof of payment)            |          |              |              |              |
|                       |        | (i) Construction of Phase 3                                                                                                                                                                          | Month    | 6            |              |              |
| 12.07 (a)             |        | Provision for Social Facilitation Consultant for the duration of the contract (payment in line item is subject to confirmation by specified professional and proof of payment)                       |          |              |              |              |
|                       |        | (i) Construction of Phase 3                                                                                                                                                                          | Prov Sum | 1            | R 150 000,00 | R 150 000,00 |
| 12.07 (b)             |        | Handling cost and profit in respect of item B12.06(a): (i) B12.06 (b): (i) and B12.07 (a): (i)                                                                                                       | %        | R 150 000,00 | 10,00%       | R 15 000,00  |
| 12,08                 |        | Contract notice board as directed by the Engineer                                                                                                                                                    | No.      | 2            | R 15 000,00  | R 30 000,00  |
| 12.09 (a)             |        | Provision for Engineering resident engineer for the duration of the contract @R45000,00 per month.                                                                                                   |          |              |              |              |
|                       |        | (i) Construction of Phase 3                                                                                                                                                                          | Month    | 6            | R 45 000,00  | R 270 000,00 |
|                       |        | (ii) Handling cost and profit in respect of item B12.09(c): (i)                                                                                                                                      | %        | R 270 000,00 | 10,00%       | R 27 000,00  |
| B12.10 (a)            |        | Site De-establishment                                                                                                                                                                                | Prov Sum | 1            | R 30 000,00  | R 30 000,00  |
| B1206                 |        | Provision of topographical survey at entrance                                                                                                                                                        | Prov Sum | 1            | R 35 000,00  | R 35 000,00  |
| TOTAL CARRIED FORWARD |        |                                                                                                                                                                                                      |          |              |              |              |

|                                                       |        |                                                            |          |     |      |        |
|-------------------------------------------------------|--------|------------------------------------------------------------|----------|-----|------|--------|
| JOHANNESBURG ZOO AND CITY PARKS                       |        |                                                            |          |     |      |        |
| DEVELOPMENT OF OLIFANTSVLEI CEMETERY - CELL G PHASE 3 |        |                                                            |          |     |      |        |
| SECTION 1300                                          | METHOD | CONTRACTOR'S ESTABLISHMENT ON SITE AND GENERAL OBLIGATIONS |          |     |      |        |
| ITEM                                                  |        | DESCRIPTION                                                | UNIT     | QTY | RATE | AMOUNT |
| B13.01                                                |        | Contractor's general obligations                           |          |     |      |        |
|                                                       |        | (a) Fixed obligations                                      | Lump Sum | 1   |      |        |
|                                                       |        | (c) Time-related obligations                               |          |     |      |        |
|                                                       |        | (i) Construction of Phase 3                                | Month    | 6   |      |        |
| TOTAL CARRIED FORWARD TO SUMMARY                      |        |                                                            |          |     |      |        |

| JOHANNESBURG ZOO AND CITY PARKS                      |        |                                                                                                                                                                                                                                                                                                                                                                                         |          |     |      |        |
|------------------------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----|------|--------|
| DEVELOPMENT OF OLIFANTSVLEI CEMETERY -CELL G PHASE 3 |        |                                                                                                                                                                                                                                                                                                                                                                                         |          |     |      |        |
| SECTION 1400                                         | METHOD | HOUSING, OFFICES AND LABORATORY FOR THE ENGINEERLS SITE PERSONNEL                                                                                                                                                                                                                                                                                                                       |          |     |      |        |
| ITEM                                                 |        | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                             | UNIT     | QTY | RATE | AMOUNT |
| B14.01                                               |        | <b>Office and laboratories:</b><br><br>The provision of accomodation as specified, including roof, external and internal walls, windows complete with glazing, doors with locks and fittings, floors, fencing, etc<br><br>(a) Offices (interior floor space only)                                                                                                                       | Lump sum | 1   |      |        |
| B14.02                                               |        | <b>Office and laboratory furniture:</b><br><br>(b) Offices<br><br>(i) Desks, complete with drawers and locks<br><br>(ii) Conference table<br><br>(iii) Filling Cabinet<br><br>(iv) Chairs swivel type<br><br>(v) A3/A4 colour printer/ copier and scanner<br><br>(vi) Rain gauge<br><br>(vii) Measuring wheel<br><br>(viii) First Aid Kit<br><br>(f) Air conditioning units and heaters | No       | 2   |      |        |
|                                                      |        |                                                                                                                                                                                                                                                                                                                                                                                         | No       | 1   |      |        |
|                                                      |        |                                                                                                                                                                                                                                                                                                                                                                                         | No       | 1   |      |        |
|                                                      |        |                                                                                                                                                                                                                                                                                                                                                                                         | No       | 6   |      |        |
|                                                      |        |                                                                                                                                                                                                                                                                                                                                                                                         | No       | 1   |      |        |
|                                                      |        |                                                                                                                                                                                                                                                                                                                                                                                         | No       | 1   |      |        |
|                                                      |        |                                                                                                                                                                                                                                                                                                                                                                                         | No       | 1   |      |        |
|                                                      |        |                                                                                                                                                                                                                                                                                                                                                                                         | No       | 1   |      |        |
|                                                      |        |                                                                                                                                                                                                                                                                                                                                                                                         | No       | 2   |      |        |
| B14.08                                               |        | <b>Services</b><br><br>(a) Services at office and laboratories for provision of water, electricity, sewage and rubbish removal, cleaning services, maintenance and repairs, including maintenance of access roads, footpath, etc<br><br>(i) Fixed costs<br><br><b>(ii) Running costs</b><br><br>Construction of Phase 3                                                                 | Lump Sum | 1   |      |        |
|                                                      |        |                                                                                                                                                                                                                                                                                                                                                                                         | Month    | 6   |      |        |
| TOTAL CARRIED FORWARD TO SUMMARY                     |        |                                                                                                                                                                                                                                                                                                                                                                                         |          |     |      |        |

| JOHANNESBURG ZOO AND CITY PARKS                       |        |                                                                                                                                   |      |      |      |        |
|-------------------------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------|------|------|------|--------|
| DEVELOPMENT OF OLIFANTSVLEI CEMETERY - CELL G PHASE 3 |        |                                                                                                                                   |      |      |      |        |
| SECTION 1600                                          | METHOD | OVERHAUL                                                                                                                          |      |      |      |        |
| ITEM                                                  |        | DESCRIPTION                                                                                                                       | UNIT | QTY  | RATE | AMOUNT |
| B16.02                                                |        | (a) Overhaul on material hauled in excess of a free-haul distance of 0.5km, for haul up to or through 1.0km (restricted overhaul) | m³   | 1000 |      |        |
|                                                       |        | (b) Overhaul on material hauled in excess of 1.0km (ordinary overhaul)                                                            | m³km | 275  |      |        |
| TOTAL CARRIED FORWARD TO SUMMARY                      |        |                                                                                                                                   |      |      |      |        |

| JOHANNESBURG ZOO AND CITY PARKS                       |                       |                                                                                                                                                                     |          |           |      |        |
|-------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------|------|--------|
| DEVELOPMENT OF OLIFANTSVLEI CEMETERY - CELL G PHASE 3 |                       |                                                                                                                                                                     |          |           |      |        |
| SECTION 1700                                          | CLEARING AND GRUBBING |                                                                                                                                                                     |          |           |      |        |
| ITEM                                                  | METHOD                | DESCRIPTION                                                                                                                                                         | UNIT     | QTY       | RATE | AMOUNT |
| B17.02                                                |                       | <b>Description of Work</b><br>(a) Clearing<br>(b) Girth exceeding 1m up to and including 2m                                                                         | ha<br>No | 1,5<br>10 |      |        |
| B17.03                                                |                       | <b>Cleaning out of hydraulic structures</b><br>(a) Pipes with an internal diameter up to and including 750mm<br>(b) Pipes with an internal diameter exceeding 750mm | m<br>m   | 10<br>10  |      |        |
| TOTAL CARRIED FORWARD TO SUMMARY                      |                       |                                                                                                                                                                     |          |           |      |        |

## DEVELOPMENT OF OLIFANTSVLEI CEMETERY - CELL G PHASE 3

| SECTION B1800                    |        | DAYWORK SCHEDULE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |      |     |      |           |
|----------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----|------|-----------|
| ITEM                             | METHOD | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | UNIT | QTY | RATE | AMOUNT    |
| B18.01                           |        | <b>Day work</b><br><br>(a) Normal hours of duty of:<br><br>(i) Unskilled labour<br><br>(ii) Semi-skilled labour<br><br>(iii) Skilled labour<br><br>(iv) Foreman                                                                                                                                                                                                                                                                                                                                                                                                                           | hr   | 9   |      | Rate Only |
| B18.02                           |        | <b>Hire of construction equipment</b><br><br>(a) Excavator<br>Minimum power: 75kW (16 ton)<br><br>(b) TL Backactor<br>Minimu power: 50kW (similar to Case 580G)<br><br>(c) Front end loader<br>Minimum power: 60kW (Similar to Cat 920)<br><br>(e) Tip truck<br>Minimum load mass: 4t Minimum load capacity: 6m3<br><br>(f) Grader (CAT 140G or similar)<br><br>(g) Walk behind roller (Bomag BW90 or similar)<br><br>(h) Mechanical Broom<br><br>(i) D6 Dozer<br><br>(j) Compressor complete with two hand-<br><br>(k) Submersible dewatering pump, 40 m3/h, with hoses and power supply | hr   | 9   |      | Rate Only |
|                                  |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | hr   | 9   |      | Rate Only |
|                                  |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | hr   | 9   |      | Rate Only |
|                                  |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | hr   | 9   |      | Rate Only |
|                                  |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | hr   | 9   |      | Rate Only |
|                                  |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | hr   | 9   |      | Rate Only |
|                                  |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | hr   | 9   |      | Rate Only |
|                                  |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | hr   | 9   |      | Rate Only |
|                                  |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | hr   | 9   |      | Rate Only |
|                                  |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | hr   | 9   |      | Rate Only |
| TOTAL CARRIED FORWARD TO SUMMARY |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |      |     |      |           |

| JOHANNESBURG ZOO AND CITY PARKS                       |        |                                                                                                                                                           |      |      |      |           |
|-------------------------------------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|-----------|
| DEVELOPMENT OF OLIFANTSVLEI CEMETERY - CELL G PHASE 3 |        |                                                                                                                                                           |      |      |      |           |
| SECTION 2200                                          | METHOD | PREFABRICATED CULVERTS                                                                                                                                    |      |      |      |           |
| ITEM                                                  |        | DESCRIPTION                                                                                                                                               | UNIT | QTY  | RATE | AMOUNT    |
| B22.01                                                | LIC    | <b>Excavation:</b>                                                                                                                                        |      |      |      |           |
|                                                       |        | (a) Excavating soft material situated within the following depth ranges below the surface level:                                                          |      |      |      |           |
|                                                       |        | (i) 0m up to 1,5m                                                                                                                                         | m³   | 500  |      |           |
|                                                       |        | (ii) Exceeding 1,5m up to 3,0m                                                                                                                            | m³   | 4000 |      |           |
|                                                       | LIC    | (iii) Exceeding 3,0m up to 4.5m                                                                                                                           | m³   | 100  |      |           |
|                                                       |        | (b) Extra over subitem 22.01(a) for excavation in intermediate material irrespective of depth                                                             | m³   | 550  |      |           |
| 22.02                                                 |        | <b>Backfilling:</b>                                                                                                                                       |      |      |      |           |
|                                                       |        | (a) Using the excavated material                                                                                                                          | m³   | 4000 |      |           |
|                                                       | LIC    | (b) Using imported selected material                                                                                                                      | m³   | 1450 |      |           |
|                                                       |        | (c) Extra over subitems 22.02(a) and 22.02(b) for soil cement backfilling (3% cement)                                                                     | m³   | 400  |      |           |
| 22.03                                                 |        | <b>Concrete pipe culverts:</b>                                                                                                                            |      |      |      |           |
|                                                       |        | (b) On Class B bedding:                                                                                                                                   |      |      |      |           |
|                                                       | LIC    | (i) 600mm dia. (Class 100D)                                                                                                                               | m    | 616  |      |           |
|                                                       |        | (ii) 750mm dia. (Class 100D)                                                                                                                              | m    | 380  |      |           |
|                                                       |        | (iii) 900mm dia . (Class 100D)                                                                                                                            | m    | 45   |      |           |
|                                                       |        | (iv) 1200mm dia . (Class 100D)                                                                                                                            | m    | 276  |      |           |
| 22.05                                                 | LIC    | <b>Portal and rectangular culverts:</b>                                                                                                                   |      |      |      |           |
|                                                       |        | (a) With prefabricated floor slabs                                                                                                                        |      |      |      |           |
|                                                       |        | (i) 1200mm x 600mm Class 150S RP Culverts                                                                                                                 | No.  | 10   |      | Rate Only |
| 22.07                                                 |        | <b>Cast Insitu Concrete and Formworks</b>                                                                                                                 |      |      |      |           |
|                                                       | LIC    | (c) In inlet and outlet structures, skewed ends, catchpits, manholes, thrust and anchor blocks, excluding formwork but including Class U2 surface finish: |      |      |      |           |
|                                                       |        | (i) Class 25/19 concrete                                                                                                                                  | m³   | 35   |      |           |
|                                                       |        | (d) Formwork of concrete under subitem 22.07(c)                                                                                                           |      |      |      |           |
|                                                       |        | (i) Vertical formwork for F1 surface finish                                                                                                               | m²   | 10   |      | Rate Only |
|                                                       | LIC    | (ii) Vertical formwork for F2 surface finish                                                                                                              | m²   | 150  |      |           |
| 22.12                                                 |        | <b>Removing existing concrete:</b>                                                                                                                        |      |      |      |           |
|                                                       |        | (a) Plain concrete                                                                                                                                        | m³   | 50   |      |           |
|                                                       |        | (b) Reinforced concrete                                                                                                                                   | m³   | 10   |      |           |
| B22.14                                                | LIC    | <b>Removing and stacking existing prefabricated culverts 1200mm x 600mm Class 150S RP Culverts for re use as directed by the engineer</b>                 | No   | 10   |      | Rate Only |
| 22.1                                                  |        | <b>Steel reinforcement:</b>                                                                                                                               |      |      |      |           |
|                                                       |        | (c) High tensile steel mesh:                                                                                                                              |      |      |      |           |
|                                                       |        | (i) Ref. 395                                                                                                                                              | kg   | 50   |      |           |
|                                                       |        | (iii) Ref. 617                                                                                                                                            | kg   | 50   |      |           |
| TOTAL CARRIED FORWARD TO SUMMARY                      |        |                                                                                                                                                           |      |      |      |           |

| JOHANNESBURG ZOO AND CITY PARKS                       |        |                                                                                                                                                |      |      |      |           |
|-------------------------------------------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|-----------|
| DEVELOPMENT OF OLIFANTSVLEI CEMETERY - CELL G PHASE 3 |        |                                                                                                                                                |      |      |      |           |
| SECTION 2300                                          | METHOD | CONCRETE KERBING, CONCRETE CHANNELLING, CHUTES AND DOWNPIPES, AND CONCRETE LININGS FOR OPEN DRAINS                                             |      |      |      |           |
| ITEM                                                  |        | DESCRIPTION                                                                                                                                    | UNIT | QTY  | RATE | AMOUNT    |
| 22.17                                                 |        | <b>Manholes, catchpits, precast inlet and outlet structures complete</b>                                                                       |      |      |      |           |
|                                                       |        | (a) Precast inlet and outlet structures                                                                                                        | No   | 3    |      |           |
|                                                       |        | (b) Catchpits Precast Kerb Inlets as shown on drawing                                                                                          | No   | 12   |      |           |
|                                                       |        | (c) Junction Box as shown on drawing                                                                                                           | No   | 2    |      |           |
|                                                       |        | (d) Stormwater Manhole as shown on drawing                                                                                                     | No   | 12   |      |           |
| 23.01                                                 | LIC    | Concrete Kerbing                                                                                                                               |      |      |      |           |
|                                                       |        | (c) Precast kerb to SABS 927 (Class 25/19)                                                                                                     |      |      |      |           |
|                                                       |        | (i) Figure 8c mountable kerb (Class 25/19)                                                                                                     | m    | 800  |      |           |
|                                                       |        | (ii) Figure 7 kerb (Class 25/19)                                                                                                               | m    | 800  |      |           |
| 23.02                                                 | LIC    | 25MPa Concrete kerbing-channeling combination                                                                                                  |      |      |      |           |
|                                                       |        | (a) Class 25/19 Cast In-situ Concrete Gutter, cast onto subbase as indicated on drawing 2023/CG/1080/10CV/035/04/01 Minimum thickness of 125mm | m    | 800  |      |           |
| 23.03                                                 | LIC    | Concrete Chutes                                                                                                                                |      |      |      |           |
|                                                       |        | (a) Class 25/19 pre-cast concrete chutes                                                                                                       | m    | 10   |      |           |
| 23.07                                                 | LIC    | Trimming of excavations for concrete-lined open drains                                                                                         |      |      |      |           |
|                                                       |        | (a) In soft material                                                                                                                           | m²   | 500  |      |           |
|                                                       |        | (b) In hard material                                                                                                                           | m²   | 100  |      |           |
| 23.08                                                 |        | Concrete Lining for Open Drains                                                                                                                |      |      |      |           |
|                                                       |        | (a) Class 25MPa/19 of 100mm cast in situ concrete base for chute entrance                                                                      | m³   | 10   |      | Rate Only |
|                                                       |        | (b) To sides with formwork on both internal and external faces (each face measured)                                                            | m²   | 10   |      | Rate Only |
| 23.10                                                 |        | Sealed joints in concrete linings of open drains (type 2)                                                                                      | m    | 60   |      |           |
| 23.13                                                 |        | Polyethylene sheeting (0.15mm thick) for concrete-lined open drains                                                                            | m²   | 1500 |      |           |
| TOTAL CARRIED FORWARD TO SUMMARY                      |        |                                                                                                                                                |      |      |      |           |

| JOHANNESBURG ZOO AND CITY PARKS                       |        |                                                                                                                                                                                                                                          |                      |                           |      |        |
|-------------------------------------------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------|------|--------|
| DEVELOPMENT OF OLIFANTSVLEI CEMETERY - CELL G PHASE 3 |        |                                                                                                                                                                                                                                          |                      |                           |      |        |
| SECTION 3300                                          | METHOD | MASS EARTHWORKS                                                                                                                                                                                                                          |                      |                           |      |        |
| ITEM                                                  |        | DESCRIPTION                                                                                                                                                                                                                              | UNIT                 | QTY                       | RATE | AMOUNT |
| 33.01                                                 |        | Cut and borrow to fill, including free-haul up to 1.0km:<br><br>(a) Material in compacted layer thickness of 200mm and less:<br><br>(ii) Compacted to 90% of modified AASHTO density                                                     | m³                   | 3450                      |      |        |
| 33.04                                                 |        | Cut to spoil, including free-haul up to 1km , Including spreading and compaction. Material obtained from:<br><br>(a) Soft excavation<br><br>(b) Intermediate excavation<br><br>(c) Hard excavation<br><br>(d) Boulder excavation Class B | m³<br>m³<br>m³<br>m³ | 1450<br>1200<br>345<br>50 |      |        |
| 33.05                                                 |        | Overbreak in hard and class A excavation                                                                                                                                                                                                 | m²                   | 50                        |      |        |
| 33.07                                                 |        | Removal of unsuitable material (including free-haul of 0.5 km):<br><br>(b) In layer thicknesses exceeding 150mm<br><br>(i) Stable material<br><br>(ii) Unstable material                                                                 | m³<br>m³             | 100<br>100                |      |        |
| 33.10                                                 |        | Roadbed preparation and compaction of material:<br><br>(b) Compaction to 93% of Mod AASHTO density                                                                                                                                       | m³                   | 2550                      |      |        |
| 33.13                                                 |        | Finishing-off cut and fill slopes, medians and interchange areas:<br><br>(a) Cut slopes<br><br>(b) Fill slopes                                                                                                                           | m²<br>m²             | 50<br>125                 |      |        |
| 33.18                                                 |        | Extra over items 33.10 and 33.12 for preparing and/or treating the roadbed and compacting material in restricted areas:<br><br>(a) Item 33.10 for roadbed preparation and the compaction of material                                     | m³                   | 800                       |      |        |
| TOTAL CARRIED FORWARD                                 |        |                                                                                                                                                                                                                                          |                      |                           |      |        |

| JOHANNESBURG ZOO AND CITY PARKS                       |        |                                                                              |      |     |      |        |
|-------------------------------------------------------|--------|------------------------------------------------------------------------------|------|-----|------|--------|
| DEVELOPMENT OF OLIFANTSVLEI CEMETERY - CELL G PHASE 3 |        |                                                                              |      |     |      |        |
| SECTION 3400                                          | METHOD | PAVEMENT LAYERS OF GRAVEL MATERIAL                                           |      |     |      |        |
| ITEM                                                  |        | DESCRIPTION                                                                  | UNIT | QTY | RATE | AMOUNT |
| B34.01                                                |        | Pavement layers constructed from commercialy sourced material                |      |     |      |        |
|                                                       |        | (d) Gravel subbase, <b>G5 Material</b> (Unstabilized material) compacted to: |      |     |      |        |
|                                                       |        | (ii) 95% of modified AASHTO density (150mm layer thickness)                  | m³   | 800 |      |        |
|                                                       |        | (f) Gravel base, <b>G5 Material stabilised to C4</b> compacted to:           |      |     |      |        |
|                                                       |        | (i) 98% of modified AASHTO density (150mm layer thickness)                   | m³   | 800 |      |        |
| 34,02                                                 |        | Extra over item 34.01 for excavation of material in:                         |      |     |      |        |
|                                                       |        | (a) Intermediate excavation                                                  | m³   | 100 |      |        |
|                                                       |        | (b) Hard excavation                                                          | m³   | 100 |      |        |
| 34,07                                                 |        | Extra over item 34.01 for temporarily blading the material to windrow:       | m³   | 800 |      |        |
| TOTAL CARRIED FORWARD TO SUMMARY                      |        |                                                                              |      |     |      |        |

| JOHANNESBURG ZOO AND CITY PARKS                       |        |                                                                                                              |      |     |      |        |
|-------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------|------|-----|------|--------|
| DEVELOPMENT OF OLIFANTSVLEI CEMETERY - CELL G PHASE 3 |        |                                                                                                              |      |     |      |        |
| SECTION 3500                                          | METHOD | STABILISATION                                                                                                |      |     |      |        |
| ITEM                                                  |        | DESCRIPTION                                                                                                  | UNIT | QTY | RATE | AMOUNT |
| 35,01                                                 |        | Chemical stabilisation 150mm layer thickness extra over unstabilized compacted layers (base & subbase layer) | m³   | 780 |      |        |
| 35,02                                                 |        | Chemical stabilising agent:                                                                                  |      |     |      |        |
|                                                       |        | (a) CEM II, 32.5 Sure Road                                                                                   | t    | 95  |      |        |
| 35,04                                                 |        | Provisions and application of water for curing                                                               | kl   | 200 |      |        |
| TOTAL CARRIED FORWARD TO SUMMARY                      |        |                                                                                                              |      |     |      |        |

| JOHANNESBURG ZOO AND CITY PARKS                       |            |                                                                                                                                                                                                |                |      |      |        |
|-------------------------------------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------|------|--------|
| DEVELOPMENT OF OLIFANTSVLEI CEMETERY - CELL G PHASE 3 |            |                                                                                                                                                                                                |                |      |      |        |
| SECTION 5600                                          | ROAD SIGNS |                                                                                                                                                                                                |                |      |      |        |
| ITEM                                                  | METHOD     | DESCRIPTION                                                                                                                                                                                    | UNIT           | QTY  | RATE | AMOUNT |
| 56,01                                                 |            | Road sign boards with painted or coloured semi-matt background. Symbols, lettering and boarder in semi-matt black or in Class I retroreflective material, where the sign board is constructed. |                |      |      |        |
|                                                       |            | (a) Aluminium sheet (2,0 mm thick):                                                                                                                                                            |                |      |      |        |
|                                                       |            | (i) Area not exceeding 2m <sup>2</sup>                                                                                                                                                         | m <sup>2</sup> | 5    |      |        |
| 5603                                                  |            | Road sign supports (overhead road sign structures excluded)                                                                                                                                    |                |      |      |        |
|                                                       |            | (a) Structural Steel - Steel tubing (hot-dip galvanised)                                                                                                                                       | ton            | 0,06 |      |        |
| 5605                                                  |            | Erection Road Signs                                                                                                                                                                            |                |      |      |        |
|                                                       |            | (a) Excavation and backfilling                                                                                                                                                                 | m <sup>3</sup> | 0,5  |      |        |
| TOTAL CARRIED FORWARD TO SUMMARY                      |            |                                                                                                                                                                                                |                |      |      |        |

| JOHANNESBURG ZOO AND CITY PARKS                       |               |                                                                                                       |          |      |      |           |
|-------------------------------------------------------|---------------|-------------------------------------------------------------------------------------------------------|----------|------|------|-----------|
| DEVELOPMENT OF OLIFANTSVLEI CEMETERY - CELL G PHASE 3 |               |                                                                                                       |          |      |      |           |
| SECTION 5700                                          | ROAD MARKINGS |                                                                                                       |          |      |      |           |
| ITEM                                                  | METHOD        | DESCRIPTION                                                                                           | UNIT     | QTY  | RATE | AMOUNT    |
| 57,01                                                 |               | Road-marking paint                                                                                    |          |      |      |           |
|                                                       |               | (a) White lines(broken or unbroken)                                                                   |          |      |      |           |
|                                                       | LIC           | (1) 100 mm wide                                                                                       | km       | 1    |      |           |
|                                                       | LIC           | (2) 150 mm wide                                                                                       | km       | 1    |      |           |
|                                                       | LIC           | (3) 300mm wide                                                                                        | km       | 1    |      |           |
|                                                       |               | (b) Yellow lines (broken or unbroken)                                                                 |          |      |      |           |
|                                                       | LIC           | (1) 100 mm wide                                                                                       | m        | 10   |      | Rate Only |
|                                                       | LIC           | (d) White lettering and symbols                                                                       | m²       | 10   |      | Rate Only |
|                                                       | LIC           | (e) Yellow lettering and symbols                                                                      | m²       | 13,5 |      |           |
| B57.06                                                | LIC           | (f) Transverse lines, painted island and<br>arrestor bed markings (any colour)                        | m²       | 10   |      | Rate Only |
|                                                       | LIC           | Setting out and premarking the lines<br>(Excluding traffic-island markings,<br>lettering and symbols) | km       | 1    |      |           |
| B57.07                                                |               | Establishment of the painting unit during the<br>construction period                                  | Lump Sum | 1    |      |           |
| TOTAL CARRIED FORWARD TO SUMMARY                      |               |                                                                                                       |          |      |      |           |

|                                                       |                                     |                                                                         |      |     |      |        |
|-------------------------------------------------------|-------------------------------------|-------------------------------------------------------------------------|------|-----|------|--------|
| JOHANNESBURG ZOO AND CITY PARKS                       |                                     |                                                                         |      |     |      |        |
| DEVELOPMENT OF OLIFANTSVLEI CEMETERY - CELL G PHASE 3 |                                     |                                                                         |      |     |      |        |
| SECTION 5900                                          | FINISHING THE ROAD AND ROAD RESERVE |                                                                         |      |     |      |        |
| ITEM                                                  | METHOD                              | DESCRIPTION                                                             | UNIT | QTY | RATE | AMOUNT |
| 59,01                                                 |                                     | Finishing the road and road reserve:<br><br>(b) Single carriageway road | km   | 1   |      |        |
| TOTAL CARRIED FORWARD TO SUMMARY                      |                                     |                                                                         |      |     |      |        |

| JOHANNESBURG ZOO AND CITY PARKS                       |        |                                                                                                                                                                                                                                                                  |      |      |      |        |
|-------------------------------------------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|--------|
| DEVELOPMENT OF OLIFANTSVLEI CEMETERY - CELL G PHASE 3 |        |                                                                                                                                                                                                                                                                  |      |      |      |        |
| SECTION 7300                                          | METHOD | CONCRETE BLOCK FOR ROADS                                                                                                                                                                                                                                         |      |      |      |        |
| ITEM                                                  |        | DESCRIPTION                                                                                                                                                                                                                                                      | UNIT | QTY  | RATE | AMOUNT |
| 73,01                                                 | LIC    | (a) Concrete block paving (80mm thick, 35MPa, Grey, Type S-A(A) (UTG2) interlocking concrete block paving laid in herringbone bond<br><b>(Rates should includes laying, profit and haulage from to Joburg ZOO to Olifantvlei cemetery , 30km away from site)</b> | m²   | 120  |      |        |
|                                                       | LIC    | (b) Concrete block paving (80mm thick, 35MPa, Grey, Type S-A(A) (UTG2) interlocking concrete block paving laid in herringbone bond<br><b>(Rates should includes laying of paver from stockpile on site)</b>                                                      | m²   | 500  |      |        |
|                                                       | LIC    | (c) Concrete block paving (80mm thick, 35MPa, Grey, Type S-A(A) (UTG2) interlocking concrete block paving laid in herringbone bond<br><b>(Rates should includes laying of paver from Source to site)</b>                                                         | m²   | 4120 |      |        |
|                                                       | LIC    | (b) 30mm river sand/paving sand                                                                                                                                                                                                                                  | m³   | 150  |      |        |
| TOTAL CARRIED FORWARD TO SUMMARY                      |        |                                                                                                                                                                                                                                                                  |      |      |      |        |

| JOHANNESBURG ZOO AND CITY PARKS                       |        |                                                                                                                                                                                                                          |       |     |      |        |
|-------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----|------|--------|
| DEVELOPMENT OF OLIFANTSVLEI CEMETERY - CELL G PHASE 3 |        |                                                                                                                                                                                                                          |       |     |      |        |
| SCHEDULE B                                            | METHOD | OSHA AND ENVIRONMENTAL PLAN                                                                                                                                                                                              |       |     |      |        |
| ITEM                                                  |        | DESCRIPTION                                                                                                                                                                                                              | UNIT  | QTY | RATE | AMOUNT |
| B1                                                    |        | <b>OHS and Environmental Authorisation</b>                                                                                                                                                                               |       |     |      |        |
| B1.1                                                  |        | Contractor's initial obligations in respect of the Occupational Health and Safety Act and Construction Regulations, including the preparation and submission of the Health and Safety File.                              | Sum   | 1   |      |        |
| B1.2                                                  |        | Contractor's initial obligations in respect of the National Environmental Management Act (NEMA) and applicable Environmental Regulations, including the preparation and submission of the Environmental Management File. | Sum   | 1   |      |        |
| B1.3                                                  |        | <b>Contractors time related obligations in respect of the Occupational Health and Safety Act and Construction Regulations.</b>                                                                                           |       |     |      |        |
|                                                       |        | (a) Construction of Phase 3                                                                                                                                                                                              | Month | 6   |      |        |
| B1.4                                                  |        | <b>Contractors time related obligations in respect of the Environmental Management and Construction Regulations</b>                                                                                                      |       |     |      |        |
|                                                       |        | (a) Construction of Phase 3                                                                                                                                                                                              | Month | 6   |      |        |
| TOTAL CARRIED FORWARD                                 |        |                                                                                                                                                                                                                          |       |     |      |        |

| JOHANNESBURG ZOO AND CITY PARKS                       |        |                                                                                                                                |      |     |      |           |
|-------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------|------|-----|------|-----------|
| DEVELOPMENT OF OLIFANTSVLEI CEMETERY - CELL G PHASE 3 |        |                                                                                                                                |      |     |      |           |
| SCHEDULE B                                            | METHOD | OSHA AND ENVIRONMENTAL PLAN                                                                                                    |      |     |      |           |
| ITEM                                                  |        | DESCRIPTION                                                                                                                    | UNIT | QTY | RATE | AMOUNT    |
| B1000                                                 |        | <b>ENVIRONMENTAL MANGEMENT PLAN</b>                                                                                            |      |     |      |           |
| B100.01                                               |        | <b>Penalty for unnecessary removal or damage to trees for the following diameter sizes:</b>                                    |      |     |      |           |
|                                                       |        | (a) 2 600mm girth or less                                                                                                      | No   | 1   |      | Rate Only |
|                                                       |        | (b) Greater than 2 600mm, but less than 6 180mm girth                                                                          | No   | 1   |      | Rate Only |
|                                                       |        | (c) Greater than 6 180mm girth                                                                                                 | No   | 1   |      | Rate Only |
| B100.02                                               |        | <b>Penalty for serious violations:</b>                                                                                         |      |     |      |           |
|                                                       |        | (a) Hazardous chemical/oil spill and/or dumping in non-approved sites                                                          | No   | 1   |      | Rate Only |
|                                                       |        | (b) General damage to sensitive environments                                                                                   | No   | 1   |      | Rate Only |
|                                                       |        | (c) Damage to cultural and historical sites                                                                                    | No   | 1   |      | Rate Only |
|                                                       |        | (d) Pollution of water sources                                                                                                 | No   | 1   |      | Rate Only |
|                                                       |        | (e) Unauthorised blasting activities                                                                                           | No   | 1   |      | Rate Only |
|                                                       |        | (f) Uncontrolled/unmanaged erosion per incident, depending on environment impacts, plus rehabilitation at contractor's cost    | No   | 1   |      | Rate Only |
|                                                       |        | (g) Damage to sensitive vegetation within "no-go" areas of vegetation damaged, plus rehabilitation thereof at contractors cost | No   | 1   |      | Rate Only |
| B100.03                                               |        | <b>Penalty for less serious violations:</b>                                                                                    |      |     |      |           |
|                                                       |        | (a) Littering on site                                                                                                          | No   | 1   |      | Rate Only |
|                                                       |        | (b) Lighting of illegal fires on site                                                                                          | No   | 1   |      | Rate Only |
|                                                       |        | (c) Persistent or un-repaired fuel and oil leaks                                                                               | No   | 1   |      | Rate Only |
|                                                       |        | (d) Any person related to the contractor's operations found within the designated "no-go" areas                                | No   | 1   |      | Rate Only |
|                                                       |        | (e) Any vehicles or equipment related to the Contractor's operations found within the designated "no-go" areas                 | No   | 1   |      | Rate Only |
|                                                       |        | (f) Excess dust or excess noise emanating from site                                                                            | No   | 1   |      | Rate Only |
|                                                       |        | (g) Dumping of milled material in side drains or on grassed areas]                                                             | No   | 1   |      | Rate Only |
|                                                       |        | (h) Possession or use of intoxicating substances on site                                                                       | No   | 1   |      | Rate Only |
|                                                       |        | (i) Any vehicles being driven in excess of designated speed limits                                                             | No   | 1   |      | Rate Only |
|                                                       |        | (j) Removal and/or damage to flora or cultural or heritage objects on site, and/or killing of wildlife                         | No   | 1   |      | Rate Only |
|                                                       |        | (k) Illegal hunting                                                                                                            | No   | 1   |      | Rate Only |
|                                                       |        | (l) Urination and defecation anywhere except in designated areas                                                               | No   | 1   |      | Rate Only |
| <b>TOTAL SECTION B CARRIED FORWARD TO SUMMARY</b>     |        |                                                                                                                                |      |     |      |           |

| JOHANNESBURG ZOO AND CITY PARKS                       |        |                                                                      |          |             |             |             |
|-------------------------------------------------------|--------|----------------------------------------------------------------------|----------|-------------|-------------|-------------|
| DEVELOPMENT OF OLIFANTSVLEI CEMETERY - CELL G PHASE 3 |        |                                                                      |          |             |             |             |
| SCHEDULE C                                            | METHOD | PROVISION OF STRUCTURED TRAINING                                     |          |             |             |             |
| ITEM                                                  |        | DESCRIPTION                                                          | UNIT     | QTY         | RATE        | AMOUNT      |
| C1200                                                 |        | Provision of Structured training                                     |          |             |             |             |
| C12.05                                                |        | Provision for accredited training                                    |          |             |             |             |
|                                                       |        | (a) Generic Skills                                                   | Prov Sum | 1           | R 50 000,00 | R 50 000,00 |
|                                                       |        | (b) Handling cost and profit in respect of sub-item C12.05 (a) above | %        | R 50 000,00 | 10%         | R 5 000,00  |
| TOTAL SECTION C CARRIED FORWARD TO SUMMARY            |        |                                                                      |          |             |             |             |

| JOHANNESBURG ZOO AND CITY PARKS                       |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |     |      |        |
|-------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----|------|--------|
| DEVELOPMENT OF OLIFANTSVLEI CEMETERY - CELL G PHASE 3 |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |     |      |        |
| SCHEDULE D                                            | METHOD | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | UNIT | QTY | RATE | AMOUNT |
| ITEM                                                  |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |     |      |        |
|                                                       | LIC    | <p><b>CONSTRUCTION OF GUARDHOUSE + SEPTIC TANK + SOAKAWAY + ENTRANCE GATE +ELECTRICITY+ FENCING</b></p> <p><u>Refer to architects draawing 1321/100 + Engineers drawing 1321/300 + 1321/301</u></p> <p><b>Note:</b> Unless otherwise stated,rate shall include for, but not be limited to the following:</p> <p><b>Site Preparation</b></p> <ul style="list-style-type: none"> <li>- Remove existing prefabricated and relocate to JHB Zoo (± 50km). item 1</li> <li>- Demolish existing walls and spoil off site as instructed by the Engineer (± 15m2). m<sup>2</sup> 15</li> <li>- Site clearance (65m2). m<sup>2</sup> 65</li> </ul> <p><b>Excavation / trenching, compaction - foundations, surface bed</b></p> <ul style="list-style-type: none"> <li>- Excavation for the strip footing foundation (45m3) m<sup>3</sup> 45</li> <li>- Compaction of the foundation @ 95% MOD AASHTO DENSITY m<sup>2</sup> 70</li> </ul> <p><b>Foundation (Guardhouse and Entrance Wall)</b></p> <ul style="list-style-type: none"> <li>- Soil poisoning (70 m2) including certificate. m<sup>2</sup> 70,00</li> <li>- Reinforcement Steel (Y10) - Rebar and wire incl. Bending &amp; Delivery (± 0,01 tons). ton 0,10</li> <li>- Reinforcement Steel (Y12) - Rebar and wire incl. Bending &amp; Delivery (± 0,3 tons). ton 0,30</li> <li>- 25 MPa concrete @ 28 DAYS (15m3). m<sup>3</sup> 30,00</li> <li>- DPC - Plastic / Membrane - (50m2) - USB 250 micron. m<sup>2</sup> 50,00</li> <li>- Two layers of 3-ply malthoid slip joint at all concrete/brick interfaces m 25,00</li> </ul> <p><b>Surface Bed/ Floor</b></p> <ul style="list-style-type: none"> <li>- 120mm thick surface bed reinforced with Mesh Ref 193 (40m2) m<sup>3</sup> 5,00</li> <li>- Floor finish: Ceramic tiles,tile adhesive, grouting and 100mm aluminium skirting m<sup>2</sup> 40,00</li> </ul> <p><b>Construction of Brickwork (Guardhouse and Entrance Wall)</b></p> <ul style="list-style-type: none"> <li>- External walls finished 230mm Corobrik Firelight Satin face brick (220m2) m<sup>2</sup> 220</li> <li>- brickforce at every 3rd course (400m) m 400</li> <li>- Lintels - Doorways, Windows - Various lengths (2x2100mm and 2x800mm) <b>Prov Sum</b> 1</li> </ul> <p><b>Roofing</b></p> <ul style="list-style-type: none"> <li>- Wall plate m 30</li> <li>- Prefabricated Roof trusses including bracing, hangers and fixings No. 10</li> <li>- Rafters 114mm m 30</li> <li>- Struts 114mm m 30</li> <li>- Purlins m 150</li> <li>- Roof Membrane - Marley Under tile 2 Layer Membrane (38gsm LDPE Bonding &amp; 80gsm Spunbond) with joints lapped min 150mm, fixed over rafters to comply with SABS 10400 and SANS 10177-10 Fire Rating m<sup>2</sup> 40</li> <li>- Safintra 0,47mm thick, AZ 150ZincAl Tufdek IBR profiled roof sheeting, fixed to intermediate SA. Pine purlins at 1200mm c/c and to ridge and eaves purlins at 1600mm centres. Roof Truss, tie beam and struts all nailed together with gangnails. Roof pitch 30° m<sup>2</sup> 40</li> <li>- 135 mm Aeropink insulation or approved equivalent. To comply with SANS 204.</li> <li>- Allowance for the issue of TR1 + TR2 certificates after completion of the entire roof installation, signed by a competent person.</li> </ul> <p><b>Ceiling</b></p> <ul style="list-style-type: none"> <li>- 6.4mm Rhino board fixed to 38x38 battens at max 400 centres, SABS approved shadow line cornice. m<sup>2</sup> 40</li> <li>- Rhonolite finish</li> <li>- Shadow line cornice</li> </ul> |      |     |      |        |
| TOTAL SECTION D CARRIED FORWARD TO SUMMARY            |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |     |      |        |

## DEVELOPMENT OF OLIFANTSVLEI CEMETERY - CELL G PHASE 3

| SCHEDULE D                                        | METHOD | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | UNIT | QTY | RATE |        |
|---------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----|------|--------|
| ITEM                                              |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |     |      | AMOUNT |
|                                                   |        | <b>Doors</b><br><br>- Pressed Steel door frames.<br>- Flush panel doors.<br>- One coat undercoat.<br>- Two coats high-gloss enamel paint.<br>- Meranti edging.<br>- Timber frames lightly sanded and finished with two coats of varnish<br><br><b>Windows</b><br><br>- 30 mm satin black powder-coated aluminium frames.<br>- W1: (4mm clear Low-e GLASS). Size 600mm x 900mm<br>- Bathroom glazing to be obscure (opaque).<br>- W2: (6,38mm Laminated Safety glass with UV protection). Size 950mm x 1400mm<br>- Glazing to comply with: NBR, SANS 10400, SAGGA and AAAMSA<br>- W3: (6,38mm Laminated Safety glass with UV protection). Size 3000mm x 1500mm<br>- Glazing to comply with: NBR, SANS 10400, SAGGA and AAAMSA<br><br><b>Septic tank + soakaway design (Refer to Sketch 01).</b><br><br><b>Excavation</b><br><br>- Excavate for a 3-chamber septic tank (11 m³ capacity) and dispose of surplus excavated material.<br>- Backfill around the septic tank with in-situ material or approved material compacted to 95% MOD AASHTO Density<br>- Excavate for soakaway pit (10,5m long x 1,4m deep x 1,5 wide)<br>- Trim, level and compact the bottom of excavation.<br><br><b>Reinforced Concrete Works</b><br><br>Concrete Base:<br>Supply and cast:<br>- 150 mm thick 25 MPa reinforced concrete base slab<br>- Reinforcement: Mesh Ref. 245 placed centrally<br><br><b>Brickwork</b><br><br>Construct septic tank walls:<br>- 220 mm thick brick masonry<br>- Brickforce at every 2nd course (400m)<br>- All internal walls plastered<br><br><b>Precast Concrete Covers</b><br><br>Supply and install:<br>- 1220 × 1220 mm light duty precast concrete access covers<br>- 2 No. Precast lids on alternate covers.<br><br><b>Precast Concrete Lintels</b><br><br>Supply and install:<br>- 4 No. × 2440 mm precast concrete lintels<br>- 2 No. × 2200 mm precast concrete lintels<br><br><b>Pipework (Septic + Soakaway)</b><br><br>Supply and install all the pipe fittings (Bends + junction ect):<br>- 110 mm diameter uPVC sewer pipe | No.  | 1   |      |        |
|                                                   |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | No.  | 2   |      |        |
|                                                   |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | No.  | 1   |      |        |
|                                                   |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | No.  | 2   |      |        |
|                                                   |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | No.  | 1   |      |        |
|                                                   |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | m³   | 70  |      |        |
|                                                   |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | m³   | 30  |      |        |
|                                                   |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | m²   | 30  |      |        |
|                                                   |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | m³   | 6   |      |        |
|                                                   |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | m²   | 40  |      |        |
|                                                   |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | No.  | 8   |      |        |
|                                                   |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Sum  | 1   |      |        |
|                                                   |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | m    | 35  |      |        |
| <b>TOTAL SECTION D CARRIED FORWARD TO SUMMARY</b> |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |     |      |        |

| JOHANNESBURG ZOO AND CITY PARKS                       |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |     |             |             |
|-------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----|-------------|-------------|
| DEVELOPMENT OF OLIFANTSVLEI CEMETERY - CELL G PHASE 3 |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |     |             |             |
| SCHEDULE D                                            | METHOD | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | UNIT      | QTY | RATE        | AMOUNT      |
| ITEM                                                  |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |     |             |             |
|                                                       |        | <b>Sewer Manhole + Drop Connection</b><br><br>- Construct Sewer Manhole (0–3 m deep) comprising 25 MPa reinforced concrete base, reinforced with Ref. 245 welded mesh placed 50 mm above the underside of the concrete, 1000 mm Ø precast concrete manhole rings, heavy-duty precast concrete cover and frame, approved plastic step irons, 20 mm thick rendered benching (1:2 HAC:sand), all joints primed and sealed with Bitu-Joint or approved equivalent, including excavation, backfilling in 200 mm layers compacted to 93% Modified AASHTO, founding compacted to 95% Modified AASHTO, testing and all ancillary work complete.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | No.       | 6   |             |             |
|                                                       |        | <b>Soakaway</b><br><br>Construct soakaway complete as per <i>sketch sheet 01</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Prov. Sum | 1   | R 15 000,00 | R 15 000,00 |
|                                                       |        | <b>Material Testing Requirements</b><br><br>Compaction test:<br>- 1 test per 100m2 per layer<br>Concrete test Cubes<br>- Each concrete test set shall consist of six (6) concrete cubes, with three (3) cubes tested at 7 days and the remaining three (3) cubes tested at 28 days. All testing shall be undertaken by a SANAS-accredited laboratory, and the certified test results shall be submitted to the Engineer for review and acceptance prior to approval of the concrete works.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |     |             |             |
|                                                       |        | <b>Boom Gate + Sliding Gate + Solar Light</b><br><br>- Supply, delivery, installation and commissioning of complete manual traffic barrier, including concrete foundation works, all materials, labour, plant, equipment, transport, and all incidental costs necessary for completion.<br><br>- Supply, deliver and install a manual traffic barrier (hand-operated, counterbalanced), being a Centinel 6m or approved equivalent, with a boom length of 6 metres. The boom pole shall be constructed of aluminium with a round profile and plastic end cap, having an outside diameter of 76.2 mm, a wall thickness of 1.27 mm, and a mass of approximately 800 g per metre. The boom shall be epoxy-coated and finished in white with red reflective tape in a spiral pattern. The barrier shall incorporate an internal spring counterbalance mechanism to ensure smooth and near effortless manual operation via an ergonomic handle. A locking mechanism, such as a thumbwheel or similar, shall be provided to secure the boom in both open and closed positions. The main support post shall consist of a manufacturer-standard steel housing, powder-coated or galvanised, designed to accommodate the internal counterbalance mechanism and mounted on a base plate or embedded in accordance with the manufacturer's specifications. The unit shall have an approximate packed mass of 29 kg. The barrier shall be installed on a reinforced concrete foundation of minimum 25 MPa strength, typically 600 mm x 600 mm x 600 mm deep, including all necessary anchor bolts or holding-down bolts. The installation shall include all accessories such as an end rest post where required, mounting brackets, base plates, and all necessary fasteners and fittings to complete the works.<br><br>- All materials shall be new and defect-free; installation to comply with manufacturer specifications; product datasheets to be submitted for approval prior to installation; equivalent products to meet or exceed specified requirements. | Prov. Sum | 2   | R 40 000,00 | R 80 000,00 |
|                                                       |        | <b>Sliding Gate (Refer to Sketch sheet 02)</b><br><br>Supply, fabricate and install 2 No. heavy-duty sliding steel gates, each 6,0 m wide x 2,4 m high, in accordance with SANS including Grade 300W structural steel, mounted on roller systems running on reinforced concrete track beams, complete with guide posts, end stops, locking mechanisms and all accessories; gate posts to be securely cast into reinforced concrete foundations; all steelwork to be primed and painted (or galvanised and painted) for corrosion protection; and installation to include excavation, concrete works, alignment, testing and commissioning, including all labour, materials, plant and incidentals for a complete installation. The total gate area shall be 28.8 m² (14.4 m² per gate), with 4 No. gate posts (2 per gate), concrete to post foundations 0.9 m² (based on 600 x 600 x 600 mm per post), reinforced concrete track beam length 20 m with concrete volume 1.8 m³ (300 x 300 mm – subject to design confirmation, typically increased for heavy-duty gates), sliding rail length 20 m (allowing for adequate run-back distance), 6 No. rollers (minimum recommended for heavy-duty operation), 4 No. guide posts/brackets (2 per gate for proper alignment and stability), and painting to steel gates measured over 28.8 m².                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Prov. Sum | 2   | R 43 000,00 | R 86 000,00 |
| TOTAL SECTION D CARRIED FORWARD TO SUMMARY            |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |     |             |             |

| DEVELOPMENT OF OLIFANTSVLEI CEMETERY - CELL G PHASE 3 |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |           |     |             |             |
|-------------------------------------------------------|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----|-------------|-------------|
| SCHEDULE D                                            | METHOD | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | UNIT      | QTY | RATE        | AMOUNT      |
| ITEM                                                  |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |           |     |             |             |
|                                                       |        | <b>Electricity</b><br><br>Supply, install, test and commission a complete electrical installation to the guardhouse in accordance with <b>SANS 10142-1</b> , comprising a 230V single-phase system connected to the existing power supply, including a surface-mounted 4–6 way distribution board fitted with a 63A main isolator, 30mA earth leakage protection and circuit breakers for lighting and socket circuits; LED energy-efficient internal light fittings and one external security/bulkhead light controlled by 1-way switches; 16A double socket outlets; PVC insulated copper wiring (1.5 mm² for lighting and 2.5 mm² for power) installed in conduit (surface or concealed); complete earthing and bonding system with earth electrode; and full testing, commissioning and issuing of a Certificate of Compliance (CoC). The installation shall include all materials, labour, conduit, fittings, accessories, terminations and all incidentals necessary for a fully functional and compliant electrical system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |     |             |             |
|                                                       |        | <b>Solar light</b><br><br>Supply, deliver, install, test and commission 60W LED solar streetlight fitting complete with integrated 350W Tier 1 solar PV module, MPPT charge controller, 100Ah lithium battery, occupancy sensor, high-pressure die-cast aluminium luminaire, IP65 and IK10 protection rating, LED efficiency ≥180 lm/W, CRI >70, colour temperature 4000K, rated life ≥60 000 hours, complete with 13.5m high mounting pole, foundations, buried ground installation, cabling, connections, earthing and all associated civil and electrical works. Include 5-year warranty on luminaire, pole, battery and solar panel. Beka Solar Ziya or equal and approved.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Prov. Sum | 1   | R 30 000,00 | R 30 000,00 |
|                                                       |        | <b>Domestic Water Supply and ancillary works</b><br><br>- Tie into existing bulk water line approximately 200m away with 50mm Ø HDPE pipe PE 100, including excavation and saddle into bulk water line<br><br>- Supply, deliver and install complete sanitary ware comprising a white vitreous ceramic Water Closet (WC) suite with concealed or close-coupled dual-flush cistern, heavy-duty seat and cover, white vitreous ceramic wall-mounted Wash Hand Basin (WHB), stainless steel sink, 6 mm polished-edge silver-backed mirror mounted above the WHB, and stainless steel toilet roll holder, complete with chrome-plated mixer taps, waste fittings, bottle trap, P-trap, angle valves, flexible braided connectors, isolation valves, all necessary pipework, concealed fixings, sealants, testing and commissioning. Sanitary ware and accessories shall be manufactured by Geberit or other approved equivalent and installed in accordance with SANS 10252-1, SANS 10400-P and the manufacturer's specifications and recommendations.<br><br>- Valve chamber including 50mm Ø isolation valve.<br><br>- Internal plumbing of the guard house WC, WHC, mirror, taps / mixers, soap dispensers, toilet<br>- Supply, deliver and install a complete rainwater disposal system comprising 125 × 125 mm heavy-duty hot-dip galvanised ogee gutters fixed to fascia boards with galvanised gutter brackets at maximum 1.0 m centres, 75 mm diameter hot-dip galvanised rainwater downpipes complete with holderbats, offsets, bends and shoes, 0.58 mm pre-painted galvanised roof flashings including ridge, barge, apron and cover flashings, and fibre-cement fascia boards, complete with stop ends, unions, outlets, expansion joints, sealants, galvanised fixings, trims and all accessories necessary to form a complete weatherproof roof drainage system in accordance with the architectural drawings and SANS 10400.<br><br>- Concrete apron: 100 mm thick 25 MPa reinforced concrete apron with Mesh Ref. 193, 250 µm DPM beneath concrete apron. G5 selected fill beneath apron, 150 mm thick, compacted to 95% Mod. AASHTO density. 10 mm isolation joints complete with polystyrene filler and silicone sealant. Saw-cut contraction joints to apron at maximum 2.0 m centres<br><br>- Ramp: Reinforced concrete wheelchair ramp, 1:14 gradient, complete with reinforcement, DPM, G5 fill and finishing. | Prov. Sum | 1   | R 15 000,00 | R 15 000,00 |
|                                                       |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Prov. Sum | 1   | R 80 000,00 | R 80 000,00 |
| TOTAL SECTION D CARRIED FORWARD TO SUMMARY            |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |           |     |             |             |

## DEVELOPMENT OF OLIFANTSVLEI CEMETERY - CELL G PHASE 3

CONTRACT NUMBER:

## SUMMARY OF SCHEDULE A :PER FULL SCOPE

| SECTION                                        | METHOD | DESCRIPTION                                                                                              | AMOUNT |
|------------------------------------------------|--------|----------------------------------------------------------------------------------------------------------|--------|
| SECTION 1200                                   |        | GENERAL                                                                                                  | R -    |
| SECTION 1300                                   |        | CONTRACTOR'S ESTABLISHMENT ON SITE<br>GENERAL OBLIGATION                                                 | R -    |
| SECTION 1400                                   | LIC    | HOUSING OFFICES AND LABORATORY FOR<br>THE ENGINEER'S SITE PERSONNEL                                      | R -    |
| SECTION 1600                                   |        | OVERHAUL                                                                                                 | R -    |
| SECTION 1700                                   |        | CLEAR AND GRUBBING                                                                                       | R -    |
| SECTION B 1800                                 |        | DAYWORK SCHEDULE                                                                                         | R -    |
| SECTION 2200                                   |        | PREFABRICATED CULVERTS                                                                                   | R -    |
| SECTION 2300                                   | LIC    | CONCRETE KERBING, CONCRETE CHANNELLING,<br>CHUTES AND DOWNPIPES, AND CONCRETE LININGS<br>FOR OPEN DRAINS | R -    |
| SECTION 3300                                   |        | MASS EARTHWORKS                                                                                          | R -    |
| SECTION 3400                                   |        | PAVEMENT LAYERS OF GRAVEL MATERIAL                                                                       | R -    |
| SECTION 3500                                   |        | STABILISATION                                                                                            | R -    |
| SECTION 5600                                   |        | ROAD SIGNAGE                                                                                             | R -    |
| SECTION 5700                                   |        | ROAD MARKINGS                                                                                            | R -    |
| SECTION 5900                                   | LIC    | FINISHING THE ROAD AND ROAD RESERVE<br>AND TREATING OLD ROADS                                            | R -    |
| SECTION 7300                                   | LIC    | CONCRETE BLOCK PAVING                                                                                    | R -    |
| TOTAL CARRIED FORWARD TO SUMMARY OF SCHEDULE A |        |                                                                                                          | R -    |

|                                                                                           |                                                                                             |            |
|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|------------|
| <b>SUMMARY OF SCHEDULE B: OHSA AND ENVIRONMENTAL MANAGEMENT PLAN</b>                      |                                                                                             |            |
| B1                                                                                        | Occupational health and safety                                                              | <b>R</b> - |
| B1000                                                                                     | Environmental Management Plan                                                               | <b>R</b> - |
|                                                                                           |                                                                                             |            |
| <b>SUMMARY OF SCHEDULE C: PROVISION OF STRUCTURED TRAINING</b>                            |                                                                                             |            |
| C1200                                                                                     | Structured Training                                                                         | <b>R</b> - |
|                                                                                           |                                                                                             |            |
| <b>SUMMARY OF SCHEDULE D: CONSTRUCTION OF GUARDHOUSE</b>                                  |                                                                                             |            |
| D                                                                                         | Construction of Guardhouse + Septic Tank + Soakaway + Entrance Gate + Electricity + Fencing | <b>R</b> - |
|                                                                                           |                                                                                             |            |
| <b>TOTAL CARRIED FORWARD TO SUMMARY OF SCHEDULES</b>                                      |                                                                                             | <b>R</b> - |
| <b>CALCULATION OF TENDER AMOUNT</b>                                                       |                                                                                             |            |
| <b>TOTAL OF THE SUMMARY OF SCHEDULES (A + B + C + D)</b>                                  |                                                                                             | <b>R</b> - |
|                                                                                           |                                                                                             |            |
| <b>CONTIGENCIES</b>                                                                       |                                                                                             |            |
| The Tenderer shall add contingencies of 10% of the total amount of Schedule of Quantities |                                                                                             | <b>R</b> - |
|                                                                                           |                                                                                             |            |
| <b>SUB TOTAL</b>                                                                          |                                                                                             | <b>R</b> - |
|                                                                                           |                                                                                             |            |
| <b>VALUE ADDED TAX</b>                                                                    |                                                                                             |            |
| The Tenderer shall add 15% of the subtotal for value added tax                            |                                                                                             | <b>R</b> - |
|                                                                                           |                                                                                             |            |
| <b>TENDER SUM CARRIED TO FORM OF TENDER</b>                                               |                                                                                             | <b>R</b> - |

## **Johannesburg City Parks and Zoo**

**C3: Scope of Work (REFER TO BOQ ABOVE)**

**BOQ SHOULD BE COMPLETED IN FULL, FAILURE TO DO SO WILL RESULT IN YOUR  
BID BEING DISQUALIFIED**

## **Johannesburg City Parks and Zoo**

### **C4: Occupational, Health, Safety, Environment and Quality Specifications**



# CONTRACTOR MANAGEMENT

**Doc ID.**

**Revision no.**

**Next revision Date: 2026**

**TITLE: SHE SPECIFICATIONS**

## CONTRACTOR, SHE SITE SPECIFIC SPECIFICATIONS

### Introduction

OLIFANTSVLEI CEMETERY  
DEVELOPMENT – CELL G,  
PHASE 3 – OHS  
SPECIFICATIONS

JHB City Parks and JHB Zoo (JCPZ) in its efforts to ensure optimum compliance with the requirements of the Occupational Health and Safety Act 85 of 1993 and Regulations must ensure that all contractors employed by JCPZ adhere to the minimum requirements for construction works on any JCPZ premises. Contractors must comply with and be informed of the following:

Principal contractor must provide and demonstrate to the Client suitable and sufficiently documented, site-specific plans based on the clients OHS specifications. Kindly contact JCPZ SHEQ personnel for clarity on any points that follow.

Furthermore, JCPZ is mandated to ensure that the public open spaces within the City of Johannesburg are managed, maintained and conserved for the enhancement of the ecosystems and biodiversity to ensure sustenance for both the current and future generations.

Kindly provide the documents that describe and/or relate to the items below that do relate to the project scope of works.

Only files that are aligned with the **safety file numerical order contained herein** will be evaluated

**All contractors must complete and sign the annexure 1 attached hereto.**

**THE CONSOLIDATED SHE FILE MUST BE HANDED OVER TO THE JCPZ SHEQ DEPARTMENT UPON COMPLETION OF THE CONSTRUCTION PROJECT.**

### Compulsory Section

| INDEX | DESCRIPTION                   | INSTRUCTION                                                                                       |
|-------|-------------------------------|---------------------------------------------------------------------------------------------------|
| 1     | Site organisational structure | 1. Must reflect on-site team and must be aligned to the legal appointments made under element 12. |

|   |                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                       |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | Site diary<br>Site visitor register<br>Daily sign in register                                                                                                                                                                                                                                                                                                 | 1. All staff MUST sign the daily sign-in register.<br>2. The site diary must be used to record all incidents.<br>3. The site visitor register completed by any visitors. All visitors must be inducted on the current health and safety hazards and must be dressed in the relevant PPE gear before entry is allowed. |
| 3 | JCPZ Health and Safety specifications, and Scope of works                                                                                                                                                                                                                                                                                                     | This document must form part of the file.<br>The BOQ or Scope of works must form part of the file.                                                                                                                                                                                                                    |
| 4 | Notifications<br>❖ Notification of Construction works (Annexure 2 form)                                                                                                                                                                                                                                                                                       | Stamped proof of notification must be provided                                                                                                                                                                                                                                                                        |
| 5 | Contractor H&S Policy                                                                                                                                                                                                                                                                                                                                         | Policies signed and dated.                                                                                                                                                                                                                                                                                            |
| 6 | Method statements<br><br>❖ Start-up & site clearance<br>✦ Detailed discussion on plant, tools, machinery and deployed staff numbers.<br>✦ Submit the site layout which clearly demonstrates the location of the ablution facilities and drinkable water.<br>✦ Machinery and tools to be used<br>✦ Number of on-site staff<br>✦ Sub contractors already chosen | Must reflect all processes that will be undertaken in the execution of the project<br><br>Signed by authorised person before submission                                                                                                                                                                               |
|   | ❖ Construction phase<br>✦ Plant to be used.<br>✦ Handheld machinery and tools to be used<br>✦ Number of on-site staff<br>✦ Sub contractors already chosen<br>❖ Close out phase<br>✦ File close out                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                       |
| 7 | Risk assessments:<br>❖ Based on scope of works.<br>❖ Site specific assessment (Health & Safety)<br>❖ Please provide proof of competence of the Risk Assessors ( <b>CV of the risk assessor must be attached to assessment report</b> )<br>❖ PPE Risk matrix                                                                                                   | 1. Signed by Authorised person before submission.<br>2. A register showing that the risks assessment was communicate to all staff MUST form part of the file.                                                                                                                                                         |

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                    |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8  | <p>Safe working procedures for significant risk bearing tasks as quantified by risk assessment ratings and must include</p> <ul style="list-style-type: none"> <li>• Plant</li> <li>• Machinery</li> <li>• Hazardous chemicals</li> <li>• Ergonomics</li> <li>• Excavations</li> </ul>                                                                                                                                                                                                                                                                                        | <ol style="list-style-type: none"> <li>1. Signed by authorised person before submission.</li> <li>2. All staff members must be notified of relevant SWP applicable to the work they perform.</li> <li>3. Training attendance registers must be available for inspection</li> </ol> |
| 9  | <p>Site specific Emergency plan</p> <ul style="list-style-type: none"> <li>❖ Incident reporting procedure (All SHE incidents) <ul style="list-style-type: none"> <li>➤ Fire</li> <li>➤ First aid</li> <li>➤ Interference by members of the public</li> </ul> </li> <li>❖ Emergency contact register</li> <li>❖ Emergency services contact register <ul style="list-style-type: none"> <li>➤ Chemical manufacturer</li> <li>➤ Poison centre number</li> </ul> </li> <li>❖ Hazardous chemicals spillages and contact procedures</li> <li>❖ Non-conformance procedure</li> </ul> | <ol style="list-style-type: none"> <li>1. Signed by authorised person before submission</li> <li>2. Training attendance registers must be available for inspection.</li> </ol>                                                                                                     |
| 10 | <p>Agreements</p> <ul style="list-style-type: none"> <li>❖ Agreement with JCPZ</li> <li>❖ Declaration of understanding SHE specifications by the Contractor</li> <li>❖ Contractor management procedure</li> <li>❖ 37.2 contractor agreements with sub-contractors;</li> <li>❖ Contractor tool register</li> <li>❖ Contractor sign in register</li> <li>❖ Contractor/s letter of good standing (Compensation Commissioner)</li> </ul>                                                                                                                                          | <ol style="list-style-type: none"> <li>1. All agreements must be dually signed and must be available for inspection</li> </ol>                                                                                                                                                     |
| 11 | <p>COID</p> <ul style="list-style-type: none"> <li>❖ Letter of good standing from Compensation Commissioner</li> <li>❖ Blank Annexure 1 template</li> <li>❖ Blank WCL2</li> <li>❖ Incident register</li> <li>❖ Incident investigation template</li> <li>❖ Incident reports</li> <li>❖ First aid treatment register</li> </ul>                                                                                                                                                                                                                                                 | <ol style="list-style-type: none"> <li>1. Copy of accident reports must be available for inspection.</li> <li>2. The JCPZ SHE Unit must be notified of all injury incidents.</li> </ol>                                                                                            |

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                         |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12 | <p><b>OHSACT applicable appointments</b><br/> OHS 16.2 Chief executive Officer assign duties<br/> # OHS 17 SHE representative</p> <p><b>Construction Regulations</b><br/> # CR 8 (1) Construction Manager<br/> # CR 8 (5) Construction Safety Officer (SACPCMP Candidate or register Officer)<br/> # CR 9 (1) Competent Risk Assessor<br/> #CR 23 (d) Construction vehicle Operator/s.<br/> CR 23 (k) Construction vehicle Inspector.<br/> CR 27 Housekeeping and general safeguarding Controller<br/> #CR 28 (a) Stacking and storage Supervisor<br/> # CR 29 (j) Fire fighters<br/> # CR 29 (l) (i) Evacuation Coordinator</p> <p><b>General Safety Regulations</b><br/> GSR 3 Appointment of first aid responder (1 for first 10 employees, thereafter 1 in 50)<br/> GSR 4 Flammable liquid controller</p> <p><b>Electrical Machinery Regulation 9 (4)</b><br/> Portable electrical tools Inspector</p> <p><b>General Administrative Regulations</b><br/> GAR 9 (2) Incident Investigator</p> <p><b>General Machinery Regulations</b><br/> GMR 3 (c) Machinery inspector<br/> GMR 4 (1) Machinery operator</p> <p><b>Facilities Regulations</b><br/> FR 2 (d) Hygiene Inspector</p> <p><b>Hazardous Chemical Substance Regulations</b><br/> HCSR 10 (2) HCSR 1 (a) Hazardous Chemical Substance controller</p> <p><b>Client Liaison officer</b></p> | <ol style="list-style-type: none"> <li>1. All appointments must be dually signed.</li> <li>2. CV's must be attached to all appointments marked #. Where relevant competency training certificates must form part of the CVs.</li> </ol> |
| 13 | <p>Induction syllabi and,<br/> Toolbox talks which must include:</p> <ul style="list-style-type: none"> <li>#Site SHE rules;</li> <li>❖ Incident reporting;</li> <li>#Emergency preparedness and response;</li> <li>❖ Hazardous chemical substance management;</li> <li>#Health &amp; Safety policy;</li> <li>❖ Hand safety;</li> <li>#PPE usage;</li> <li>❖ Ergonomics;</li> <li>❖ Grinder safety;</li> <li>❖ Electrical safety;</li> <li>❖ Fire prevention;</li> <li>❖ Use of firefighting equipment;</li> <li>❖ Etc.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <ol style="list-style-type: none"> <li>1. Training attendee registers must be available for inspection</li> <li>2. Elements marked with # must form part of the induction syllabi</li> </ol>                                            |

|    |                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                           |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14 | Employee information <ul style="list-style-type: none"> <li>❖ Contractor employee's ID copies</li> <li>❖ Certificate of fitness</li> <li>❖ Employee next of kin register</li> </ul>                                                                                                                                                                                                                         | 1. Copies must be in file on submission for file approval.                                                                                                                                                                                |
| 15 | <ul style="list-style-type: none"> <li>❖ Site specific Health &amp; Safety plan</li> </ul>                                                                                                                                                                                                                                                                                                                  | 1. The plan must be approved by an authorised person.<br>2. The plans must be communicated to relevant employees, and attendance registers must be available for inspection.<br>3. Relevant elements within the plan must be implemented. |
| 16 | Hazardous Chemical Substances (HCS) <ul style="list-style-type: none"> <li>❖ HCS Management Plan</li> <li>❖ Safety Data Sheets for all chemicals and solvents</li> <li>❖ List of chemicals</li> </ul>                                                                                                                                                                                                       | 1. List must be aligned to the operations.                                                                                                                                                                                                |
| 17 | Registers & tool inspections <ul style="list-style-type: none"> <li>❖ PPE issue</li> <li>❖ PPE Inspection</li> <li>❖ Hand tools inspection</li> <li>❖ Portable Electrical tools inspection</li> <li>❖ Construction vehicle (plant) inspection register</li> <li>❖ Machinery inspection registers</li> <li>❖ First aid equipment inspection register</li> <li>❖ Firefighting equipment inspection</li> </ul> | 1. Updated inspections reports must be available for inspection.                                                                                                                                                                          |
| 18 | Self-site inspections<br>Contractor monitoring                                                                                                                                                                                                                                                                                                                                                              | 1. The Constructor must perform weekly site inspections.<br>2. Updated inspections reports must be available for inspection.<br>3. Deviations noted must be actioned by the contractor                                                    |

|                                                                                                        |                                                                                                                                                                                                    |                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 19                                                                                                     | Monitoring <ul style="list-style-type: none"> <li>❖ JCPZ audit report</li> <li>❖ Corrective action plan</li> <li>❖ JCPZ Inspection reports</li> </ul>                                              | 1. Audits by the JCPZ SHEQ Team will heed a report.<br>2. The contractor must develop an action plan for any audit findings raised.<br>3. All reports/action plans must be kept in the file. |
| 20                                                                                                     | Licencing and competency <ul style="list-style-type: none"> <li>❖ Construction vehicle operator competency;</li> <li>❖ H&amp;S Officer competency;</li> <li>❖ Risk Assessor competency;</li> </ul> | 1. Where competency is required, such competency must be provided upon file submission.                                                                                                      |
| 21                                                                                                     | Contractor evaluation - Approval of sub-contractor files                                                                                                                                           | 1. Evaluation reports to be kept in PC file.                                                                                                                                                 |
| 22                                                                                                     | Work stoppages and Occupational Health & Safety instructions.                                                                                                                                      | 1. Kept in file.                                                                                                                                                                             |
| <b>Additional comments / requirements:</b>                                                             |                                                                                                                                                                                                    |                                                                                                                                                                                              |
| <b>Contractors must ensure that the file is available on site for inspection and auditing purposes</b> |                                                                                                                                                                                                    |                                                                                                                                                                                              |
| <b>The SHE file must be updated daily</b>                                                              |                                                                                                                                                                                                    |                                                                                                                                                                                              |
| <b>JCPZ, SHEQ must be informed of any Health, Safety or Environmental incidents</b>                    |                                                                                                                                                                                                    |                                                                                                                                                                                              |
| <b>Failure to update and implement processes and plans may result in work stoppages</b>                |                                                                                                                                                                                                    |                                                                                                                                                                                              |

**All contractor and contractor employees will be subjected to JCPZ SHEQ inspections and audits.**

**IMPORTANT NOTES:**

1. The SHEQ file must be approved by JHB City Parks and JHB Zoo's SHEQ Department before site establishment or commencement of operations on site.
2. **The Contractor must hand over a consolidated health & safety file to JCPZ upon completion of the construction work and must, include a record of all drawings, designs, materials used and other similar information concerning the completed structure.**
3. The SHEQ file must be updated daily by the contractor.
4. **File submission by appointment only.**
5. Please contact your SHEQ Coordinator for any queries at the numbers provided below:

P Hilton  
Health & Safety Specialist  
☎011 683 8231  
📠 071 678 0925  
[philton@jhbcityparks.com](mailto:philton@jhbcityparks.com)

**Physical address to deliver the file:** 12 Glencoe Road Springfield, Johannesburg.

**Annexure 1**

**SITE TEAM CONTACT DETAILS**

| COMPONENT            | NAME | SURNAME | EMAIL | CONTACT |
|----------------------|------|---------|-------|---------|
| SITE<br>MANAGER      |      |         |       |         |
| SAFETY<br>OFFICER    |      |         |       |         |
| COMPANY<br>OFFICE    |      |         |       |         |
| PROJECT<br>LEAD JCPZ |      |         |       |         |

**I THE UNDERSIGNED HAVE READ AND UNDERSTAND THE REQUIREMENTS  
DETAILED IN THE OHS SPECIFICATION**

\_\_\_\_\_

**AUTHORISED PERSON**

\_\_\_\_\_

**SIGNED**

\_\_\_\_\_

**DATE**

## Appendix 7.2 Template for compiling environmental management specifications (EMSProc06/OPC02)

|                                                                                                                                                                                                                                                                                                                                                                    |                                                 |                               |                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|-------------------------------|-------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                   | <p><b>ID NO:</b><br/><b>EMSProc06/OPC02</b></p> | <p><b>REVISION NO: 05</b></p> | <p><b>DATE OF NEXT REVISION:</b><br/><b>AUGUST 2026</b></p> |
| <p><b>CONTRACTOR MANAGEMENT: ENVIRONMENTAL MANAGEMENT SPECIFICATION</b></p> <p><b><u>NAME OF PROJECT: DEVELOPMENT OF OLIFANTSVLEI CEMETERY - PHASE 3 (CONSTRUCTION OF GUARDHOUSE + SEPTIC TANK + SOAKAWAY + ENTRANCE GATE + ELECTRICITY + FENCE</u></b></p> <p><b><u>PROJECT COORDINATOR: Solly Sumbane</u></b></p> <p><b>DATE: 4<sup>th</sup> August 2026</b></p> |                                                 |                               |                                                             |

### 1. Introduction

Johannesburg City Parks and JHB Zoo's (JCPZ) mandate is to ensure that the public open spaces within the City of Johannesburg are managed, maintained and conserved for the enhancement of the ecosystems and biodiversity to ensure sustenance for both the current and future generation. To ensure this, the organisation has aligned its activities to all applicable environmental legislation that govern the protection of the environment. One of the innovative tools used to achieve this alignment and to comply with legislation is the ISO 14001 Environmental Management System (EMS). All activities undertaken by the contractors working on behalf of JCPZ form part of the EMS scope and the onus is on JCPZ to ensure that these contractors are managed and that they comply with all applicable environmental legislation as well as the requirements of the organisational EMS. The contractors appointed on behalf of JCPZ shall not be expected to develop the ISO 14001 EMS: 2015 system but will rather be expected to demonstrate that they are conversant with the environmental legal requirements applicable to the scope of work at hand. The contractors should therefore align their documents with the applicable environmental requirements instead of listing the pieces of legislation. As such all appointed contractors shall compile a soft copy of the environmental management file, which is aligned to this specification, the file shall be reviewed and approved by the SHEQ department. This process will be followed by the SHEQ induction training and monitoring and measurement program that will be undertaken through inspections and audits.

## 2. Environmental Management Legal Requirements

It is imperative to ensure that the contractor appointed to undertake this job understands the topography of the proposed site as well as the environmental risks that could emanate on different spheres of the environment in question including the water course. The contractor is expected to comply with the requirements of the National Environmental Management Act No 108 of 1996 (NEMA) including exercising the duty of care and applying the environmental principles as outlined in Section 2 of NEMA. The contractor should also ensure that there is compliance to the applicable SEMAs. The appointed contractor should ensure that all activities are undertaken in line with the conditions set out in the Environmental Impact Assessment and the Environmental Authorisation issued for this project.

An environmental sustainability policy should be developed, which clearly outlines these principles. Whenever requested to work in facilities that have water bodies, the contractor should exercise caution with the objective of avoiding possible water contamination in line with the National Water Act No 36 of 1998. The appointed contractor should engage with the Facility Manager and establish the heritage status of the facility and if there are any heritage resources such resources shall be protected in line with the National Heritage Resources Act No 25 of 1999.

The handling and management of chemicals including cement, paint and thinners must be in line with the requirements of the Hazardous Chemical Substances Act No 15 of 1973 and the copies of the MSDS should be readily available with the objective of managing possible emergencies. The handling and management of general and hazardous waste must be in line with the National Environmental Management: Waste Act No 59 of 2008 (NEM: WA) Act. Due to the aged infrastructure in some of JCPZ facilities, the appointed contractor should be vigilant and apply the much-needed precautions when handling any asbestos containing material / waste. In an event that the appointed contractor enters an agreement with a subcontractor, such agreement shall be done in writing and the copy of the agreement and the declaration forms for the principal contractor and the subcontractor shall be submitted together with the environmental management file. The contractor is furthermore expected to submit the environmental management file prior to the commencement of the proposed project. The format of the file should follow the pattern below and should include the following:

### 3. Format of the file

***It's very imperative to take note that only files aligned with this specification will be assessed. The specification should not spell out what the contractor plans to do but rather how the proposed work will be undertaken in a manner that prevents environmental pollution.***

The contractor is expected to submit a file **electronically with an index** in line with this specification. In an event that one project covers more than one site / facility, the contractor shall submit a file for each site / facility as the documentation should be aligned with the specific site as well as the environmental considerations for that facility / site. The documents should be in zipped folders and be aligned with the following and send to the Environmental Specialist Likopo Khambule at [lkhambule@jhictyparks.com](mailto:lkhambule@jhictyparks.com).

- The contents of the file should be site specific and talking to the activities of the proposed project;
- The file format must be aligned with the items below;
- The copy of this environmental specification should be included the file;
- The table below should be completed and be included when the file is submitted;

|                                                                                                             |  |
|-------------------------------------------------------------------------------------------------------------|--|
| <b>Name of contractor:</b>                                                                                  |  |
| <b>Email address:</b>                                                                                       |  |
| <b>Name of project &amp; scope of work</b>                                                                  |  |
| <b>Activities (all activities as per the scope of work or BOQ)</b>                                          |  |
| <b>Material and tools used (include the non-renewable resources)</b>                                        |  |
| <b>Inventory for the hazardous chemicals used (include the copies of the MSDS in the 16-section format)</b> |  |

***N.B. a file that does not comply with the above will not be evaluated***

#### **4. The Environmental policy**

The appointed contractor should develop an environmental sustainability policy to show commitment to environmental conservation and pollution prevention. The contents of the policy should be aligned with the NEMA principles, be signed and entail a communication strategy and the policy should make provision for communication with the employees. The policy statement should be site specific.

## **5. Environmental Management Appointments**

The appointed contractor is expected to submit an organogram that outlines the roles and responsibilities of all legal appointees (Emergency preparedness and response personnel, Fire fighter, Environmental Officer, Incident investigator, Environmental Control Officer (where applicable), Hazardous management supervisor / controller, Waste management Coordinator). The appointment letters should be aligned with the environmental legal requirements and not aligned to any of the ISO systems. All appointments should be project and site specific and be done in writing, signed and dated. Appointment letters below are compulsory and should form part of the environmental management file:

- ECO
- Emergency preparedness and response personnel;
- Fire fighter;
- Environmental Officer;
- Incident investigator;
- Environmental Control Officer (where applicable);
- Hazardous management supervisor / controller;
- Waste management Coordinator;

## **6. Environmental Risk Assessment**

Submit a baseline Environmental Risk Assessment which clearly identifies each activity, environmental risks and impacts as well as the mitigating factors. The appointed service provider will be expected to submit a site-specific Environmental Risk Assessment; the risk assessment should outline all activities and processes that will be undertaken as well as the control measures aimed at mitigating the identified risks. It must be noted that the risk assessment that includes the health & safety elements will be rejected.

## **7. Environmental Site Establishment**

The contractor is expected to submit the environmental site establishment plan which outlines the following:

- The method statement should include the outline of all activities, material and equipment used (SOPs) as well as any other resources with the objective of what measures will be put in place to ensure that environmental impacts are reduced;
- The method statement for site clearance should be clearly defined, and caution should be exercised with the objective of preventing the removal of indigenous vegetation including any species of National interest;
- The site layout which clearly demonstrates the location of the following: ablution facilities and waste bins. In an event that the contractor employees will be making use of JCPZ facilities, an arrangement should be made with the relevant JCPZ management;
- The contractor is expected to sign the declaration of understanding of the Environmental specifications prior to the commencement of the project;

## **8. Waste management plan to include but not be limited to the following:**

The appointed contractor should develop the waste management procedure or plan which is site specific and is aligned with the JCPZ waste management plan. It is crucial that engagement is made with the facility manager responsible to understand how the JCPZ waste management plan is implemented. The plan to include but not be limited to the following:

- Develop a waste management plan which is aligned with the requirements of NEMA and NEM: WA, the plan should be signed as it is a legal document that is meant to give guidance to the company with regards to how the waste will be managed;
- The contractor shall be subjected to the monitoring and measurement program to verify if there is proof of registration as a waste handler with CoJ (Wastehub) for general waste and the Provincial department for hazardous waste; as well as if there is proof that vehicles transporting waste are registered and permitted to do so (GDARD); Permit / agreement from the registered landfill site; Proof that waste is disposed of in an Environmentally friendly manner (proof of waste manifestos);
- Waste segregation and storage strategies (waste management risk assessment);
- Type of waste generated;
- Transportation & disposal method (s);

## **9. Environmental Management Plan (EMP)**

**The EMP should be developed as a control measure for ensuring minimal impact on the environment and should be site and project specific and include but not limited to the following:**

- Defined scope of work for the proposed project which includes the planned activities, materials and equipment to be used;
- Pollution prevention plan (dust suppression, soil contamination and water contamination) and should also include the environmental management considerations;
- Hazardous Chemical Substances (HCS) Management Plan (inventories, Material Safety Data Sheets (MSDS) including daily management to prevent environmental pollution – where applicable;
- The Environmental compliance monitoring plan (how the contractor will monitor compliance and report the findings to the Client / SHEQ);

## **10. Environmental Emergency & preparedness Plan**

The plan should include but not limited to the following:

- The site specific guidance on how the possible emergencies will be identified and what action will be taken in an event of an emergency, the plan should be aligned to the JCPZ site specific emergency preparedness and response procedure. In order to be realistic, the contractor is expected to engage with the facility manager to ensure proper alignment
- The plan should include possible scenarios of environmental emergencies which could arise;
- The plan should clearly indicate the communication strategy that will be used to ensure that the employees are conversant with the plan;
- Measures that will be undertaken to assess the effectiveness of the control measures at the appropriate intervals, e.g. undertaking periodic emergency evacuation drills;
- The plan should include the contact list of key personnel including the JCPZ facility manager, Head of Security personnel and the SHE Coordinator;

## **11. Site Rehabilitation Plan (where applicable)**

Develop a procedure that will be followed for rehabilitating the disturbed area at the completion of the project. The plan should be aligned to the site establishment, the risk assessment as well as the EMP;

## 12. Incident management

The incident management plan should be aligned to the requirements of the environmental legal requirements applicable to the scope of work, the plan should include the communication strategies that will be implemented to ensure that the employees are conversant with the plan and should cover the following:

- The procedure that will be followed to manage the environmental incidents;
- Templates that will be used for recoding and submitting the environmental incidents that occur;
- Templates that will be used to address the non-compliances and non-conformances that are raised by the JCPZ department. The template should include all steps needed to address the nonconformances or findings raised including the root cause analysis;

## 2. Awareness Training

No contractor will be allowed to commence work prior to the SHE induction training being conducted by the SHE department. The contractor will also be expected to ensure that all employees who undertake work associated with high environmental impacts and those governed by stringent legal requirements are subjected to competency training and a comprehensive training program that is aligned with the scope of work is developed and the employees are subjected to the environmental awareness training. The training environmental management topics should include but not limited to the following:

- Waste management;
- Incident reporting;
- Emergency preparedness and response;
- Hazardous chemical substance management;
- Resources management (water, electricity);
- Environmental sustainability policy;
- Dangers of unattended fires
- General pollution prevention strategies (air, water, land);
- General Environmental awareness;

**Note:** A proof that toolbox talks are conducted must be kept on Contractor file for monitoring.

## 14. Legal Requirements

In addition to the requirements listed above, the contractor is expected be familiar with all relevant legislation and municipal by laws not limited to the following:

- 14.1 Constitution of South Africa Act 108 of 1996;
- 14.2 National Environmental Management Act 107 of 1998;
- 14.3 National water Act 36 of 1998;
- 14.4 National Environmental Management Biodiversity Act 10 of 2004;
- 14.5 National Forest and Fire Amendment Act of 2001;
- 14.6 Environment Conservation Amendment Act 2005 no 50 of 2003;
- 14.7 Hazardous Chemical Substances Act 15 of 1973;
- 14.8 National Environmental Management: Waste Act 59 of 2008;
- 14.9 National Environmental Management: Air Quality Act 39 of 2004;
- 14.10 National Heritage Resources Act 25 of 1999;
- 14.11 City of Johannesburg bylaws

**Note: The contractor is not expected to submit copies of the above legislation but should align the activities, processes and services with the requirements of applicable environmental legislation.**

**The following should be taken to consideration:**

1. An environmental management file entailing all the requires above should be submitted and be approved by the JCPZ's SHEQ department prior to the contractor doing a site establishment;
2. No contractor shall be allowed to commence with any work before environmental induction is conducted by JCPZ's SHEQ department;
3. No contractor shall be allowed to commence with any activity without signing and submitting the declaration to prevent environmental pollution to the SHEQ department;
4. The contractor should ensure that the environmental management file is on site and updated on daily basis;

***The environmental Specialist can be contacted for further clarity:***

Likopo Khambule – Environmental Specialist



062 401 2602



[lkhambule@jhbcityparks.com](mailto:lkhambule@jhbcityparks.com)



Physical Address: 12 Glencoe Road Springfield, Johannesburg

# **1. ROADS SECTIONS**

## **MATTERS RELATING TO THE STANDARD SPECIFICATIONS**

SECTION 1200: GENERAL REQUIREMENTS AND PROVISIONS

SECTION 1300: CONTRACTOR'S ESTABLISHMENT ON SITE AND GENERAL OBLIGATIONS

SECTION 1400: HOUSING, OFFICES AND LABORATORIES FOR THE ENGINEER'S  
SITE PERSONNEL

SECTION 1600: OVERHAUL

SECTION 1700: CLEARING AND GRUBBING

SECTION 1800: DAYWORK SCHEDULE

SECTION 2200: PREFABRICATED CULVERTS

SECTION 2300: CONCRETE KERBING, CONCRETE CHANNELLING, CHUTES AND  
DOWNPIPES AND CONCRETE LININGS FOR OPEN DRAINS

SECTION 3300: MASS EARTHWORKS

SECTION 3400: PAVEMENT LAYERS OF GRAVEL MATERIAL

SECTION 3500 STABILIZATION

SECTION 5700: ROAD MARKING

SECTION 5900: FINISHING THE ROAD AND ROAD RESERVE AND TREATING OLD  
ROADS

SECTION 7300: CONCRETE BLOCK PAVING

## **SECTION 1200: GENERAL REQUIREMENTS AND PROVISIONS**

### **B1202 SERVICES**

Add the following to the fifth paragraph:

“Provision is made in the bill of quantities for payment for searching and exposing of known or unknown services as well as the relocation and/or protection of existing services. Any moving of existing services which may be required within the proclaimed road reserve will be undertaken by the relevant service authorities or by a selected subcontractor if so, ordered by the engineer.”

### **B1204 PROGRAMME OF WORK**

#### **a) General requirements**

“The bar-chart programme to be provided by the contractor shall show the various activities in such detail as may be required by the engineer. Progress in terms of the programme shall be updated monthly by the contractor in accordance with the progress made by the contractor.

In compiling the programme of work, the contractor shall indicate and make due allowance for the following, as specified elsewhere in the contractor documents:

- The requirements regarding the accommodation of traffic and areas that may be occupied at any time for construction purposes (as indicated on the drawings and specified in Section 1500 of the specifications)
- Requirement regarding the training of labourers and Emerging Contractors (EC's).
- The requirements for work to be undertaken by labourers and work to be undertaken by EC's.

#### **b) Programme of work for rehabilitation work**

“The engineer shall, however, undertake acceptance control tests for the judgement of workmanship and quality, without accepting any obligations vested with the contractor in terms of the contract with specific reference to quality of materials and workmanship. Such acceptance control test done by the engineer shall not relieve the contractor of his obligations to maintain his own quality control system”.

Add the following at the end of this clause:

“The engineer shall, for the purpose of acceptance control on products and workmanship, assess test results and measurements in accordance with the provisions of section 8300 of the standard specifications. Where small quantities of work are involved, a lot shall mean a full day’s production for a specific item of work subject to acceptance control testing.”

B1206

“The contractor shall be responsible for the true and proper setting out of the Works and for the correctness of the position, levels, dimensions and alignment of all parts of the Works and for the provision of all necessary instruments, appliances and labour in connection therewith.”

The Contractor shall take care that property beacons, trigonometrical survey beacons or setting-out beacons are not displaced or destroyed without the consent of the Engineer. Property beacons and trigonometrical survey beacons that have been displaced or destroyed shall be replaced by registered land surveyor, who shall certify such replacement.

The cost replacing all beacons displaced or destroyed during the course of the Contract without the consent of the Engineer shall be borne by the Contractor.”

B1209 PAYMENT

c) Rates to be inclusive

“VAT shall be excluded from the rates and provided for as lump sum in the Summary of Bill of Quantities.”

d) Materials on the site

“In addition, the engineer may at his sole discretion also allow payments under “Materials on Site” in respect of any construction materials if stored off-site providing that:

- a) The site selected for this purpose is approved by the engineer
- b) Such land is physically separated from any production plant or operation
- c) Only materials for use under this contract is stockpiled on such land
- d) The contractor has provided proof of an agreement with the owner of land that the owner has no claim whatsoever on any materials stockpiled land
- e) Material obtained by the contractor for or on behalf of emerging subcontractors (SMME’s) shall remain the responsibility of the contractor after payment has been made in respect of materials site.”

## B1215 EXTENSION OF TIME RESULTING ABNORMAL RAINFALL

Add the following after the first paragraph of this clause:

“For the purposes of this contract, extension of time resulting from abnormal rainfall or other forms of inclement weather shall be determined according to the requirements of Method ii (critical-path method).”

Method (ii) (Critical path method)

“The value of “n” shall be taken as the (3) working days per calendar month.

If normal rainy or inclement weather, resulting in delays, occurs for less than three (3) working days in any calendar month, the difference between the three (3) working days and the actual number of working days on which normal rainy or inclement weather occurred, shall be ignored and not accumulated for the duration of the contract period for the purposes of determining an extension of time due to normal rainy weather, nor due any other reason.

Items of work on the critical path of the programme of work which are subject to climatic limitations, shall also be considered for extension of time if such items of work are delayed by e.g. cold weather, high winds or other inclement weather conditions.

In this regard, reference shall be made to weather limitations specified for the application of various bituminous products. However, for months during which seal-work cannot be undertaken in terms of the specifications, no extension of time shall be claimed for.

Rainfall records

| <b>MONTH</b> | <b>AVERAGE RAINFALL<br/>(mm)</b> | <b>RAIN DAYS<br/>(per month)</b> |
|--------------|----------------------------------|----------------------------------|
| JANUARY      | 118                              | 13                               |
| FEBRUARY     | 83                               | 8                                |
| MARCH        | 70                               | 8                                |
| APRIL        | 38                               | 6                                |
| MAY          | 11                               | 2                                |

|           |     |    |
|-----------|-----|----|
| JUNE      | 6   | 1  |
| JULY      | 2   | 1  |
| AUGUST    | 6   | 1  |
| SEPTEMBER | 19  | 2  |
| OCTOBER   | 45  | 7  |
| NOVEMBER  | 88  | 10 |
| DECEMBER  | 104 | 11 |

#### **B1217 PROTECTION OF THE WORKS AND REQUIREMENTS TO BE MET BEFORE CONSTRUCTION OF NEW WORK ON TOP OF COMPLETED WORK IS COMMENCED**

“(h) No concrete kerbing or concrete drains directly adjoining the bituminous surfacing shall be constructed prior to the completion of the bituminous surfacing.”

#### **B1222 USE OF EXPLOSIVES**

“(h) Where blasting operations are undertaken in close proximity of temporary deviations, the Contractor shall implement all such safeguarding measures as may be required and instructed by the engineer.”

#### **B1224 THE HANDING-OVE OF THE ROAD RESERVE**

“The total length of the road reserve between the specified limits of construction will be handed over to the contractor on the commencement date. Reference shall, however, be made to the requirements of section 1500 of these specifications where limitations in respect of work-areas are specified. In the event of the non- adherence by the contractor in terms of the mentioned specifications, the engineer shall withdraw such sections of the road reserve as may be justified to ensure suitable progress of the works or safe passage of traffic.”

#### **B1229 SABS CEMENT SPECIFICATIONS**

“Where reference is made in this specification or the standard specifications to the cement specifications, e.g. SABS 471: Portland cement and rapid hardening Portland cement, it shall be replaced with the new specification:

SABS ENV 197-1: Cement- composition, specifications and conformity criteria.

Part 1: Common cements.

Furthermore, where reference is made in this specification or the standard specifications to the different cement types, the following new names/types shall apply:

| Old product<br>Nomenclature | Typical new product nomenclature |                       |
|-----------------------------|----------------------------------|-----------------------|
|                             | Cement type                      | Cement strength class |
| OPC                         | CEM I                            | 32,5                  |
|                             | CEM I                            | 32,5 R                |
| RHC                         | CEM I                            | 42,5                  |
|                             | CEM I                            | 42,5 R                |
| LASRC                       | No provision made                | No provision made     |
| PC15SL                      | CEM II/A-S                       | 32,5                  |
|                             | CEM II/A-S                       | 32,5R                 |
|                             | CEM II/A-S                       | 42,5                  |
| PC15FA                      | CEM II/A-V                       | 32,5                  |
|                             | CEM II/A-V                       | 32,5R                 |
|                             | CEM II/A-W                       | 32,5                  |
|                             | CEM II/A-W                       | 32,5R                 |
| RH15FA                      | CEM II/A-V                       | 42,5                  |
|                             | CEM II/A-V                       | 42,5R                 |
|                             | CEM II/A-W                       | 42,5                  |
|                             | CEM II/A-W                       | 42,5R                 |
| PBFC                        | CEM III/A                        | 32,5                  |
|                             | CEM III/A                        | 32,5R                 |
| PFAC                        | CEM II/B-V                       | 32,5                  |
|                             | CEM II/B-W                       | 32,5                  |
| RH30SL                      | CEM II/B-S                       | 32,5R                 |

|        |            |       |
|--------|------------|-------|
|        | CEM II/B-S | 42,5  |
| RH40SL | CEM III/A  | 32,5R |
|        | CEM III/A  | 42,5  |

CEM I 32,5, CEM II A-S 32,5 CEM II/A-V 32,5, or CEM III A may used for the manufacture of reinforce concrete members.”

#### **“B1230: IN SERVICE TRAINING**

The contractor shall implement in-service training. Labourers shall be trained progressively throughout the duration of the contract, in the various stages of a particular type of work.

##### **a)Details of in-service training**

- (i) The contractor shall attach to form RDP 1(E) basic details of his proposed in – service training programme, which details shall inter alia include the following:
  - The details of training to be provided
  - The manner in which the training is to be delivered
  - The number and details of trainers to be utilized.
- (ii) The in-service training programme shall be submitted with the initial works programme. The progress in relation to this programme will be recorded monthly and attached to the site meeting minutes and payment certificate.
- (iii) The contractor shall provide onsite, sufficient skilled and competent trainers to train all labourers engaged on the contract, in the various skills required for the execution and completion of the works.
- (iv) All labourers shall be remunerated in respect of all time spent undergoing training.
- (v) Every worker engaged on the contract shall on the termination of his participation on the contract, be entitled to receive from the contractor, a certificate of service in which the following information shall be recorded:
  - The name of the contractor
  - The name of the employee
  - The name of the project /contract
  - The nature of work satisfactorily executed by the worker and the time spent thereon

- The nature and extent of training provided to the worker
- The dates of service.

The cost of the above obligations shall be deemed to be covered by the sums and rates tendered for items B13.01 (a) and (c) in the bill of quantities.

## **B1231 COMMUNITY LIAISON OFFICER (CLO)**

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

The contractor shall, however, accept the appointed as part of his management personnel.

### **a) Duties of the Community Liaison Officer**

The Community Liaison Officer's duties will be:

- i. To be available on site daily between the hours of 07:00 and 11:00 and at other times as the need arises. His/her normal working day will extend from 07:00 in the morning until 16:30 in the afternoon.
- ii. To determine, in consultation with the contractor, the needs of the temporary labour for relevant skills training. He will be responsible for the identification of suitable trainees and will attend one of each of the training sessions.
- iii. To communicate daily with the contractor and the engineer to determine the labour requirements with regard to numbers and skill, to facilitate in labour disputes and to assist in their resolution.
- iv. To assist in and facilitate in the recruitment of suitable temporary labour and the establishment of a "labour desk."
- v. To attend all meetings in which the community and/or labour are present or are required to be represented.
- vi. To assist in the identification, and screening of labourers from the community in accordance with the contractor's requirements.
- vii. To inform temporary labour of their conditions of temporary employment and to inform temporary labourers as early as possible when their period of employment will be terminated.
- viii. To attend disciplinary proceedings to ensure that hearings are fair and reasonable.

- ix. To keep a daily written record of his interviews and community liaison.
- x. To attend monthly site meetings to report on labour and RDP matters.
- xi. All such other duties as agreed upon between all parties concerned.
- xii. To submit monthly returns regarding community liaison as illustrated In Part C5.1 of this document (form RDP 12(E)).

**b) Payment for the community liaison officer**

A special pay item is incorporated in section 1200 of the bill of quantities relating to payment of the liaison officer on a prime cost sum basis. This payment shall only be made for the period for which the duties of the liaison officer are required and not necessarily for the full duration of the contract. The remuneration of the CLO shall be determined jointly by the contractor, engineer and employer.

**c) Period of employment of the community liaison officer**

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

**B1232 SUBCONTRACTORS**

Over and the stipulations of clause 8 of the General Conditions of Contract 1998, regarding subletting of part of the works, it is a condition of the contract that an approved subcontractor shall not sublet part of his work, covered in his appointment by the main contractor, to another subcontractor without the consent and the engineer. Subletting shall in all cases be critically considered by the engineer.

In addition to the provisions of clause 8 of the general conditions of contract regarding subcontracting of the works, it is a requirement of this contract that an approved subcontractor shall not further subcontract work subcontracted to him by the main contractor, to another subcontractor without the consent and approval of the engineer. Subcontracting shall in all cases be critically considered by the engineer. The engineer reserves the rights to limit the extent or the volume of work subcontracted by the contractor, should he be deem it necessary in terms of progress or quality of workmanship.

**B1233 WORKMEN'S COMPENSATION ACT**

All labour employed on the site shall be covered by the Workmen's Compensation Act. The contractor shall pay in full, including the payment of the necessary levies, such amounts, shall resolve the manner in which Workmen's Compensation will be handled. Amounts paid by the contractor shall not be included in the wage rates but shall be an extra payment allowed for by the contractor.

## **B1234 MEASUREMENT AND PAYMENT**

| <b>“ITEM</b> | <b>UNIT</b> |
|--------------|-------------|
|--------------|-------------|

|                                          |                 |
|------------------------------------------|-----------------|
| <b>B12.01 Locating Existing Services</b> | Provisional Sum |
|------------------------------------------|-----------------|

| <b>ITEM</b> | <b>UNIT</b> |
|-------------|-------------|
|-------------|-------------|

|                                                                                                                                 |  |
|---------------------------------------------------------------------------------------------------------------------------------|--|
| B12.02 (a) Excavation for location, protecting, or shifting of existing services, protecting, or shifting of existing services. |  |
|---------------------------------------------------------------------------------------------------------------------------------|--|

|                                                                                                                   |  |
|-------------------------------------------------------------------------------------------------------------------|--|
| B12.02 (b) Backfilling of excavations made for locating, protecting, adjusting, or shifting of existing services. |  |
|-------------------------------------------------------------------------------------------------------------------|--|

To determine the positions of existing services cubic metre (m<sup>3</sup>)

| <b>ITEM</b> | <b>UNIT</b> |
|-------------|-------------|
|-------------|-------------|

|                                                            |                |
|------------------------------------------------------------|----------------|
| <b>B12.03 Quality Control Test Ordered by the Engineer</b> | Prime Cost Sum |
|------------------------------------------------------------|----------------|

| <b>ITEM</b> | <b>UNIT</b> |
|-------------|-------------|
|-------------|-------------|

|                                                           |   |
|-----------------------------------------------------------|---|
| B12.04 Handling cost and profit in respect of item B12.03 | % |
|-----------------------------------------------------------|---|

| <b>ITEM</b> | <b>UNIT</b> |
|-------------|-------------|
|-------------|-------------|

|                                                                                                                                                                                                             |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| B12.05 Remuneration of Community Liaison Officer (CLO) for the duration of the contract @ R8750 per month (payment in line item is subject to confirmation by specified professional and proof of payment). |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

**ITEM****UNIT**

B12.06 (a) Remuneration for SHE Officer for the duration of the contract.

B12.06 (b) Provision for Independent Environmental Control Officer for the duration of the contract (payment in line item is subject to confirmation by specified professional and proof of payment).

B12.07 (a) Provision for Social Facilitation Consultant for the duration of the contract (payment in line item is subject to confirmation by specified professional and proof of payment).

B12.07 (b) Handling cost and profit in respect of item B12.06(a): (i) B12.06 (b): (i) and B12.07 (a): (i)

B12.08 Contract notice board as directed by the Engineer No.

B12.09 (a) Provision for Engineering resident engineer for the duration of the contract

B12.10 (a) Site De-establishment Prov. Sum

B1206 Provision of topographical survey at entrance Prov. Sum

## **SECTION 1300: CONTRACTOR'S ESTABLISHMENT ON SITE AND GENERAL OBLIGATIONS**

### **B1302 GENERAL REQUIREMENTS**

#### **a) Camps, constructional plant and testing facilities**

"The contractor shall, at each area where work is being undertaken, provide on the daily basis at least one portable chemical latrine unit use by construction workers employed on the project. The latrine units shall be serviced daily and kept in a hygienic and orderly state to the satisfaction of the engineer. No separate payment shall be made for this requirement and shall be deemed to be included in the rates tendered for the contractor's time- related obligations."

### **B1303 PAYMENT**

#### **ITEM**

#### **UNIT**

#### **B13.01 The contractor's general obligations**

**(As specified)**

"The combined total tendered for sub-items (a), (b) and (c) shall not exceed 15% of the tender sum, excluding VAT.

Should the contractor be of the opinion that 15% is inadequate to cover his costs in terms of section 1300, he shall indicate separately with his tender where such costs have been allowed for his tender. If no such indication is given, the contractor shall not at any stage during the contract for any reason whatsoever claim additional compensation under this item."

#### **ITEM**

#### **UNIT**

#### **B13.01 The contractor's general obligations**

Fixed obligations

Lump Sum

Time related obligations

Month

## **SECTION 1400: HOUSING, OFFICES AND LABORATORIES FOR THE ENGINEER'S SITE PERSONNEL**

### **ITEM**

### **UNIT**

#### **B1401 SCOPE**

The provision of accommodation as specified, including roof, external and internal walls, windows complete with glazing, doors with locks and fittings, floors, fencing, etc

(a) Offices (interior floor space only) Lump Sum

#### **B1402 OFFICES AND LABORATORIES FURNITURE**

##### **a) General**

"The facilities to be provided for the engineer in terms of these specifications shall be fenced off by a two-meter-high security fence. A security gate shall be provided in the fence which shall be guarded at all times by an acceptable watchman provided by the contractor.

The engineer's establishment may be incorporated within the contractor's establishment provided that preceding requirements are met to the satisfaction of the engineer.

##### **b) Offices**

The offices shall be provided with the necessary equipment and facilities to maintain a suitable working environment, including desks with drawers and locks, conference tables, filing cabinets, swivel chairs, an A3/A4 colour printer/copier/scanner, rain gauge, measuring wheel and first-aid kit.

##### **(f) Air conditioning units and heaters**

The contractor shall provide and install air-conditioning units and heaters.

## **B14.08 Services**

### **ITEM**

### **UNIT**

Services at office and laboratories for provision of water, electricity, sewage and rubbish removal, cleaning services, maintenance and repairs, including maintenance of access roads, footpath, etc.

- |                    |           |
|--------------------|-----------|
| (i) Fixed costs    | Lump Sump |
| (ii) Running costs | Month     |

## **SECTION 1600: OVERHAUL**

### **ITEM**

### **UNIT**

## **B1602 DEFINITIONS**

- |                                                                                                                                      |                  |
|--------------------------------------------------------------------------------------------------------------------------------------|------------------|
| (a) Overhaul on material hauled in excess of a free-haul distance<br>of 0.5km, for haul up to or through 1.0km (restricted overhaul) | m <sup>3</sup>   |
| (b) Overhaul on material hauled in excess of 1.0km (ordinary overhaul)                                                               | m <sup>3</sup> k |

## **SECTION 1700: CLEARING AND GRUBBING**

### **B1702 DESCRIPTION OF WORK**

#### **a) Clearing**

“Clearing shall include the removal of material to a thickness of up to 150mm in-situ material as ordered by the engineer. No payment shall be made for temporary stockpiling of topsoil material in the case where this material is applied as topsoil after completion of road side slopes.

Should the required depth exceed 150mm, the total volume of material removed shall either be classified as “temporary stockpiling of topsoil” or “unsuitable roadbed material” or “cut to spoil” whichever is applicable as allowed for in the standard specifications. In these cases no payment shall be made for clearing and grubbing.

Clearing as described shall in all cases be undertaken in such a manner that the topsoil is preserved and not contaminated with other debris or rubbish. Cross-sections for the determination of earthworks quantities shall be after clearing (topsoil or unsuitable roadbed material) and roadbed preparation if applicable.

Payment for gabion boxes and mattresses which have to be removed and the material sorted stacked shall be made under section 5200”

### **B1703 EXECUTION OF WORK**

#### **(e) Cleaning out of hydraulic structures**

After the instruction for the cleaning out of hydraulic structures has been executed, the contractor shall be responsible for maintaining the hydraulic structures in a clean condition for the duration of the contract.

## **B1704 MEASUREMENT AND PAYMENT**

| <b>ITEM</b>                 | <b>UNIT</b>  |
|-----------------------------|--------------|
| 17.01 Clearing and grubbing | hectare (ha) |

| <b>ITEM</b>                                     | <b>UNIT</b> |
|-------------------------------------------------|-------------|
| 17.02 Girth exceeding 1m up to and including 2m | No          |

| <b>ITEM</b>                                                         | <b>UNIT</b> |
|---------------------------------------------------------------------|-------------|
| 17.05 (a) Pipes with an internal diameter up to and including 750mm | m           |
| 17.05 (b) Pipes with an internal diameter exceeding 750mm           | m           |

## **SECTION1800: DAYWORK SCHEDULE**

Note: this is new section added to the Standard Specifications.

### **B1801 SCOPE**

This section covers the listing of day work items for use in determining payment for work which cannot be quantified in specific pay item "units" in the bill of quantity or quantity or work ordered by the engineer during the construction period which was not foreseen at tender stage for which no applicable rate exists in the schedule or for work a special or different character warranting payment as decided by the engineer.

### **B1802 ORDERING OF DAYWORK**

No day work shall be undertaken unless specific written authorization is obtained from the engineer.

### B1803 Measurement and Payment

| The engineer may order the following day work items: | DESCRIPTION                                                          | UNIT     |
|------------------------------------------------------|----------------------------------------------------------------------|----------|
| 18.01                                                | (a) Normal hours of duty of :                                        |          |
|                                                      | (i) Unskilled                                                        |          |
|                                                      | (ii) Semi-skilled                                                    | Hour (h) |
|                                                      | (iii) Skilled                                                        |          |
|                                                      | (iv) Foreman                                                         | Hour (h) |
|                                                      |                                                                      | Hour (h) |
|                                                      | Hire of construction equipment                                       | Hour (h) |
|                                                      | (a) Excavator 3-5 ton                                                |          |
|                                                      | (b) TL Backactor                                                     |          |
|                                                      | (c) Front end loader                                                 |          |
|                                                      | (d) Platform truck                                                   | Hour (h) |
|                                                      | (e) Tip truck                                                        |          |
|                                                      | (f) Grader (CAT 140G or similar)                                     | Hour (h) |
|                                                      | (g) Walk behind roller (Bomag BW90 or similar)                       | Hour (h) |
|                                                      | (h) Mechanical Broom                                                 | Hour (h) |
|                                                      | (i) D6 Dozer                                                         | Hour (h) |
|                                                      | (j) Compressor                                                       | Hour (h) |
|                                                      | (k) Submersible dewatering pump, 40 m3/h with hoses and power supply | Hour (h) |
|                                                      |                                                                      | Hour (h) |
|                                                      |                                                                      | Hour (h) |
|                                                      |                                                                      | Hour (h) |
|                                                      |                                                                      | Hour (h) |

The unit of measurement shall be the actual number of hours worked by labourers or foremen or an item of plant.

The tendered rates shall include full compensation for all cost items including overheads, head- office expenses and profits as described in subclause 40(3) of the general conditions of contract and shall be subject to contract price adjustment as provided for in the contract.

The mark-ups on day work items in accordance with the Appendix to the Tender shall not be applicable on day work items listed in the bill of quantities in terms of the above specifications. In the event of new day work rates being requested for items not appearing in the bill of quantities, then the provisions of the contract and the Appendix to the Tender shall apply.

Prior to the commencement of any work by the labourers described under B18.01, the contractor must obtain written consent from the engineer regarding the classification and composition of all labourers in terms of “unskilled” and “skilled” labourers required for the work as ordered by the engineer.”

## **SECTION 2200: PREFABRICATED CULVERTS**

### **B2201 SCOPE**

“Section 2200, Prefabricated culverts will read, Section B2200, Constructed culverts.

The attention of the contractor is drawn to the fact that information given on the plans, longitudinal sections or drainage schedules may have to be altered to suit actual site conditions and, therefore, the contractor shall only construct these culverts after the engineer has verified the information on the drawings from detail surveys taken on site by the contractor as directed by the engineer.

Precast units shall be ordered by the contractor from actual measurements of length acquired on the site and not from lengths sated in the drainage schedule or from the bill of quantities.

No precast units shall be ordered until the engineer has satisfied himself that the proposed units have been manufactured to the required tolerances and loading standards. The engineer must be given the opportunity to load test units if he considers this necessary.”

### **B2203 MATERIALS**

#### **(f) Skewed Ends**

Deleted the second and third paragraphs and substitute with the following:

“Precast portal and rectangular culverts placed on a skew shall be supplied with cast in situ skewed ends as shown on the drawings. In situ skew ends are to be constructed simultaneously with the wingwalls and headwalls.”

### **B2204 CONSTRUCTION METHODS**

“In all cases where a soft founding material is classified as suitable for culvert bedding construction, the in situ material shall be ripped, moistened and compacted to 90% or 93% modified AASHTO density.

The depth of preparation and compaction of founding material shall be as indicated on the drawings or as specified by the engineer. Allowance for measurement and payment for this work is made in the bill of quantities under this section.”

## **B2205 EXCAVATION FOR CONSTRUCTION BY TRENCH METHOD**

### **“(d) Drainage of excavations**

The contractor shall apply suitable, effective drainage and dewatering methods for preventing the ingress of water into the excavation and to keep them dry. Drainage measures, with the exception of pumping, shall be maintained until the backfilling has been completed. Between various construction stages, pumping may be interrupted in consultation with the engineer.

Any draining or pumping of water shall be done in a manner as will preclude the concrete or materials or any part thereof from being carried away.

Allowance for measurement and payment for dewatering and keeping dry of culvert excavations is made the schedule in this section.”

## **B2211 BACKFILLING OF PREFABRICATED CULVERTS**

Change the last sentence in the fourth paragraph to read “90% or 93% as shown on the drawings or as directed by the engineer.”

## **B2212 INLET AND OUTLET STRUCTURS, CATCHPITS AND MANHOLES**

### **(a) Concrete work**

“The type of surface finish for in situ concrete in the culverts shall be as indicated on the drawings. Generally, all exposed faces shall be of Class F2 formwork and faces covered by backfill shall Class F1. The top of parapet walls and wingwalls shall be finished to a Class U2 surface finish.”

### **(h) Prefabricated inlet and outlet structures**

Add the following:

“The use of precast concrete inlets and outlets as described in clause 2212(h), shall not be allowed under any circumstances. Cast in situ concrete wingwall type inlets and outlets shall be constructed as indicated on the drawing and shall be in accordance with section 6000 of the standard Specifications. Allowance for measurement and payment for wingwall type inlets and outlets is made in the schedule in this section.”

## **B2218 MEASUREMENTS AND PAYMENT**

“The tendered rate shall be full compensation for the cutting, by means of mechanical saw (angle grinder) and finishing off of the pipes for the specific angle of skew at which the pipes must be laid. The tendered rate for concrete pipe culverts shall include the additional cost of units that are half the standard length. The standard length of a concrete pipe is 2.44m”

## **SECTION 2300: CONCRETE KERBING, CONCRETE CHANNELLING, CHUTES AND DOWNPIPES AND CONCRETE LININGS FOR OPEN DRAINS**

### **B2301 SCOPE**

“The position and length of the following types of concrete kerbs and channels are indicated on the standard drawings.

Type B : Precast concrete kerbing, semi-mountable (SABS 927-1969)

Type C : In situ concrete kerbing at intersections

Edge beam : In situ concrete kerbing at farm access and bus stops

### **B2304 CONSTRUCTION**

(b) Slip form kerbing

“Slip-form kerbing shall under no circumstance be allowed.”

(e) Cast in situ kerbs and channels

“Forming and templates used to form joints between alternate sections shall be of steel plate of which the thickness shall not be less than 5mm.”

(i) Construction sequence

Replace paragraphs (i), (ii) and (iii) with the following:

“In all cases where kerbing and/or channel in adjoin the bituminous surface of the road, the kerbing and/or channelling may only be constructed after the bituminous surface has been completed.

Before commencing with the kerbing and/or channelling, the surfacing and the base, shall be accurately cut to line with a mechanical saw to a minimum depth of 75mm. After excavation the concrete shall then be cast against the cut surface without formwork. All material outside damaging the edge before commencing with the casting of the concrete. No payment shall be made for repair work as instructed by the engineer to damage caused by the cutting/excavating process of surfacing and base layers. Any concrete split onto the surfacing shall immediately be removed and cleaned. Where so required by the engineer, the contractor shall, without any additional compensation, paint emulsion over the stained surface.

(K) Formwork and finish

“Formwork and finish of concrete kerbs shall comply with the requirements of section 6200. All visible edges on the sides or at joints of cast in situ concrete kerbs or channels shall be rounded with a rounding tool.”

## **SECTION 3300: MASS EARTHWORKS**

### **B3301 TREATING THE ROADBED**

This section covers all work in connection with the construction of cuts and fill, the removal to spoil of material unsuitable for use, the construction and compaction of fills with cut material from the road prism or borrow material from approved borrow pits. The compaction of the roadbed and finishing off cuts and fills up to the stage where fills are ready for placing the pavement layers.

### **B3305 TREATING THE ROADBED**

(a) Removing unsuitable material

“For the purpose of this contract, excavation and removal of in-situ clayey material over areas where the road is in a fill condition shall be classified as removal of unsuitable material, irrespective of the stability or moisture condition of the in-situ material.”

(b) Preparing and compacting the roadbed

Delete the last sentence of the first paragraph “if necessary, roadbed 150mm in depth of compaction” and replace as follows:

“Where demarcated by the engineer, prior to the roadbed being scarified, the excess in situ material forming part of the present roadway, and within the limits of the roadbed, and in close proximity of the layer works, but falling within the limits of the layersworks, shall be bladed to controlled level in order to achieve the required the level and necessary depth of compaction.”

## **B3307            FILLS**

### **(c) Constructing a pioneer layer**

“For the purpose of this contract, pioneer layers shall be completed by means of eight-pass roller compaction using vibratory rollers as specified in subclause 3304(b) of the standard specifications.”

### **(d) Benching**

“Benching of and pavement layer material is required to be undertaken into the existing fill embankments and pavement layers. No additional payment shall be made over and above the normal pay items applicable to earthworks and pavement layers where benching required for widening of the existing road formation. Benching required for widening of the existing road formation. Benching shall be undertaken as shown on the drawings.

It is requirement that benching shall always be started at the bottom of the existing progressing to the top of the formation. The dimensions and details of benching are shown on the drawing.”

## **B3312    MEASUREMENT AND PAYMENT**

### **ITEM**

### **UNIT**

33.01 Cut and borrow to fill, including free-haul up to 1.0km:

(a) Material in compacted layer thickness of 200mm and less:

(ii) Compacted to 90% of modified AASHTO density

m<sup>3</sup>

| ITEM                                                                                                           | UNIT           |
|----------------------------------------------------------------------------------------------------------------|----------------|
| 33.04 Cut to spoil, including free-haul up to 1km, Including spreading and compaction. Material obtained from: |                |
| (a) Soft excavation                                                                                            | m <sup>3</sup> |
| (b) Intermediate excavation                                                                                    | m <sup>3</sup> |
| (c) Hard excavation                                                                                            | m <sup>3</sup> |
| (d) Boulder excavation Class B                                                                                 | m <sup>3</sup> |

| ITEM                                           | UNIT           |
|------------------------------------------------|----------------|
| 33.05 Overbreak in hard and class A excavation | m <sup>2</sup> |

| ITEM                                                                  | UNIT           |
|-----------------------------------------------------------------------|----------------|
| 33.07 Removal of unsuitable material (including free haul of 0.5 km): | m <sup>2</sup> |
| (b) In layer thicknesses exceeding 150mm                              |                |
| (i) Stable material                                                   | m <sup>3</sup> |
| (ii) Unstable material                                                | m <sup>3</sup> |

| ITEM                                                  | UNIT           |
|-------------------------------------------------------|----------------|
| 33.10 Roadbed preparation and compaction of material: |                |
| (b) Compaction to 93% of Mod AASHTO density           | m <sup>3</sup> |

| ITEM                                                                    | UNIT           |
|-------------------------------------------------------------------------|----------------|
| 33.13 Finishing-off cut and fill slopes, medians and interchange areas: |                |
| (a) Cut slopes                                                          | m <sup>2</sup> |
| (b) Fill slopes                                                         | m <sup>2</sup> |

| ITEM                                                                                                                          | UNIT           |
|-------------------------------------------------------------------------------------------------------------------------------|----------------|
| 33.18 Extra over items 33.10 and 33.12 for preparing and/or treating the roadbed and compacting material in restricted areas: |                |
| (a) Item 33.10 for roadbed preparation and the compaction of material                                                         | m <sup>3</sup> |

## **SECTION 3400: PAVEMENT LAYERS OF GRAVEL MATERIAL**

### **B3402 MATERIALS**

#### **(a) General**

“Material requirements for gravel pavement layers are in accordance with TRH4 and shall be indicated on the drawings.”

### **B3405 CONSTRUCTION TOLERANCES**

#### **(F) Surface regularity**

“Where transverse construction joints in base layers are made between newly and previously constructed sections, the contractor shall exercise level control at such joints by installing level poles at 5m intervals on side of the joint of the layer covering at least a 30m length into the newly constructed section.”

### **B3406 QUALITY OF MATERIALS AND WORKMANSHIP**

“Test results and measurements shall be assessed by the engineer according to the provisions of Section 8300 of the standard specifications.”

### **B3407 MEASUREMENT AND PAYMENT**

| <b>ITEM</b>                                                           | <b>UNIT</b>    |
|-----------------------------------------------------------------------|----------------|
| B34.01 Pavement layers constructed from commercially sourced material |                |
| (d) Gravel subbase, G5 Material (Unstabilized material) compacted to: |                |
| (ii) 95% of modified AASHTO density (150mm layer thickness)           | m <sup>3</sup> |
| (f) Gravel base, G5 Material stabilised to C4 compacted to:           |                |
| (i) 98% of modified AASHTO density (150mm layer thickness)            | m <sup>3</sup> |

| ITEM                                                        | UNIT           |
|-------------------------------------------------------------|----------------|
| B34.02 Extra over item 34.01 for excavation of material in: |                |
| (a) Intermediate excavation                                 | m <sup>3</sup> |
| (b) Hard excavation                                         | m <sup>3</sup> |

| ITEM | UNIT |
|------|------|
|------|------|

B34.07 Extra over item 34.01 for temporarily blading the material to windrow: m<sup>3</sup>

## SECTION 3500: STABILISATION B3503 CHEMICAL STABILISATION

### 1. Preparing the layer

Breaking- down and removal of oversize material and addition of make to required thickness shall be completed before stabilizing agent shall be added.”

#### (h) Curing the stabilized work

“it is the intention of this contract that curing of chemically stabilized layers shall be undertaken in accordance to protection method (ii) as specified. Any other method of curing shall only be allowed in special; circumstances as decided upon by the engineer, but no additional payment whatsoever over that allowed for in item 35.05 will be made.”

#### (i) Construction limitations

I table 3503/1, replace “8 hours” with “6 hours.”

## B3506 TOLERANCES

### 2. Uniformity of mix (chemical stabilisation)

“All pavement layers, especially layers which are to be chemically stabilized, shall , apart from the application of other mixing equipment, include at least two motor grader blade mixing operations to the full depth of the layer.

The in-place mixing of chemical stabilizing agents with agents with gravel materials shall be executed in such a manner that the coefficient of variation in the uniformity of the mix shall not exceed 30% when the stabilized layer is subjected to the chemical titration test, TMH1 method A15d. For plant-mixed stabilized materials the coefficient of variation shall not exceed 20%.

The coefficient of variation,  $C_v$ , is calculated by the formula:

$C_v = \frac{S_n}{\bar{X}_n} \times 100$  where,

$S_n$ = standard deviation of n determinations of stabilizing agent content

$\bar{X}_n$ = mean percentage of n determinations of agent content with n = 4 minimum.”

#### **B3510 MEASUREMENT AND PAYMENT**

##### **ITEM**

##### **UNIT**

B35.01 Chemical stabilisation 150mm layer thickness extra over unstabilized compacted layers (base & subbase layer) m<sup>3</sup>

##### **ITEM**

##### **UNIT**

B35.02 Chemical stabilising agent:

(a) CEM II, 32.5 Sure Road t

##### **ITEM**

##### **UNIT**

B35.04 Provisions and application of water for curing kl

#### **B3509 QUALITY OF MATERIALS AND WORKMANSHIP**

“The preparation of chemically stabilized material for the determination of the modified AASHTO density of the material shall be executed in accordance with TMH1 test method A 16 T and compaction thereof in accordance with TMH1 test method A7.”

## **SECTION 5600: ROAD SIGNS**

### **B5601 SCOPE**

This section covers the supply of permanent and temporary road signs and the erection of permanent road traffic signs alongside and over the carriageway, ramps and crossroads at Intersections and Interchanges and at the locations Indicated on the drawings or as directed by the engineer.

The signs shall be of the standard regulatory, warning, guidance and Information signs as detailed on the drawings and shall be fabricated in accordance with the South African Road Traffic Signs Manual, except where otherwise Indicated on the drawings or in the project specifications, or as directed by the engineer.

### **B5602 MATERIALS**

#### **(a) Structural Steel**

Structural steel shall comply with the requirements of BS4360 for the type of steel specified or shown on the drawings Unless otherwise specified, channels. Square tubes, angle Irons and other steel members on the reverse side of the sign boards and steel tubes for sign supports shall be coated in accordance with subclause 5603(a).

Where specified, all structural steel, including tubes shall be galvanised in accordance with the requirements of SABS 763 for type A 1 or B2 articles, as may be applicable.

Steel tubes shall comply with the requirements of SASS 657.

#### **(b) Bolts, nuts and rivets**

Steel bolts and nuts shall comply with SABS 135 or SABS 1143. Aluminium bolts and nuts shall be manufactured from alloy 851S or D65S.

All steel bolts, nuts and washers shall have a hot-dip (galvanized) zinc coating which complies with the requirements of SABS 763 for coatings on type C2 articles.

Blind rivets used for fixing road sign boards to square tubing framework shall be 4,65 mm rivets manufactured from or coated with a material that will not cause corrosion through electrolytic action. Hardened blind or aluminium rivets shall be used for attaching aluminium sections.

### **(c) Steel plate and steel profiles**

#### **(i) Steel plate**

Steel plate for road signs shall be 1,40 mm thick prepainted galvanized steel plate (Isacor G275 Chromadek or approved equivalent), which has been treated on both sides with an epoxy primer followed by a silicon polyester topcoat. The total dry thickness of the treatment shall be at least 25 µm.

The reverse side of a STOP sign R1 and all its derivatives shall be painted white. The reverse side of all other signs shall be dark grey.

Where a reflectorised road sign is required, its reverse side shall be painted with a dull grey prime coat and the face with only the specified topcoat.

#### **(ii) Steel profiles**

Standard sign profiles shall be 200 mm sections with a thickness of 1,0 mm, manufactured from prepainted galvanized mild steel substrate (Isacor G275 Chromadek or approved equivalent), and shall comply with the details on the drawings.

#### **(iii) Aluminium**

Aluminium plate shall be manufactured from grade 5251.H.3 alloy and shall conform to the requirements of BS 1470 and shall be 2,0 mm in thickness.

## **B5603 MANUFACTURING OF ROAD SIGN BOARDS AND SUPPORTS**

### **(a) Road sign boards**

Road sign boards shall be manufactured by a recognised manufacturer of road signs.

## **B5606 ERECTING ROAD SIGNS**

### **(a) Position**

Road signs shall be erected in the positions shown on the drawings or indicated by the engineer.

**(b) Excavation and backfilling**

Excavations for the erection of road signs shall be made according to the dimensions shown on the drawings. Where the excavations are to be backfilled with soil a 1: 12 cement:soil mixture shall be made if so required by the engineer. The soil or soil-cement mixture shall then be placed at optimum moisture content in 100 mm thick layers in the excavation and shall be compacted to a minimum of 90% of modified AASHTO density.

When material from the excavations is not suitable for backfilling or for the preparation of soilcrete, suitable material shall be obtained as instructed by the engineer.

**B5609 MEASUREMENT AND PAYMENT**

**ITEM**

**UNIT**

**56.01 Road sign boards with painted or coloured semi-matt background. Symbols, lettering and boarder in semi-matt black or in Class I retroreflective material, where the sign board is constructed.**

(a) Aluminium sheet (2,0 mm thick):

(i) Area not exceeding 2m<sup>2</sup> m<sup>2</sup>

**56.03 Road sign supports (overhead road sign structures excluded)**

**Road sign supports (overhead road sign structures excluded)**

(a) Structural Steel - Steel tubing (hot-dip galvanised) ton

**5605 Erection Road Signs**

(a) Excavation and backfilling m<sup>3</sup>

## **SECTION 5700: ROAD MARKINGS**

### **B5701 SCOPE**

All road markings shall be of the standard regulatory warning and guidance markings as detailed on the drawings and accordance with the South African Road Traffic Signs Manual.

### **B5702 MATERIALS**

#### **(a) Paint**

##### **(i) Retro-reflective road marking paint**

“When measured in accordance with SABS Method 1261-1998 within a period of two weeks after application, the coefficient of retro-reflected luminance, RL, shall be at least 150 mcd/m<sup>2</sup>.lx for white markings and 100 mcd/m<sup>2</sup>.lx for yellow markings.

Retro-reflective road-marking paint shall be used to paint road markings during the contract period and to re-paint all road markings at the end of the maintenance period.”

##### **“(v) Other road marking materials**

The contractor may use other road markings materials which would ensure more durable markings and which would meet the specified performance criteria.

Such materials shall comply with a standard set by a recognized national standard institution. Information on such materials and the standards to which they comply shall be submitted to the engineer for approval prior to the materials being used.

### **B5705 SURFACE PREPARATION**

“The onus is on the contractor to ensure that the surfaces on which the road markings are to be applied are sufficiently clean, dry and non-flaky to ensure that the quality of the road markings will not be adversely affected. The contractor is also responsible for protecting road studs from being painted over.”

### **B5707 APPLYING THE PAINT**

“The contractor’s establishment on site and general obligation shall be deemed to fully include the establishment of the road-marking team, irrespective of the number of times the road-marking team is required to be onsite or is required to move within the site.

**B5714 MEASUREMENT AND PAYMENT**

| ITEM | UNIT |
|------|------|
|------|------|

|                                  |  |
|----------------------------------|--|
| <b>57.01 Road-marking paint:</b> |  |
|----------------------------------|--|

|                                      |    |
|--------------------------------------|----|
| (a) White lines (broken or unbroken) | km |
|--------------------------------------|----|

| ITEM | UNIT |
|------|------|
|------|------|

|                                                                                                              |    |
|--------------------------------------------------------------------------------------------------------------|----|
| <b>57.06 Setting out and premarking the lines (Excluding traffic-island markings, lettering and symbols)</b> | km |
|--------------------------------------------------------------------------------------------------------------|----|

| ITEM | UNIT |
|------|------|
|------|------|

|                                                                                   |          |
|-----------------------------------------------------------------------------------|----------|
| <b>57.07 Re-Establishment of the painting unit during the construction period</b> | Lump Sum |
|-----------------------------------------------------------------------------------|----------|

**SECTION 5900: FINISHING THE ROAD AND ROAD RESERVE AND TREATING OLD ROADS**

**B5901 SCOPE**

*In the first line of the second paragraph, insert the following after 'this section'*

“...distinguishes between new construction and renewal construction. When construction is new, as in the case of new alignments for example, then this section”

**B5902 FINISHING THE ROAD AND ROAD RESERVE**

*Retain the existing paragraphs as sub-clause:*

“(a) New construction”

*Replace the sixth paragraph with:*

“All materials resulting from the finishing operations shall be disposed of at approved spoil sites.”

*Add the following:*

“(b)     Renewal construction

After completing construction work within the site, the Contractor shall ensure that all construction generated or related material that may have been swept, windrowed, stockpiled, stored or spread beyond the road surface is removed. This shall be done before any other rehabilitation work is undertaken, including shaping, topsoiling and grassing. Should, during the removal of construction generated or related material, existing vegetation or topsoil be disturbed or destroyed, the Contractor shall, at his own cost, re-instate the road reserve to its original state. This shall include ripping, should the construction material have compacted the existing surface.

Culvert inlets and outlets, culvert barrels, and open drains shall be cleared of debris, soil, silt and other material generated from the construction activities.

The surfacing shall be cleared of all dirt, mud and foreign objects. Dragging, pushing or scraping material across the finished surfacing shall not be permitted.

All junctions, intersections, islands, kerbing and other elements making up the completed works shall be neatly finished off.

The Contractor shall ensure that all undesirable plants have been removed from the road reserve and borrow pit areas.

All materials resulting from the finishing operations shall be disposed of at approved spoil sites.

**B5904                      MEASUREMENT AND PAYMENT**

| <b>ITEM</b> | <b>UNIT</b> |
|-------------|-------------|
|-------------|-------------|

|                                                                |  |
|----------------------------------------------------------------|--|
| <b>59.01              Finishing the road and road reserve:</b> |  |
|----------------------------------------------------------------|--|

|                             |    |
|-----------------------------|----|
| (b) Single carriageway road | km |
|-----------------------------|----|

## **SECTION 7300: CONCRETE BLOCK PAVING FOR ROADS**

### **B7301 SCOPE**

This covers the furnishing of materials and the construction of concrete block paving for roads.

### **B7302 MATERIALS**

#### **(a) Bedding sand**

Bedding sand for concrete block paving shall not contain any deleterious impurities. Bedding sand shall comply with the following grading requirements:

| Sieve size (mm) | % passing through |
|-----------------|-------------------|
| 9,52            | 100               |
| 4,75            | 95 – 100          |
| 2,36            | 80 – 100          |
| 1,18            | 50 – 85           |
| 0,600           | 25 – 60           |
| 0,300           | 10 – 30           |
| 0,150           | 5 – 15            |
| 0,075           | 0 – 10            |

Bedding sand shall not contain any clay or slit material.

#### **(b) Jointing sand**

100% of the sand used to fill the joints between the concrete blocks shall pass through a 1,18 mm sieve and between 10% and 15% of it shall pass through a 0,075 mm sieve.

#### **(c) Concrete paving blocks**

Concrete paving blocks shall comply with the requirements of SABS 1058. The block shall be of the class, type and thickness specified in the project specifications, on the drawings, or in the schedule of

quantities. The surface texture and colour of all blocks shall be uniform. The blocks shall comply with the Portland Cement Institute's abrasion test.

**(d) Concrete**

Concrete in situ concrete edge beams or intermediate beams shall be constructed in accordance with the provisions of section 6200, 6300 and 6400. Prefabricated kerbing and channelling shall comply with the requirements of section 2300.

**(e) Herbicide and ant poison**

The herbicide and ant poison shall be environmentally friendly and shall be subject to the engineer's approval.

**01 CONSTRUCTION**

**(a) Underlying pavement layers**

The underlying pavement layers shall be constructed and prepared in accordance with the requirements for the relevant pavement layers in series 3000 of the standard specifications, the project specifications and the drawings. Where specified or required by the engineer the prepared surface shall be treated with approved herbicide and ant poison before the layer of sand for bedding is placed.

**(b) Bedding sand**

A layer of bedding sand shall be placed on top of the prepared surface of the underlying pavement layer. It shall be accurately levelled to an uncompacted thickness of 25 mm ( $\pm 5$  mm) or as specified so that the concrete paving blocks will have the correct level after compaction. The bedding sand shall be placed immediately before the concrete paving blocks are laid and shall not be compacted before the blocks have been laid.

**(c) Concrete paving blocks**

The blocks shall be laid in the pattern shown on the drawings or as directed by the engineer. Unbroken blocks shall be laid first and the filler pieces afterwards. Filler pieces shall be neatly sawn or hewn to fit exactly into the space to be filled. Any space, of which the size is less than 25% of the size of an unbroken block, shall be filled with 35 MPa concrete. The size of the joints between blocks shall be between 2 mm and 4 mm, and the top faces the blocks shall be flushed.

After the paving blocks have been laid, the pavement shall be compacted by two passes of a suitable vibrating-plate compactor operating at a frequency of 65 Hz to 100 Hz and low amplitude. Its plate surface shall be 0,2 m<sup>2</sup> to 0,4 m<sup>2</sup> and it shall develop a centrifugal force of 7 kN to 16 kN.

After compaction of the pavement as described above, jointing sand shall be spread and brushed into the joints until the joints have been properly filled. Any surplus sand shall then be broomed off the pavement shall then be subjected to two further passes by the plate vibrator.

**(d) Edge beams and intermediate beams**

Cast in situ or prefabricated concrete edge beams or intermediate beams shall be constructed on the underlying pavement layer in accordance with the details shown on the drawings. No paving blocks shall be laid before the edge, and intermediate beams have developed sufficient strength to withstand the construction forces.

**(e) Construction tolerances**

The completed concrete block paving shall comply with the following construction tolerances:

|       |                                                           |         |
|-------|-----------------------------------------------------------|---------|
| (i)   | Line of pattern                                           |         |
|       | Maximum deviation from any 3 m straight line              | 10 mm   |
|       | Maximum deviation from any 20 m straight line             | 20 mm   |
| (ii)  | Vertical deviation from a 3 m straight edge               |         |
|       | At the edge beams                                         | + 3 mm  |
|       | Elsewhere                                                 | ± 10 mm |
| (iii) | Maximum difference in the surface levels of Adjacent unit | 5 mm    |

**02 MEASUREMENT AND PAYMENT**

| Item | Unit |
|------|------|
|------|------|

**01 Concrete block paving**

(class, type and thickness indicated) .....square metre (m<sup>2</sup>)

The unit of measurement shall be the square metre of completed concrete block paving. The quantity shall be calculated from the dimensions shown on the drawings or authorized by the engineer.

The tendered rate shall include full compensation for furnishing all materials, constructing the sand bedding, laying and compacting the concrete pavement blocks, filling the joints with jointing sand, and for all other work necessary to complete the concrete block paving as specified.

| Item | Unit |
|------|------|
|------|------|

**02 Cast in situ concrete edge and intermediate**

**beams**.....cubic metre (m<sup>3</sup>)

The unit of measurement shall be the cubic metre of concrete in edge and intermediate beams. The quantity shall be calculated from the dimensions shown on the drawings or authorized by the engineer.

The tendered rate shall include full compensation for furnishing all materials, and constructing the edge and intermediate beams complete as specified, including all excavation and backfilling in all classes of material.

| Item      |                                                                      | Unit           |
|-----------|----------------------------------------------------------------------|----------------|
| <b>03</b> | <b>Provision of approved herbicide and ant poison:</b>               |                |
| (a)       | Provision of materials .....                                         | prime cost sum |
| (b)       | Contractor's charges and profit added to the<br>prime cost sum ..... | per cent (%)   |

Payment under the prime cost sum for providing ant poison and herbicide and the contractor's costs and profit in this respect shall be made in accordance with the provisions of the general conditions of contract, but, in addition, the contractor's tendered rate for costs and profit shall include all compensation for applying the chemicals as specified.

## **2. WATER SECTIONS**

### **Applicable SANS 1200 Standardised Specifications**

The following SANS 1200 Standardised Specifications for Construction are applicable:

- SANS 1200 DB - Earthworks (Pipe Trenches)
- SANS 1200 L - Medium-Pressure Pipelines
- SANS 1200 LB - Bedding (Pipes)
- SANS 1200 LF - Water Connection

### **PSDB EARTHWORKS PIPE TRENCHES (SANS 1200DB)**

#### **PSDB 3 MATERIALS**

##### **PSDB 3.5 BACKFILL MATERIALS**

*Add the following paragraphs to subclause 3.5:*

"(c) Cement-stabilized backfilling

Backfilling shall, where directed by the Engineer, be stabilized with 5% cement. The aggregate shall consist of approved soil or gravel containing stones not bigger than 38 mm and with a plasticity index not exceeding 10

The soil or gravel shall be mixed with 5% cement and shall be compacted in layers of 100 mm thick to 90% of modified AASHTO density. Where Dolomitic underground conditions exist, for Low-Risk Areas, the total backfill to be compacted to 93% Modified AASHTO; the use of non-cohesive single graded sand or crusher sand are not allowed; and the backfill shall (excluding when in rock), be less permeable than the surrounding material. See The Manual for Consultants for Appropriate development of infrastructure on dolomite (PW344:2010). An additional requirement in Medium Risk Areas is that the maximum aggregate size for embedment shall not exceed 6mm.

(d) Soilcrete backfilling

The aggregate for soilcrete shall be mixed with 5% cement and shall consist of approved soil or gravel containing stones not bigger than 38 mm and with a plasticity index not exceeding 10.

The soil or gravel shall be mixed in a concrete mixer with the cement and enough water to acquire a consistency that allows the mixture to be placed with vibrators to fill all voids between the pipe and the sides of the trench. Shuttering shall be used where necessary."

### **PSDB 3.7 SELECTION**

*Replace the words "if he so wishes" in the first line of the second paragraph with the words "at his own cost" and:*

Notwithstanding Subclause 3.7, in terms of which the Contractor has a choice regarding methods of selection, the Contractor is required to use selective methods of excavation. The Contractor shall selectively remove and keep separate the sandy material from unsuitable material and place it adjacent to the trench for reuse as backfill, selected fill, selected granular material or for other use as ordered by the Engineer.

Material which, in terms of Subclause 6.2 of SANS 1200 D or Subclause 6.1 of SANS 1200 LB, is too wet for immediate use in the trench (but which is otherwise suitable) will not be regarded as "unsuitable" material and, if so, ordered by the Engineer, the Contractor shall spread such material in a suitable area until it has dried sufficiently for later use. Should the material which is replaced in the trench become too wet again, due to the fact that the Contractor made insufficient provision for the handling and removal of groundwater in accordance with Subclause 5.5 of SANS 1200A, the Contractor shall replace the material at his own cost with material which is, in the opinion of the Engineer, suitable.

When preparing his programme and construction methods, the Contractor shall make allowance for selective excavation and the handling and drying out of material which is too wet for immediate use.

Unless otherwise ordered by the Engineer, all excavated material shall be kept within the pipe servitude. The toe of the bank of excavated material shall be trimmed well back from the edge of the trench so as to leave a minimum 0.6 m clearance between the toe of the bank and the edge of the trench. The Contractor shall keep this strip clear of excavated material at all times.

The Contractor shall take steps to avoid burying or contaminating topsoil which shall be set aside for replacing, as far as practical, on the surface from which it was excavated.

## **PSDB 5     CONSTRUCTION**

### **PSDB 5.1.1 General**

**Add the following to this Sub-clause:**

#### **SETTING OUT AND CARE OF SURVEY PEGS**

Line and level pegs for the centre line of the pipes only will be set out by the Contractor with the approval by the Engineer. The Contractor shall be responsible for the care and accurate referencing of all pegs and no peg shall be taken out or moved without the permission of the Engineer. Any error which may occur in this setting out will be the responsibility of the Contractor and he shall remedy such errors at his own expense.

The Contractor shall be responsible for locating property beacons or pegs along the route of the pipeline and shall be responsible for the care of these beacons or pegs. The cost of replacing damaged survey beacons or pegs will be recovered from the Contractor.

The Contractor shall check the condition of all line and level pegs and satisfy himself that they have not been disturbed and are true in regard to position and level. A peg which has been disturbed shall not be used unless its true position and level has been re-established and the new values have been verified by the Engineer.

#### **LINE AND GRADE OF TRENCH**

Before commencing the setting out the Contractor shall clear and roughly grade the surface over the full width of the trench.

The Contractor shall provide, erect, set to line and level and maintain approved substantial profiles along the length of the trench at the 50m line and level pegs and at changes of grade and direction. Each profile shall have its chainage marked on it and shall be fitted with a horizontal cross-bar set at a predetermined height above the trench floor level and have setting marks which will define the centre-line of the trench. Where required by the Engineer the Contractor shall provide a profile with the cross-bar extending across the full width of the trench. A profile shall remain in position during all stages of the trench excavation and the trench floor and pipe bed preparation and until the backfilling is completed past the chainage of the profile.

The Contractor shall maintain correct line and grade throughout the work. Precise control of the grade of the trench floor is required and the Contractor shall compute the trench floor levels at each pipe joint position indicated by the Engineer and install a level peg at the position of each joint and each change of grade to enable the pipe to be installed in accordance with the levels and grades shown on the relevant longitudinal section drawings. The accuracy of the computation of and transfer of levels from the levelled pegs provided by the Engineer at the trench side to those installed by the Contractor to establish the trench floor shall be within 3mm of the correct level. The competent person appointed by the Contractor in terms of Project Specification shall be fully experienced and competent in the use of engineering surveying equipment and techniques.

## **PSDB 5.1 PRECAUTIONS**

### **PSDB 5.1.2 Stormwater, seepage and dewatering excavations**

#### **PSDB 5.1.2.1 Throughout the works.**

##### **Add the following to this Sub-clause:**

In addition to the Contractor's responsibilities for dealing with water, the Engineer may order the Contractor to place a crushed stone bedding layer (minimum thickness 150 mm) on the trench bottom. Should the trench bottom conditions remain unstable due to the nature of the soil and the degree of saturation, the Engineer may order the Contractor to install a filter fabric on the trench bottom prior to the provision of the stone layer. Should the material in the trench bottom or the bedding material be of such a nature that it can penetrate the stone layer, the Engineer may instruct the Contractor to enclose the stone layer completely within a geotextile filter blanket which shall comply with the requirements below, and shall have overlaps of at least 200 mm. Where Dolomitic underground conditions exist, for Low Risk Areas, the total backfill to be compacted to 93% Modified AASHTO; the use of non-cohesive single graded sand or crusher sand are not allowed; and the backfill shall (excluding when in rock), be less permeable than the surrounding material. See The Manual for Consultants for Appropriate development of infrastructure on dolomite (PW344:2010). An additional requirement in Medium Risk Areas is that the maximum aggregate size for embedment shall not exceed 6mm.

The Contractor will only be paid by providing and laying the stone bedding layer and filter fabric after receipt of a written order to do so from the Engineer.

The cost of dealing with water as specified in Sub-clause DB 5.1.2.1, as amended will be held to have been included in the tendered sums.

### **Stone bedding in water-logged conditions:**

Where the use of a layer of crushed stone in the trench bottom has been authorized by the Engineer, it will be measured by volume calculated according to length multiplied by the minimum base width and specified thickness. The tendered rate shall cover the cost of preparation of the trench bottom to accommodate the layer of stone, the supply and placing of the layer of stone over at least the specified width and all related activities in order to produce a stable platform.

### **Geotextile filter fabric:**

Where the Engineer has authorised the use of geotextile filter fabric, this shall be measured by area as: width x nett length, where the width shall be the full or half-width supplied by the manufacturer which conforms closest to the specified of plus 2 x base width plus 200mm. The tendered rate shall include the cost of supply, placing and losses as a result of overlaps and over excavated trench widths.

The synthetic fibres of a geotextile blanket shall consist of at least 85% by mass of polypropylene, polyethylene, a polyester, a polyamide, or a copolymer of vinyl chloride and vinylidene-chloride, or any combination of these polymers, and shall contain such additives as are necessary to render the filaments resistant to the effects of ultra-violet radiation and heat. The amount of water absorbed by the geotextile after 24 hours soaking in water at 20 deg. C shall be less than 1% by mass.

In addition to the requirements of Subclause 3.1.3 of SANS 1200 DK the geotextile shall comply with the following:

Mass : 150 g/m<sup>2</sup> (minimum)

Strength in all directions : 6 kN/m (minimum)

Equivalent opening size (EOS) : 105 micrometres (maximum) A non-punched, approved geotextile acceptable to the Engineer.

### **PSDB 5.1.3 Accommodation of traffic and access to properties**

*Replace the semicolon and the word "and" at the end of subclause 5.1.3(a) with a full stop and replace item (b) with the following:*

"(b) Where necessary to achieve compliance by the Contractor with his obligations in terms of subclause C3.4.2.5(e) Scope of Works (for CIDB document format) to provide and maintain pedestrian and vehicular access to properties affected by the works, the Contractor shall construct and maintain to the satisfaction of the Engineer, such temporary access roads around, and/or steel or timber bridges over excavations in roads, pavements, entrances or accesses to properties.

Temporary pedestrian access bridges shall be at least 1,2 m wide and temporary access bridges for vehicles shall be at least 3,6 m wide. All temporary access bridges shall be fitted with handrails as well as protective mesh fencing on both sides.

On completion of the work, the Contractor shall dismantle and remove all such temporary constructions and reinstate these areas to their former condition.

Except only where the Engineer has included in the Schedule of Quantities, particular payment items specifically therefore, the Contractor will not be paid directly for the construction and maintenance of temporary access roads and/or the provision and maintenance of bridges as aforementioned, and the costs thereof shall be deemed included in the Contractor's tendered rates for excavation."

*Add the following new subclause to subclause 5.1:*

#### **"PSDB 5.1.5 Removal of existing pipelines**

Where existing pipes have to be removed, they shall be carefully opened up by machine excavation to 300 mm above the pipes after which the whole pipe shall be fully exposed by means of hand excavation. The excavation width shall comply with subclause 8.2.3.

The pipes shall be removed from the trench in a manner approved by the Engineer, and brought to the surface for inspection by the Engineer.

Pipes that are declared suitable for reuse and pipes declared unfit for reuse shall be dealt with in an applicable manner described in the specifications, or on the Drawings or on the Engineer's instructions, as relevant."

#### **PSDB 5.2 MINIMUM BASE WIDTHS**

*Add the following after paragraph (b):*

"A side allowance of 500 mm shall be applicable to pipes of diameter equal to or less than 1500ND."

## PSDB 5.4 EXCAVATION

*Add the following:*

"Except where otherwise specified, trenches shall be of such a depth that the minimum cover over the pipes shall be 1000 mm except at road-crossings where the minimum cover shall be 1 200 mm. The Contractor shall timeously obtain approval from the Engineer and the consent from the Client should sleeves not be required.

- (i) Before commencing the work the Contractor shall apply for and obtain detailed longitudinal section drawings or and instructions to enable the work to be set out.
- (ii) Set out the works, clear the working strip, establish an access road, pipe storage strip, pipe storage mounds and pipe laying platform alongside the trench.
- (iii) Remove, store and replace topsoil.
- (iv) Excavate the trench, prepare the trench floor to the accuracy limits in **PSDB 5 CONSTRUCTION**.
- (v) During the, course of the work the Engineer will prescribe the actual depth of the trench bottom below the specified pipe invert level to take into account local soil conditions.
- (vi) The Contractor shall clear and clean the trench bottom of all disturbed material, rubble, shattered rock, mud and standing water before placing the pipe bed. Each interface between filling layers shall be cleared and cleaned of all loose material, rubble, shattered rock, mud and standing water before the succeeding filling layer is placed.
- (vii) The finished surface of the trench floor shall be a plane with a vertical alignment that does not deviate from its designed position by more than 50mm. At points of change in the grade of the pipeline the Contractor shall obtain from the Engineer a ruling on whether the trench floor grade is to be fixed between joint holes or between the grading pegs designated on the section drawing.
- (viii) It is to be expected that during the bulk excavation material will be removed from below the prescribed trench floor position. In cases where the floor is formed of rock the additional depth will for purposes of this contract be termed overbreak and this can be expected to vary according to the nature of the rock, the jointing planes, the extent of weathering of the rock, the methods and procedures used in the blasting of the rock and the expertise of the personnel undertaking the blasting. In the case where the floor is formed in soil the additional depth will for purposes of this contract be termed over-excavation.
- (ix) There will be no direct payment for the cost of removing and disposing of the volume of material removed from below the prescribed floor level or for the cost of rebuilding overbreak and over-excavation to the prescribed floor level, or for trimming the actual floor surface to the required grade and preparing it to the degree of evenness and to the specified tolerance to receive the pipe bed.
- (x) Joint holes, valve chambers and thrust blocks shall be excavated to suit the prescribed programme"

*Add the following:*

#### **PSDB 5.4.1 JOINT HOLES**

Before the pipes are laid the floor shall be cut and the bottom of the trench deepened for joint holes where required, the minimum lengths and depths of which are shown on the drawings. A minimum clearance of 500 mm to the barrel of the steel pipe is required from the pipe sides and bottom for welding and making good of field joint castings. This work shall be carried out as directed and shall be completed well in advance of the pipe laying. The exact position of each joint hole shall be prescribed by the Engineer.

#### **PSDB 5.5 TRENCH BOTTOM**

##### **Add the following to this Clause:**

Where the Contractor's method of working results in quagmire conditions in the trench bottom, the Contractor shall excavate and stabilize the trench at his own cost to the approval of the Engineer.

The Contractor shall clear and clean the trench bottom of all disturbed material, rubble, shattered rock, mud and standing water before placing the pipe bed. Each interface between filling layers shall be cleared and cleaned of all loose material, rubble, shattered rock, mud and standing water before the succeeding filling layer is placed. Where Dolomitic underground conditions exist, for Low-Risk Areas, the total backfill to be compacted to 93% Modified AASHTO; the use of non-cohesive single graded sand or crusher sand are not allowed; and the backfill shall (excluding when in rock), be less permeable than the surrounding material. See The Manual for Consultants for Appropriate development of infrastructure on dolomite (PW344:2010). An additional requirement in Medium Risk Areas is that the maximum aggregate size for embedment shall not exceed 6mm.

## **PSDB 5.6 BACKFILL**

### **PSDB 5.6.1 General**

#### **Add the following to this Clause:**

- a. Construct the pipe bedding for the pipeline in accordance with the dimensions detailed on the drawings and stated in the Bill of Quantities. Apply Dolomitic underground measures if required.
- b. Enlarge and deepen the trench for joint holes where required, excavate for valve chambers, structures and any additional excavation as required by the Engineer.
- c. Carry out crossings of roads, railways, services and pipelines
- d. Expose existing pipelines for sufficient length to allow connections between new pipe and existing pipe to be installed.
- e. Construct the pipe embedment when the pipes have been installed.
- f. Agree with the Engineer on particular lengths of portions of pipeline for hydrostatic and methodology on backfill to expose circumferential welds for testing of the pipeline. Confirm hydrostatic test pressures and times of pressurization with the Engineer.
- g. Supply, fill, backfill and compact the trench after the pipe installation and hydrostatic testing has been completed and backfill the structures after construction is completed, cart away and dispose of surplus spoil where required and generally reinstate the working strip. . Where Dolomitic underground conditions exist, for Low-Risk Areas, the total backfill to be compacted to 93% Modified AASHTO; the use of non-cohesive single graded sand or crusher sand are not allowed; and the backfill shall (excluding when in rock), be less permeable than the surrounding material. See The Manual for Consultants for Appropriate development of infrastructure on dolomite (PW344:2010). An additional requirement in Medium Risk Areas is that the maximum aggregate size for embedment shall not exceed 6mm.
- h. Maintain the trench, trench floor and/or pipe bed until the pipe and fittings are installed, maintain the trench until backfilling is instructed by the Engineer, and maintain the backfilled trench for twelve months after the final completion of the work.

### **PSDB 5.6.3      Disposal of soft excavation material**

**Delete the contents of Clause 5.6.3 and replace with the following:**

All surplus material and unsuitable material not required for backfilling shall be disposed of at suitable sites to be located by the Contractor. All such sites shall require the approval of the Engineer and the Local Authority and community. No additional payment will be made for the transportation of such material

Dumping shall proceed in an orderly manner with coarse material placed at the bottom and covered with finer material, where possible. Upon completion of dumping the material shall be shaped to provide free-draining surfaces and slopes and finished off to the satisfaction of the Engineer.

### **PSDB 5.6.6      Completion of backfilling**

**Add the following to this Subclause:**

The contractor shall bring on to the site sufficient resources for pipe laying so that trenches do not remain open for longer than one week ahead or behind the pipe laying team.

### **PSDB 5.6.8      Transport for earthworks**

**Add the following to this Subclause:**

Notwithstanding the contents of clause 5.6.8, the transport of all earthworks, whether for imported or excavated material from site, shall be included in the tendered rates for the scheduled items, and no payment will be made for overhaul.

### **PSDB 5.7.2      Areas subject to traffic loads**

**Add the following to this Sub-clause:**

All trenches will be considered to be subject to traffic loads and the backfill material and compaction in these trenches shall comply with the requirements of Sub-clauses 3.5(b) and 5.7.2.

## **PSDB 8 MEASUREMENT AND PAYMENT**

### **PSDB 8.1 BASIC PRINCIPLES**

**Amend the last sentence of Subclause 8.1.2 (c), to read:**

"The ground surface will be that existing after any bulk excavation has been carried out and before any embankment has been constructed, unless a portion of the embankment has to be constructed in order to achieve an acceptable cover over a pipe that is to be installed, in which case, measurement will be made from the level of embankment that produces an acceptable minimum cover over the pipe."

### **PSDB 8.3 SCHEDULED ITEMS**

#### **PSDB 8.3.2 Excavation**

**Add the following to this Sub-clause:**

The rates for excavation of trenches shall also cover the cost of selection as specified in PSDB

3.7 Selection, as amended. The costs of drying out of material suitable for bedding will be measured elsewhere.

The rate tendered for excavation in all materials shall include for forming joint holes to facilitate welding in the field. Extra-over payment will be made for hard rock excavation provided the surface levels of the hard rock have been recorded on drawings signed by the Engineer before it is excavated.

- (a) Excavate in all and intermediate materials, for trenches, backfill compact and dispose of surplus material

*Replace "of 1,0 m" in the first sentence of 8.3.2(a) with:*

"as specified in the Schedule of Quantities."

The tendered rate shall include for soft and intermediate excavations.

- (b) Extra over item (a) above for:

*Add the following at the end of the existing subitem 2:*

"No payments will be made under subitems (1) and (2) in respect of any materials measured and paid for under subitem 3 below."

The unit of measurement shall be the linear metre of pipeline, measured in place according to the authorised dimensions, which was excavated by hand on the specific prior written instructions of the Engineer; provided always that the Engineer's said instruction shall have stated that measurement and payment for such hand excavation will be in accordance with this item.

The tendered rate shall include full compensation for the additional cost, effort and time resulting from excavating in the respective materials using hand methods only.

The Engineer shall not be obliged to authorise payment under this item in respect of any hand excavation carried out (whether ordered in writing or otherwise), which hand excavation was in any case necessary to achieve compliance by the Contractor with his obligations under the Contract to

- (i) utilise construction appropriate to the nature of the specific parts of the works; and/or
- (ii) protect existing structures and/or services; and/or
- (iii) comply with all prevailing legislation and regulations.

The tendered rate shall include for hard rock and boulder excavations.

### **PSDB 8.3.3      Excavation ancillaries**

#### **PSDB 8.3.3.3 Compaction in road reserves**

*REPLACE THE HEADING OF THIS SUBITEM WITH THE FOLLOWING:*

#### **"PSDB 8.3.3.3    Compaction in road crossings"**

*Replace the sentence, "The volume will be measured as specified in 8.2.2, 8.2.3 and 8.3.3.1", with the following:*

"To determine the volume in the case of gravel roads, the depth will be measured from the underside of the gravel wearing course to the top of the fill blanket, and in the case of bitumen roads, from the underside of the subbase to the top of the fill blanket.

The rest of the trench shall be backfilled as specified in clauses 5.9.3, 5.9.4 and 5.9.5, as applicable, and payment will be made under item 8.3.6.1."

#### **PSDB 8.3.3.4 Overhaul**

*Replace the contents of this item with the following:*

"Measurement and payment shall be in accordance with subclause PSD 5.2.5."

### **PSL MEDIUM-PRESSURE PIPELINES (SANS 1200L)**

#### **PSL 3 MATERIAL**

##### **PSL 3.1 GENERAL**

***Add the following paragraphs:***

"Each type of pipe delivered to the Site shall be of a standard length corresponding to the standard lengths offered by the pipe manufacturer in his catalogue, with a maximum permissible variation in length of  $\pm 2\%$ . Steel pipes shall be ordered in length of 18 metres, except where shorter lengths are required for specific purposes.

A pipe that is shorter or longer than the defined standard will be rejected by the Engineer, except when such non-standard lengths are required in terms of the Contract and have been specifically manufactured or cut as such by the pipe manufacturer or supplier.

The materials and construction of all pipes, fittings, valves and specials shall comply with the appropriate SANS, BS, API or other appropriate specification, whether stated or not, and shall be approved by the Engineer. Only full-length pipes bearing the relevant standard's mark will be acceptable. Cut pipes shall only be used at pipe junctions to position valves and specials as shown on the drawings, and at connections to structures. When laying the pipes the markings shall be visible from above.

In the case where any pipe fittings are required that are not included in the Bill of Quantities for the permanent installation or is required for temporary works, the Contractor shall inform the Engineer without delay and claim. The Engineer will provide the appropriate design pressure

and agree with the Contractor on the design responsibility for the fittings. Should it be agreed that the Contractor takes responsibility for the design of the fittings, the Contractor's design will be subject to the Engineer's approval. The Contractor or Manufacturer shall guarantee the manufacturing of the fitting.

The Engineer shall at all reasonable times have free access to the place where the goods are manufactured for the purpose of examining and sampling the materials and goods, and if necessary for supervising the testing and marking of goods. The manufacturer shall supply free of charge every facility and all labour required for such examination, sampling, inspection, testing and marking before delivery and shall provide and maintain in good order suitable, convenient and accurate apparatus for testing goods."

### **PSL 3.4 STEEL PIPES, FITTINGS AND SPECIALS**

#### **PSL 3.4.1 GENERAL**

##### **Add the following to Sub-clause 3.4.1**

All steel pipes and specials, irrespective of diameter, shall be fabricated from plain ended pipes. The use of screwed flanges and fittings shall not be permitted, except where indicated on the construction drawings and approval by Engineer. All fabrication shall take place in a suitable workshop prior to galvanising or other corrosion protection, and no cutting or welding of pipes on site shall be permitted without approval of the Engineer.

The Contractor shall, when called upon to do so, make available to the Engineer the manufacturer's certificates covering the chemical analysis and physical properties of the steel used in the manufacture of the pipes. The pipes shall be hydraulically tested before leaving the factory to the test pressure specified in Sub-clause 7.3 of SANS 1200 L. The methods of sampling and testing of the manufactured pipes and fittings shall comply with Sections 6 and 7 of SANS 719. Tests shall be carried out at the place of manufacture and at the expense of the Contractor. Before the goods concerned leave the manufacture's workshops, the Contractor shall supply a signed certificate giving results of the tests and certifying that the goods have been manufactured in accordance with the Specification.

### **PSL 3.4.3 PIPES OF NOMINAL BORE OVER 150mm**

*Add the following:*

The main pipeline shall comply with the following material specifications:

- a. DN500 and DN600 steel pipeline (8 mm wall thickness) with Cement Mortar Lining (Internal Lining) and Rigid Polyurethane Coating (External Coating).
- b. Electric Resistant Welded (ERW) steel pipe for diameters less than DN600 and Spirally Arc Welded (SAW) steel pipes for diameters more than and including DN600 manufactured to API (American Petroleum Institute) 5L Specification Grade X42 with a 290 MPa yield stress and 414 MPa minimum ultimate tensile stress (UTS).
- c. Pipe lengths delivered to site to be 18 metres long for all pipes (Require approval by Engineer before confirmation of pipe lengths), except where adjacent to specials or adjusted by manufacturer.
- d. End type should be Bevel Ended (both ends) for pipes equal to and over DN800 (All linings) and Spigot/Socket type for pipes smaller than DN800 (if Cement Mortar Lining is used). If Epoxy Lining is used, then end type should be of the flanged type for pipes smaller than DN800.
- e. The main pipeline will be joined by welding however, where flanges are applicable they should be suitable for Class 16 pipes will be provided for future connections and for connections to fittings and valves. For Dolomitic underground conditions all flanges will be inside water tight chambers. No flanges of flexible couplings will be allowed outside chambers.
- f. All welds to conform to SANS 10044 or API 1104, with dye penetration test of 100%.
- g. Ends of specials shall be cleanly cut and be free from burrs. The ends shall not deviate more than 3 mm at any point from a true plane at right angles to the axis of the pipe.
- h. Where pipes are to be joined by butt welding the ends shall be bevelled on the outside only to an angle of  $30 \pm 5$  degrees measured from a plane perpendicular to the axis of the pipe, and shall include a root face of  $2\text{mm} \pm 1\text{mm}$

**Pipe pressure class, wall thickness and nominal diameter to be specified as in the Schedule of Quantities. Pipe sizes, diameter, lengths and supplier are required to be approved by the Engineer prior to construction and placing of any orders.**

The steel strip for the fabrication of the main pipes shall be manufactured in accordance with the latest edition of American Petroleum Institute API Standard 5L and shall be of grade X42.

The Tenderer shall state in the Schedules the name of the manufacturer and the place of manufacture of the steel plates or the coil strip, and these shall be subject to the approval of the Engineer.

All steel plates or coils strips shall be free from seams, cracks, laminations and other injurious defects. It is the responsibility of the Tenderer to ensure that the steel plates or coils are free from defects before fabrication. This information must be shared with the Engineer on request.

The pipe manufacturer shall submit to the Engineer the steel maker's certificates covering all steel used. These certificates shall indicate 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 thickness material and the physical properties of the steel except that at the opinion of the manufacturer.

Pipe sections shall be consecutively numbered from the commencement of fabrication. Each pipe section number shall be punched on the inside of the pipe at each end of the pipe and each circumferential weld made at the Contractor's works, to joint pipes, shall be marked with the welder's identifying stamp.

The method of manufacture of the pipes shall be detailed in Returnable Schedules A37 for evaluation.

All welding procedures shall be described in Returnable Schedules A37 and approved by the Engineer and all welders and welding operators employed on the work shall have passed an approved qualification test. The Contractor shall maintain a record of the procedure, performance and qualification tests.

Full details of welding electrodes and fluxes, where applicable, shall be given in Returnable Schedules A37.

Forming: The Line Pipe Specification (API 5L, PSL1) allows for helical and longitudinal seam welds for fabrication of the pipe. The welding method and process of fabrication shall be given by the Contractor in the Returnable Schedules.

### Spiral/helical seams

Pipe coils shall be fabricated from strip formed to a cylindrical form with a helical seam. Coil jointing welds in the strip used in the forming of spiral-welded pipes shall be not less than 300 mm from a pipe end.

The radial offset (misalignment) of the plate edges in the weld seams shall not exceed 1.5 mm. This shall apply to all pipe sizes.

### Longitudinal seams

Pipe coils/plate shall be fabricated from strip formed to a cylindrical form with a longitudinal seam. The coil/strip jointing end welds shall not be present in the finished longitudinal seam pipe.

Mechanical testing of the longitudinal seam shall be in accordance to API 5L. For double-seam pipe, both longitudinal weld seams in the pipe selected to represent the test unit shall be tested.

The radial offset (misalignment) of the plate edges in the weld seams shall not exceed 1.5 mm. This shall only apply to pipes up to 600mm.

### Welding:

All welding shall be electric fusion welding, be acceptable to the Engineer and shall comply with the following requirements:

(a) Uniformity of appearance: All welds shall be substantially uniform in appearance and shall show full fusion and penetration throughout their lengths.

(b) Undercut: Welds shall be substantially free from undercut and, if present,

(i) the depth of the undercut shall not exceed 12½ per cent of the nominal wall thickness or 1 mm, whichever is the lesser in depth and,

(ii) the aggregate length of undercut in any 1m length of welding shall not exceed 50mm.

(c) Weld bead tolerances: The outer weld bead shall not exceed a height of 3 mm for nominal wall thickness of 10 mm and under and shall not exceed a height of 5 mm in pipes having thicker walls. The inner weld bead shall not project more than 1 mm and all excess weld metal shall be removed by grinding to the satisfaction of the Engineer. In butt welds made from one side only a root groove may be present provided that it has a rounded outline and does not penetrate below the level of the adjacent surfaces of the parent plate.

(d) Freedom from defects: The weld, heat affected zone and surrounding parent metal shall be free from cracks, porosity cavities and trapped slag and other defects described in API Specification 5L.

(e) Transverse tensile strength of welded joint: The welded joint shall have an ultimate tensile strength at least equal to 95 per cent of the minimum tensile strength of the parent plate.

(f) Resistance to bending: Test specimens prepared and tested in accordance with **Clause 5** shall show no crack (on the outer surface) greater in length than 5 mm in any direction.

#### Welding Tests

(a) Mechanical tests (destructive tests): Transverse tensile and guided bend tests carried out on test pieces cut from the welded seam. The tests shall be carried out in accordance with Section 4 of American Petroleum Institute Specification 5L (latest edition). Should one of these test samples fail to comply with the relevant requirements, two further specimens of the same type shall be prepared and subjected to the relevant test. If one or both of the retest specimens fail to comply with the relevant requirements further re-tests shall be carried out until 10 consecutive specimens comply with the relevant requirements.

(b) Radiographic examination of helical and circumferential welds. Cracks, lack of complete penetration, or lack of complete fusion shall be considered injurious defects. The standard for acceptance of minor imperfections such as slag inclusions or gas pockets shall be in accordance with Clauses 9.2 through 9.13 of American Petroleum Institute Specification 5 L (latest edition). Any weld rejected as a result of radiographic examination may be repaired at the option of the Contractor, and such repair shall be carried out in accordance with Clause 7 of American Petroleum Institute Specification 5L (latest edition).

(c) Ultrasonic inspection with equipment capable of continuous and uninterrupted inspection of the weld seam. The examination procedure, reference standard and rejection limits shall be those set out in Clauses 9.14 to 9.18 of American Petroleum Institute Specification 5L (latest edition). An imperfection that produces an indication which would lead to rejection in terms of Clause 9.16 of Specification 5L (latest edition) shall be investigated by radiographic examination.

## NUMBER AND TYPE OF WELDING TEST

Mechanical tests:

Transverse tensile and guided bend test on the first section then on one pipe section in each 500m of pipe.

Radiographic tests:

Pipe shells are to be hydrostatically tested for every 20 pipes manufactured, including the first pipe of manufacture. In addition, radiographic examination shall be carried out on the full length (100 per cent) of the circumferential and helically welded seams for all pipe shells manufactured. If unsatisfactory results are obtained, the pipe shell shall be repaired in accordance to API 5L and radiographically examined as detailed above until such procedures are acceptable and performance has been re-established. Should the quality at any time fall below the standard required by the contract then the Engineer's Representative can request that the pipe shell be hydrostatically tested.

Radiographic examination shall be carried out as detailed in the above paragraph and in addition each shell shall be examined as follows:

Helically (spiral) formed pipes:

- (i) Radiographic examination of the full width (100 per cent) of each coil joining butt weld for helically formed pipe as well as for a full length on the helical welded seam from the point where the butt and helical seams are jointed together.
- (ii) The full length (100 per cent) of every circumferential welded seam made to join pipes into a double length on one pipe from each lot of 10 pipes.
- (iii) For a length of 1 000 mm from each end of every helical welded seam on each completed pipe.

Ultrasonic tests:

Ultrasonic inspection on the full length (100 per cent) of every circumferential welded seam made to join pipes into a double length may be requested by the Engineer's Representative.

## REPAIR OF INJURIOUS DEFECTS

Repairs of a welded seam shall be permitted during the process of manufacture. Where repairs are required the defective weld metal shall be cut out, and the parent metal prepared by grinding and re-welded to the satisfaction of the Engineer.

The repair procedure and performance, and welders employed on repairs shall be qualified as stated in **Appendix B** of the American Petroleum Institute Standard 5 L (latest edition). Each repair weld shall be marked with the welder's identifying stamp.

When a repair is made in a weld, the weld shall be radiographically examined for the full length of the repaired section and for an additional length of 400 mm on each side of the repaired section.

On discovery of reject welds, the Engineer may, at his discretion, call for additional radiographic examination until it is shown that the necessary standard is being maintained.

Should a weld repair be required on a pipe subsequent to hydraulic testing; the pipe shall be retested to the test pressure specified.

### **PSL 3.7        OTHER TYPES OF PIPES**

#### **PSL 3.7.2     POLYETHYLENE PIPES**

##### **Replace Sub-clause 3.7.2 with the following:**

Polyethylene pipes shall be of high-density type complying with the requirements of this specification and shall be of types and classes as specified for each application.

The manufacturer shall maintain a quality system that conforms to the requirements of the SANS ISO 9001: 2000 or national equivalent.

The client or engineer may, at its discretion appoint an inspection officer to carry out pre-delivery tests at the manufacturer's / supplier's works.

The manufacturer / supplier shall allow the inspection officer access to its works for the purpose of inspecting either during the course of manufacture or when completed and shall afford the inspection officer all reasonable facilities.

Copies of all test schedules and manufacturer's quality control records shall be available for examination by the inspection officer.

The following certificates are to be submitted for pipes supplied:

- Certificate of registration – SANS ISO 9001:2000
- Permit certification – SANS ISO 4427 for PE 100
- Quality control plan (to include raw materials and product test certificates)
- SANS Quality system audit reports – last 2 audits

Pipe raw material composition shall be PE 100.

**Pipe pressure class and nominal diameter to be specified as in the Schedule of Quantities. Pipe sizes, diameter, lengths and supplier are required to be approved by the Engineer prior to construction.**

Polyethylene pipes and fittings, welding (heated tool butt welding) and installation practices shall comply with the relevant requirements of the following, as well as installation practices for steel pipe where not covered in the specifications mentioned below:

- SANS 1671-1 Welding of thermoplastics - Machines and equipment Part 1: Heated-tool welding
- SANS 1671-2 Welding of thermoplastics: Machines and equipment Part 2: Electrofusion welding
- SANS ISO 4427: Polyethylene (PE) pipes for water supply – Specifications
- SANS ISO 4427-1 Plastics piping systems – Polyethylene (PE) pipes and fittings for water supply Part 1: General
- SANS ISO 4427-1 Plastics piping systems – Polyethylene (PE) pipes and fittings for water supply Part 2: Pipes
- SANS ISO 4427-5 Plastics piping systems – Polyethylene (PE) pipes and fittings for water supply Part 5: Fitness for purpose of the system
- SANS 10268-1 Welding of thermoplastics — Welding processes Part 1: Heated-tool welding
- SANS 10268-2 Welding of thermoplastics — Welding processes Part 2: Electrofusion welding
- SANS 10268-10 Welding of thermoplastics — Welding processes Part 10: Weld defects
- SANS 10269 Welding of thermoplastics — Testing and approval of welders
- SANS 10270 Welding of thermoplastics — Approval of welding procedures and welds
- ISO 12176-1 Plastics pipes and fittings -- Equipment for fusion jointing polyethylene systems -- Part 1: Butt fusion
- DVS 2207-1 Welding of Thermoplastics – Heated Tool Welding Of Pipes, Pipeline Components and Sheets Made Of PE-HD

### **PSL3.8 JOINTING MATERIAL**

#### **PSL3.8.2 FLEXIBLE COUPLINGS**

**Replace Sub-clause 3.8.2.1 with the following:**

Detachable couplings shall be of the "Viking - Johnson" or other similar and approved type without central register unless otherwise specified. Coupling flanges shall be designed to withstand the hydrostatic test pressures and all stresses due to tightening of the bolts, and the rubber rings shall generally comply with BS 2494 Class D. Detachable couplings shall suit the outside dimensions of pipe-work complying with either BS 2035 or the relevant SANS specification as the case may be.

Mild steel "Viking – Johnson"-type couplings shall be lined and coated with Copon EP 2300 or approved equivalent to the manufacturer's specification, and a minimum dry film thickness of 350 micron.

**A keeper ring shall be installed at all changes in internal lining from Cement mortar to the Epoxy Paint lining.**

### **PSL3.8.3 FLANGES AND ACCESSORIES**

"Where flanges are required, they shall comply with SANS 1123 - Table 1600/3 unless otherwise indicated on the Drawings."

## **PSL 3.9 CORROSION PROTECTION**

### **PSL 3.9.1 CAST IRON PIPES**

**Replace sub-clause 3.9.1 with the following:**

All cast iron pipes, specials and valves shall be given two coats of approved epoxy paint except where cast into concrete. The cost of this work shall be included in the rates tendered for supplying and fixing pipes, specials and valves.

## PSL 3.9.2 STEEL PIPES

### PSL 3.9.2.2 Steel pipes of nominal bore over 150 mm

*Add the following:*

The protective lining and coating shall comprise a coherent internal lining and external coating bonded to the inside and outside surface of each pipe in order to prevent corrosion of the inside and outer pipe surface. The Tenderer must supply full details of the coating proposed.

The Tenderer must supply the brand of coating, the analysis of the coating and the mix ratios of the coating manufacture, if applicable, to the Engineer. The results of the control standards for the coating from the manufacturer need to be presented. Proof of testing of the coating at SANS, CSIR is required and must be presented.

Protective coating shall only be applied to bare steel pipe that complies with all the technical requirements and has passed the tests and hold points of the quality control plan. For all inspections in the quality control plan that are required to be witnessed by the Engineer's Representative, at least 24 hours' notice shall be given by the Contractor.

The protective coating shall comprise a coherent external coating bonded to the outside surface of each pipe in order to prevent corrosion of the outer pipe surface. Polyurethane is preferred, yet the acceptable alternatives to be considered are Bituguard (Modified Bitumen) and three Layer Poly-ethelene for external protective coating. The Tenderer must supply full details of the coating proposed.

The Tenderer must supply the brand of coating, the analysis of the coating and the mix ratios of the coating manufacture, if applicable, to the Engineer. The results of the control standards for the coating from the manufacturer need to be presented. Proof of testing of the coating at SANS, CSIR is required and must be presented.

Protective coating shall only be applied to bare steel pipe that complies with all the technical requirements and has passed the tests and hold points of the quality control plan. **For all inspections in the quality control plan that are required to be witnessed by the Engineer's Representative, at least 24 hours' notice shall be given by the Contractor.**

## **MATERIALS AND APPLICATION REQUIREMENTS**

### **RIGID POLYURETHANE EXTERNAL COATING**

It is proposed that 100% Solids Rigid Poly-urethane be used with dry film thickness not less than

2,5mm (2500µm) and an application mix ratio of 1:1.(Polyol and Isocyanate) Materials and application shall comply with AWWAC222:2008 / SANS 1217:2012.

The material used for coating of steel pipes shall be of the following type

Type 1C: solvent-free chemically cured polyurethane.

#### **Physical and performance requirements:**

Coating material shall comply with the appropriate requirements given in Table 1 of SANS 1217 (presented below) and they will be done at the request of the client's QCP and this test shall be deemed to be included in your price.

Table PSL1: Physical and performance requirements of coating material

| Property                                                                                                                                                                                                                                                     | Type 1 C<br>Solvent-free chemically<br>cured rigid<br>polyurethane <sup>a</sup><br>coating material<br>requirement | Test method or clause                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| Adhesion, MPa, min. (laboratory)                                                                                                                                                                                                                             | 15                                                                                                                 | ASTM D 4541 (tester type III, IV, or V)            |
| Impact resistance, Kg.m, min.                                                                                                                                                                                                                                | 0,6                                                                                                                | ASTM D 2794 intrusion                              |
| Water absorption, %, max.                                                                                                                                                                                                                                    | 3                                                                                                                  | ASTM D 570 long term                               |
| Dielectric strength, kV/mm thickness, min.                                                                                                                                                                                                                   | 15                                                                                                                 | ASTM D 149-97a                                     |
| Resistance to abrasion, g, max.                                                                                                                                                                                                                              | 0,080                                                                                                              | ASTM D 4060, CS 17, 1kg, 1000 cycles               |
| Cathodic disbonding, disbonded area, mm ECD <sup>b</sup> , max.                                                                                                                                                                                              |                                                                                                                    |                                                    |
| 28 d test period at 23°C                                                                                                                                                                                                                                     | 18                                                                                                                 | ASTM G 8                                           |
| 90 d test period at 23°C                                                                                                                                                                                                                                     | 24                                                                                                                 | ASTM G 95                                          |
| Flexibility of material                                                                                                                                                                                                                                      | pass                                                                                                               | ASTM D 522-93a, 180°, 75 mm mandrel, clause 13.1.1 |
| ECD = Equivalent circle diameter                                                                                                                                                                                                                             |                                                                                                                    |                                                    |
| <sup>a</sup> Requirements for type 1C coating of other materials to be agreed between the purchaser and supplier<br><br><sup>b</sup> Calculation of ECD: $ECD = [(A \times 4) \div \pi]^{1/2}$<br><br>where A = disbonded area less the initial holiday area |                                                                                                                    |                                                    |

The coating repair material's properties shall be as good as or better than the original production coating material when tested.

Requirements for coating pipe:

A coating on a pipe shall comply with the appropriate requirements for minimum dry film thickness of **2500 microns** and electrical insulation defects given in **Table PSL2**, after application and curing for at least a period and temperature specified by the manufacturer of the coating material

Table PSL2: Test properties of applied coating

| Property                                                                                                         | Type 1 C<br>Solvent-free chemically<br>cured rigid polyurethane <sup>a</sup><br>coating material<br>requirement | Test method or clause |
|------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------|
| Minimum total dry film thickness, microns, min.                                                                  | 2500                                                                                                            | SANS 2808             |
| Adhesion, MPa, min. (pipe)                                                                                       | 10                                                                                                              | ASTM D 4541           |
| Electrical discontinuity.                                                                                        | ND                                                                                                              | ASTM D 5162           |
| ND = No defects                                                                                                  |                                                                                                                 |                       |
| <sup>a</sup> Requirements for type 1C coating of other materials to be agreed between the purchaser and supplier |                                                                                                                 |                       |

If in the determination of the minimum total dry film thickness, any reading is below the minimum value, a further series of at least 10 readings shall be taken. In both series of readings shall be less the minimum specified and it shall not in any case be less than 80% of the minimum specified. If the coating fails to comply with the relevant requirements for film thickness, a further coat may be applied over the whole surface, if approved by the client and if acceptable, and after suitable surface preparation.

Adhesion:

Use SANS 2409: 2008 but, instead of the spacer, use a cutting jug of suitable flexible material and having 2mm spacing. Where test panels or control specimens are used for the test,

prepare and coat three test panels per pipe and carry out three tests on different part of the same test panel or control specimen and calculate the mean value.

Use SANS 5776 / ASTM D4541 but use bobbin-type test pieces of diameter 25mm and operate the pull-off tester at a constant rate of extension of 1mm/min.

#### Impact resistance:

Use the method describe in ASTM G14, but us a mass piece or up of mass 1.36 kg and having a hemispherical nose of diameter 16,0mm and use a 2m long guide tube of the type specified in SANS 5176.

Calculate the impact resistance of the coating as follows:

Impact resistance,  $J = 9,806 \ 6 \ mh$

Where

$m$  = mass of the tup, kg (1.36 kg)

$h$  = height from which the tup is dropped, m

#### Inspection and adhesion test:

Examine the coating for any defects including blistering, softening, wrinkling and whitening, and test for loss of adhesion. Deem an adhesion test result below 10, as per **Table TSC9.3.3** above, to be a defect. Note and report blistering (if any) in accordance with ASTM D714. Where the size of blisters exceeds those represented by blister size No. 2, record the average blister diameter in millimeter and the frequency of blisters as in ASTM D714.

#### Surface Preparation:

The steel surface preparation shall be through abrasive grit blasting to Sa2½ (nearly white metal) of SIS 05 59 00 – 1967. The steel surface profile shall be between 50µm - 100µm following grit blasting. The method of preparation and cleaning of the steel pipe prior to applying the protective coating shall be stated in the relevant Returnable Schedule. Full details shall be given for the removal of dust, rust, scale, etc.

#### Generally:

Details of the material, primer and methods to be used to heat and mix the material and steps to be taken to maintain a uniform and consistent material shall be stated in the Relevant Schedule. The coating shall be evenly applied and shall be tough, smooth, glossy and free from ripples or runs; Care shall be taken to ensure that there are no air gaps between the coating and the pipe at welds and in particular where the stiffener is attached to the pipe wall. If necessary an approved polyurethane based mastic filler shall be smoothed over the welds before the polyurethane coating is applied.

As alternatives the following exterior coatings will be considered:

- Polymer modified bitumen external coating eg Bituguard, to comply with EN10300 (2005)

"Steel Tubes and Fittings for Onshore and Offshore Pipelines – Bituminous Hot Applied Materials for External Coating"

## MODIFIED BITUMEN EXTERNAL COATING

Modified bitumen shall comply with the requirements of category 2 coating enamel, grade b (**Table PSL3**) as required by and applied in accordance with SANS 1137, SANS 1178 and BS EN 10300:2005 which shall comply generally with the following requirements:

Table PSL3: Requirements of category 2 coating enamel

| Characteristics                          | Grade b    | Method of test   |
|------------------------------------------|------------|------------------|
| Filler content by ignition, % by mass    | 25 to 35   | EN 10300 Annex K |
| Density at 25 °C, g/cm <sup>3</sup>      | 1.2 to 1.4 | EN 10300 Annex L |
| Softening point (ring and ball), °C      | 130 to 160 | EN 1427          |
| Penetration at 25 °C, 0.1 mm             | 10 to 30   | EN 1426          |
| Flash point (Cleveland open cup) minimum | 260        | ISO 2592         |

The testing of the coating enamel shall be as per the following table:

| Property                                                      |                         | Grade b        | Method of test |
|---------------------------------------------------------------|-------------------------|----------------|----------------|
| Sag, maximum mm                                               | 80 °C , 24 h            | 1.5            | Annex D        |
| Impact disbonded area, maximum mm <sup>2</sup>                | 0 °C - 10 °C            | 6 500          | Annex E        |
| Peel initial and delayed, minimum N/20 mm                     | 30 °C<br>40 °C<br>50 °C | 80<br>50<br>30 | Annex F, F.4.2 |
| Bend at - 10 °C, minimum mm                                   |                         | 15             | Annex G        |
| Cathodic disbonding, disbonded radius after 28 d, maximum, mm |                         | 7              | Annex I        |

The minimum thickness of the enamel shall be 4mm with an average of 5mm.

Modified Bitumen shall be in the form that it is received from the supplier and no adulteration will be permitted. The material data sheet must be provided, see TSC8 above (Protective Coating - Guidelines).

Unless agreed to by the Engineer temperatures shall not exceed the following:

|                          |       |
|--------------------------|-------|
| Bulk storage temperature | 180°C |
| Hot priming              | 235°C |
| Coating and wrapping     | 235°C |

Modified bitumen which has been heated to a temperature in excess of 235°C shall be discarded. The Contractor shall provide approved means of recording the temperatures during the operation. **The temperature recordings must be documented in a table and submitted to the Engineer for each pipeline coated.**

#### Protection required:

The Bitumen Fibre Wrapping external coating for pipes shall have a minimum thickness of 5mm and an average thickness of 5mm. The coating shall be reinforced with two layers of a Type I glass fibre mat in accordance with SANS 1130 (latest version) and BS EN 10300:2005 applied at a controlled speed and tension to form a helix having an overlap of at least 30 mm.

#### Surface Preparation:

The steel surface preparation shall be through abrasive grit blasting to Sa2½ (nearly white metal) of SIS 05 59 00 – 1967. The steel surface profile shall be between 50µm - 100µm following grit blasting.

Tubes and components shall be maintained at least 3 °C above the dew point temperature at all times during the cleaning and coating process.

NOTE: At the time of application, particularly when the weather is damp and cold, it may be necessary to pre-heat the tubes and components, and this operation should not be prejudicial to the cleanliness of the surface or to the conditions required for the application of the primer.

#### Pre-blast requirements

Immediately prior to blast cleaning, the tubes shall be inspected for surface contamination (oil grease, temporary corrosion protection, etc.). Where oil, grease or other surface contaminants are present they shall be removed (without spreading over the surface) with a suitable solvent (e.g. Xylene) or a biodegradable emulsifier.

Immediately prior to blast cleaning, the tubes shall be inspected for surface contamination (oil grease, temporary corrosion protection, etc.). Where oil, grease or other surface contaminants are present they shall be removed (without spreading over the surface) with a suitable solvent (e.g. Xylene) or a biodegradable emulsifier.

When necessary tubes shall be washed with fresh potable water before blast cleaning to remove surface contaminants including mud, salts and other loosely adhering mineral matter, The tubes and components shall then be preheated to a minimum of 30 °C in order to remove moisture and to prevent contamination of the abrasive media.

### Blast Cleaning

Tubes and components shall be blast cleaned; the grade of abrasive shall give a blast peak to trough surface profile of 50 µm - 100 µm. The degree of cleanliness shall be to Sa 2½ to SIS 05 59 00 – 1967.

Only dry abrasive techniques shall be employed. The abrasive shall be reusable chilled iron grit or steel grit or a mixture of grit and shot, the abrasive shall be kept free from dust, salts and other impurities. Sand (or Silicone) shall not be used.

### Priming pipe

The primer shall be applied to a dust free, clean, dry, prepared surface. The primer shall be applied in accordance with the primer manufacturer's recommendations. The primer manufacturer must supply the Material Data Sheet and the method to be utilised.

The primer film applied at the thickness specified by the primer manufacturer shall be uniform and continuous. The dry film thickness shall be measured at least once per shift. The primer shall be free from runs drips, sags, misses, holidays and bare areas. Tubes not primed correctly shall be re-cleaned and re-primed.

Tubes on which the primer has deteriorated, or become contaminated shall be rejected and shall be re-cleaned and re-primed.

### Application

Coat and wrap application shall follow priming within 2 hours of priming, and the primed surface shall be dry and free from surface contamination prior to enamel application.

The enamel shall be applied by an extrusion process.

Equipment shall be used for spirally wrapping the outer-wrap under controlled tension using trained operators.

All wraps shall be wrinkle-free with minimum overlap of 12 mm. The enamel shall be applied at a temperature in accordance with the manufacturer's recommendations. The enamel shall flow evenly onto the pipe and be free from any solid particles which may cause irregularities in flow.

The coating shall be cut-back where necessary to meet the specification. The method of removal of cut-back shall be approved prior to commencement of coating.

### Testing of Bitumen Coating:

On one pipe in each batch of 20 pipes the Contractor shall carry out, in the presence of the Engineer's Representative, the following tests in accordance with the test methods set out in BS EN 10300:2005:

Testing shall include but not be restricted to:

## Visual

The general appearance of the coating shall be evaluated visually. The coating shall be of uniform appearance free from wrinkle, pinholes, voids, laminations, holiday, dry wrap and contamination. The coating shall be completely bonded to the surface. Visual inspection notes must be presented and representatives from the client and the tenderer must co-sign in agreement of the inspection.

## Holiday detection

Holiday detection shall be carried out on every coated pipe as in Annex R of BS EN10300:2005. Holiday detection documentation must be presented. The coating shall be free from holiday.

## Adhesion

A field bond test shall be conducted on the coated pipes 24 hours after coating on one pipe in every 20 pipes. Three tests shall be conducted on each selected pipe.

The coating shall adhere to the steel in accordance with the specified limits in Annex S of BS EN10300:2005. The adhesion tests documentation must be presented.

## Enamel coating thickness

A film thickness gauge of magnetic or electro- magnetic type shall be used to measure the coating thickness of each pipe (including coating over the weld where applicable) in accordance with Annex T of BS EN 10300:2005. The instrument shall be calibrated at least twice daily. The thickness readings made on every twentieth pipe shall be recorded.

The thickness of the coating shall conform to the requirements of the order and it is recommended that the thickness should in accordance with Annex J of EN 10300:2005.

The Engineer's representative must be present and co-sign on the presented documentation.

## Non-conformance procedure

During production quality control, if the coated pipe selected for tests specified in above mentioned tests, i.e. visual, holiday, adhesion and thickness shows defects/ failures that gives cause for rejection, then three pipe preceding and two pipes following this pipe shall also be tested. These five pipes shall be subjected to the test specified for visual, holiday adhesion and thickness.

If the results of these pipes are satisfactory, the coating shall be considered acceptable. If not, the coating shall be considered unacceptable.

If further defects / failures are detected then the entire production for that shift shall be checked and examined. If the coating is rejected, the coater shall re-coat pipes and components and present the re-coated pipe for acceptance again.

If in any total production batch the rejection rate is higher than 10%, the whole batch shall be rejected and the cause of the failures ascertained. Production shall not recommence until the cause of the failure has been satisfactorily established.

#### Cathodic disbonding

Cathodic disbonding test on coated pipes shall be undertaken in accordance with method given in Annex I of BS EN 10300:2005. Documentation of tests performed to be presented to the Engineer

#### General:

Details of the material, primer and methods to be used to heat and mix the material and steps to be taken to maintain a uniform and consistent material shall be stated in Returnable Schedules.

The coating shall be evenly applied and shall be tough, smooth, glossy and free from ripples or runs. Care shall be taken to ensure that there are no air gaps between the coating and the pipe at welds and in particular where the stiffener is attached to the pipe wall. If necessary an approved, bitumen based mastic filler shall be smoothed over the welds before the bitumen coating is applied.

#### Repair of coating:

Pipe external coating may be repaired at the maker's works providing the area requiring repair does not exceed 5.0 per cent of the wrapped area. If the area to be repaired exceeds this figure the entire damaged protective coating shall be stripped and the pipe recoated. Where wrapping is repaired an entire circumferential band the width of the damaged section shall be removed from the pipe and the repair made with full wrapping bands or reinforcing mat.

Pipes with localized defects (e.g. porosity, surface defects) as well as those which have been subjected to control tests may be repaired.

The coating materials that can be used for the repairing of defects shall satisfy two conditions:

- Be suitable for protective the pipe in the required service conditions (e.g. working temperature)
- Be compatible with and adhere to the bitumen based coating applied previously.

The application conditions for repair materials shall be approved prior to commencement of coating.

After application, the repair shall be subject to holiday detection. The repair shall be free of holiday.

## POLYETHYLENE EXTERNAL COATING

### General

- a) System B1: Coating consisting of a liquid or powdered epoxy primer, a polymeric adhesive and a polyethylene outer sheath
- b) System B2: Coating consisting of a powdered epoxy primer, a powdered copolymer adhesive and a powdered polyethylene outer layer.

### Surface Preparation

The external surface of the pipe shall be free from oil and grease or any other contaminants prior to the application of the coating. Moisture shall be removed by preheating the pipe before any blast cleaning and coating. The surface temperature of the pipe shall be maintained at 3°C above the dew point, but less than 150°C during any blast cleaning and inspection.

Blast cleaning shall be performed for Systems B1 and B2: Sa2½ SIS 05 59 00 – 1967.

The surface profile from peak to trough shall be 50 to 100 µm inclusive and be according to the raw materials manufacturer recommendations, where applicable. Residual blast products are to be removed from the pipe surface.

### Material:

Materials used shall be certified by the manufacturer to be in accordance with CSAZ245.21-02. The materials used shall be identified with the manufacturer's name, product description, batch number, location of manufacturer and date of manufacturing. Storage and handling must be in accordance to the manufacturer's recommendation.

### Primer

The liquid epoxy primer shall have properties as specified in Table 4 of CSAZ245.21-02 (Table PSL5 below).

Table PSL5: Liquid Epoxy Primer Requirements

| Test                        | Unit     | Acceptance Criteria                             | Test method in CSAZ245.21-02 |
|-----------------------------|----------|-------------------------------------------------|------------------------------|
| Base resin density          | g/mL     | Within 0.05 of manufacturer's specified nominal | ASTM D 1475                  |
| Curing agent density        | g/mL     | Within 0.05 of manufacturer's specified nominal | ASTM D 1475                  |
| Base resin viscosity        | mPa.s    | Within 15% of manufacturer's specified nominal  | ASTM D 2196                  |
| Curing agent viscosity      | mPa.s    | Within 15% of manufacturer's specified nominal  | ASTM D 2196                  |
| Epoxy equivalent weight     | WPE      | Within 10% of manufacturer's specified nominal  | ASTM D 1652                  |
| Total amine value           | mg KOH/g | Within 15% of manufacturer's specified nominal  | ASTM D 2083                  |
| Gel time (mixed components) | s        | Within 20% of manufacturer's specified nominal  | CSAZ245.20-02; Clause 12.2   |

Table 2.9.6.3.2: Adhesive Requirements

| Test                                      | Unit              | Acceptance Criteria                                                             | Test method in CSAZ245.21-02 |
|-------------------------------------------|-------------------|---------------------------------------------------------------------------------|------------------------------|
| <b>Systems A1 and A2</b>                  |                   |                                                                                 |                              |
| Viscosity                                 | mPa.s             | Within 30% of manufacturer's specified nominal                                  | Clause 12.1                  |
| Flow test at maximum design temperature   | mm                | No greater than 20% more than the manufacturer's specified nominal              | Clause 12.2                  |
| Ring and ball softening point             | °C                | Atleast 20°C above maximum design temperature                                   | ASTM E 28                    |
| Water absorption                          | wt%               | 0.1 maximum                                                                     | ASTM D 570                   |
| <b>Systems B1 and B2</b>                  |                   |                                                                                 |                              |
| Flow rate                                 | g/10 min          | Within 20% of manufacturer's specified nominal                                  | ASTM D 1238                  |
| Density                                   | g/cm <sup>3</sup> | Within 1% of manufacturer's specified nominal                                   | ASTM D792/1505               |
| Vicat softening point*                    | °C                | Atleast 10°C above maximum design temperature                                   | ASTM D 1525                  |
| Brittleness temperature*                  | °C                | -50°C or lower (System B1 for F <sub>20</sub> , system B2 for F <sub>40</sub> ) | ASTM D 746                   |
| * This test required once every 12 months |                   |                                                                                 |                              |

## Polyethylene

The properties of the virgin polyethylene resin shall be given as in Table PSL6 below. Test plates must be prepared in accordance to ASTM D 4703 and conditioned in accordance to ASTM D 618.

Table PSL6: Requirements

| Test | Unit | Acceptance Criteria      |                     |                   | Test Method in CSAZ245.21-02 |
|------|------|--------------------------|---------------------|-------------------|------------------------------|
|      |      | Low Density (LD)         | Medium Density (MD) | High Density (HD) |                              |
|      |      | Linear Low Density (LLD) |                     |                   | ASTM D792 or ASTM D 1505     |

|                                                                      |                   |                                                                             |                                     |                                     |                                                      |
|----------------------------------------------------------------------|-------------------|-----------------------------------------------------------------------------|-------------------------------------|-------------------------------------|------------------------------------------------------|
| Density                                                              | g/cm <sup>3</sup> | < 0.925                                                                     | 0.925 – 0.940                       | > 0.940                             |                                                      |
| Elongation at break                                                  | %                 | 600 minimum                                                                 | 600 minimum                         | 600 minimum                         | ASTM D 638 Type IV sample; crosshead speed 50 mm/min |
| Flow rate *                                                          | g/10 min          | LD: 0.15 – 0.6<br>LLD: 0.5 – 2.0                                            | 0.1 – 1.0                           | 0.15 – 0.80                         | ASTM D 1238 190°C/2.16kg                             |
| Hardness                                                             | Shore D           | 45 minimum                                                                  | 50 minimum                          | 60 minimum                          | ASTM D 2240                                          |
| Heat aging **                                                        | MPa, %            | Atleast 60% of original tensile stress at yield; minimum elongation of 150% |                                     |                                     | Clause 12.6                                          |
| Tensile stress at yield                                              | MPa               | 9.7 minimum                                                                 | 12.4 minimum                        | 18.5 minimum                        | ASTM D 638 Type IV sample; crosshead speed 50 mm/min |
| Oxidative-induction time in oxygen at 220°C, aluminum pan, no screen | Minute            | 10 minimum                                                                  | 10 minimum                          | 10 minimum                          | ASTM D 3895                                          |
| Brittleness temperature **                                           | °C                | -70 or lower (for F <sub>20</sub> )                                         | -70 or lower (for F <sub>20</sub> ) | -70 or lower (for F <sub>20</sub> ) | ASTM D 746                                           |
| Environmental stress cracking resistance condition **                | h                 | 300 minimum (for F50) Condition “C”                                         | 300 minimum (for F50) Condition “C” | 300 minimum (for F50) Condition “B” | ASTM D 1693 100% Igepal                              |
| Vicat softening point **                                             | °C                | 90 minimum                                                                  | 110 minimum                         | 120 minimum                         | ASTM D 1525                                          |

\*The acceptance criteria are not applicable for System B2. The acceptance criteria for System B2 shall be within 20% of the manufacturer’s specified nominal.

\*\*This test is required at least once every 12 months.

#### Application of Primer, Adhesive and Polyethylene

The selected primer, adhesive and polyethylene shall be applied according to the manufacturer's recommendations. The minimum thickness of primer shall be 120 microns for the respective pipe outer diameter and coating systems B1 and B2. The minimum thickness of the adhesive shall be 150 microns for systems A1 and A2 for pipe outer diameters less than 275 mm and 200 microns for pipe outer diameters exceeding 275 mm. The minimum thickness of the adhesive for systems B1 and B2 shall be 100 microns for all pipe outer diameters. These requirements are as given by Table 6 in CSAZ245.21-02.

The thickness requirements of the polyethylene layer are given in Table PSL7 below. Application of polyethylene shall be performed immediately following the application of the adhesive.

Table PSL7: Polyethylene Thickness Requirements

| Specified pipe OD, mm    | Polyethylene Thickness, mm |      |      |
|--------------------------|----------------------------|------|------|
| Systems A1 and A2        |                            |      |      |
| < 75                     | 0.55                       |      |      |
| 75 – 115                 | 0.60                       |      |      |
| >115 – 170               | 0.70                       |      |      |
| >170 – 275               | 0.85                       |      |      |
| >275                     | 1.05                       |      |      |
| System B1                | LD or LLD                  | MD   | HD   |
| < 100                    | 1.80                       | 1.00 | 0.85 |
| 100 – 250                | 2.00                       | 1.15 | 1.00 |
| >250 – 500               | 2.20                       | 1.15 | 1.00 |
| >500 – 800               | 2.50                       | 1.15 | 1.00 |
| >800                     | 3.00                       | 1.15 | 1.00 |
| System B2 (All pipe ODs) | 0.45                       | 0.45 | 0.45 |

The coating application shall be a continuous process in order to give an outer sheath free of pinholes, cracks and other visible defects. The polyethylene may undergo shrinkage or growth following cutback due to temperature changes (cutback length of 50mm is specified, measured from the pipe end).

## Coating Qualification Tests

The applicator shall provide the certificates of compliance, stating that the coating has been manufactured, applied, inspected and tested in accordance with the CSAZ245.21-02 standard. The coating tests results shall be included and submitted to the Engineer.

The coating qualification requirements are given in Table PSL8 below. Test rings shall be prepared in accordance to section 7.4.3 of CSAZ245.21 for the tests to be performed.

Table PSL8: Coating Qualification Test Requirements

| Test                                                    | Acceptance Criteria                                     | Test Method                                                                                                                                                                                                                |
|---------------------------------------------------------|---------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 28 d cathodic disbondment at 20°C                       | 12 mm maximum radius                                    | Clause 12.3 of CSAZ245.21                                                                                                                                                                                                  |
| 28 d cathodic disbondment at maximum design temperature | Purchaser's specification                               | Clause 12.3 of CSAZ245.21                                                                                                                                                                                                  |
| Impact resistance                                       | A minimum of 3.0 J/mm of actual total coating thickness | CSAZ245.20 Clause 12.12, except that for each $\mu\text{m}$ of thickness, the voltage setting for the dc holiday detector (see Clause 12.12.3.3) shall be $10\text{V}/\mu\text{m}$ of thickness, up to a maximum of 15000V |
| Flexibility                                             | No cracking of polyethylene                             | CSAZ245.20, Clause 12.11; bend of $2.5^\circ$                                                                                                                                                                              |
| Peel Adhesion*                                          |                                                         | Clause 12.4 or 12.5                                                                                                                                                                                                        |
| System A1                                               | 3.0 N minimum                                           |                                                                                                                                                                                                                            |
| System A2                                               | 19.6 N minimum                                          |                                                                                                                                                                                                                            |
| System B1                                               | 150.0 N minimum                                         |                                                                                                                                                                                                                            |
| 28 d adhesion**                                         |                                                         | CSAZ245.20, Clause 12.14;                                                                                                                                                                                                  |
| System B2                                               | Rating 1 – 3                                            | 28 d at 75°C                                                                                                                                                                                                               |
| *Not suitable for system B2.                            |                                                         |                                                                                                                                                                                                                            |
| **Applicable for system B2 only.                        |                                                         |                                                                                                                                                                                                                            |

## Coating Repairs

Coated pipe shall be repaired by patching or by stripping and re-coating in accordance with clause 8 in CSAZ245.21. All repairs shall be inspected for holidays in accordance to Clause 7.4.2 in CSAZ245.21

The required lining for the Main pipeline is as follows:

### **CEMENT MORTAR INTERNAL LINING**

Cement-mortar internal lining is proposed as internal lining for the Main pipeline to comply with AWWA C205 and the following:

The internal surface to be lined shall be free from objects that can adversely affect the lining or impair its application. Loose rust, loose mill scale, dirt, debris, oil, grease, paint and other material that may have originated from an external coating process, scattered weld beads as well as blasting residues and/or chemical cleaning process residues shall be removed. However the presence of a light adhesive rust layer does not impair the performance of a cement mortar lining and may be left.

The mortar shall be a homogeneous mixture of cement, sand and water of a suitable consistency for producing a uniform lining on the internal surface of the tubes and fittings. The mortar shall be free from foreign bodies, in particular lumps of hardened mortar.

In the case of drinking water transportation lines, the organic impurities content shall not exceed the amount equivalent to 0.1 g KMnO<sub>4</sub>/ kg sand when determined as an extract in de-ionized water and to 0.3 g KMnO<sub>4</sub> / kg sand when determined as an extract in 0.1 mol NaOH.

#### Materials for mortar lining

##### CEMENT:

The cement shall comply with SANS 50197-1:2000/EN 197-1:2000. The following general provisions shall apply:

- a) Cement shall be Portland Cement (Cem I). Early strength class N or R or a combination of these classes may be used.
- b) Pozzolanic material, fly ash, or silica fume, shall not be used in addition to or to replace a portion of the cement.
- c) Cement used for the trial mortar mix to be specified by the Tenderer in **Annexure 3 of the commercial tender document** and all cement used for this contract shall be procured from the same factory unless otherwise permitted by the Engineer in writing. The name of the factory shall be stated by the Tenderer in **Annexure 3 of the commercial tender document**.
- d) Cement shall be delivered to the site in a dry condition undamaged by exposure to the weather.
- e) Cement shall be stored on the site in approved weather and damp-proof conditions.
- f) All cement spilled from broken pockets on working surfaces or storage floors shall not be used on the work. It shall be swept up each day and removed from the work together with all broken pockets of cement.

**SAND:**

Sand for cement mortar shall be river sand, natural pit sand, crusher sand or a blend of the sands provided it is clean and the grains are inert, hard, durable and uncoated. The supplier and type of sand and its typical grading envelope shall be stated by the Tenderer in the schedules.

Sand shall be well graded and a sieve analysis of a representative sample carried out in accordance with SANS 3001-AG1:2009 shall show that it complies with the following grading requirements (**Table PSL9**):

Table PSL9: Grading requirement for cement mortar sand.

| Sieve size (mm) | Percentage passing by mass |
|-----------------|----------------------------|
| 1,000           | 100%                       |
| 0,075           | 1 to 10%                   |

| Deleterious substances                | Percentage by mass |
|---------------------------------------|--------------------|
| Shale                                 | 1%                 |
| Clay lumps                            | 1%                 |
| Mica and other deleterious substances | 2%                 |
| Sum of all deleterious substances     | 3%                 |

Sand shall be free from injurious amounts of dust, clay lumps, shale, soft or flaky particles, mica, loam, oil, alkali, and other deleterious substances. The maximum percentage by mass of deleterious substances shall not exceed the following limits:

The following general provisions shall apply:

- a) The water demand of the sand is defined as the quantity of water in litres required to make one cubic metre of a mortar which having a sand to cement ratio by mass of 1,0 has a consistency of 8.5 mm DB penetration when tested in accordance with BS 4551: 1980 or latest. The water demand of the sand shall not exceed 340 l/m<sup>3</sup>.
- b) The water demand of the sand shall be determined from at least three trial cement mortar mixes each of a different water content and shall be stated by the Tenderer.
- c) Sand tested for organic impurities in accordance with SANS 5832: 2006 shall yield a test solution not darker in colour than the reference solution.
- d) The chloride content of the sand determined by SANS Method 5831 shall not be greater than 0.01 per cent.
- e) The Contractor shall submit samples of the sand to the Engineer for his approval before use. Prior to commencing the work the Contractor shall submit a report in detail from an approved testing laboratory showing that the sand complies with the specification.
- f) Sand shall be stored on site on an impermeable surface, protected from the weather, and washed sand shall be allowed to drain freely for at least 24 hours before use. The Engineer may require the Contractor to test the sand daily (or more frequently if necessary) for moisture content, impurities and grading before use.

#### WATER:

For pipes conveying drinking water, only water intended for human consumption shall be used. For other applications, water of comparable quality, having a conductivity of less than 2 000 µS/cm and a KMnO<sub>4</sub> consumption of less than 10 mg/l, can be used. For the determination of these parameters the European standards shall be used when available and, if not, use relevant national standards. Water for mortar shall be clean and free from injurious amounts of dissolved mineral salts, organic matter or other substances which may impair the strength or durability of the mortar.

#### ADMIXTURES:

An admixture is any other material apart from cement, sand and water, which is added to the cement mortar or painted onto the bare steel surface prior to cement mortar application. No admixture shall be used that has a deleterious effect on the electrochemical passivation of the steel surfaces by the cement mortar or on the potable water flowing in the pipe after the lining has been placed. In addition no admixture shall be used that impairs the durability, fatigue strength or ability of the mortar to resist impact loadings. Prior written approval of the Engineer shall be obtained for the use of any admixture and the Contractor shall submit test data to substantiate the admixture performance.

### Sampling and testing

The testing laboratories of the SANS, CSIR, SAIW, PCI, or other laboratories subject to the prior approval in writing of the Engineer, will be accepted as approved laboratories in which tests or designs required by the specification may be carried out.

### Cement slurry

Cement slurry for use with the hand application of mortar to large areas greater than two square metres in extent or with the repair of lining defects shall consist of cement, water and admixture. A suitable admixture is a styrene-butadiene copolymer latex (SBR) manufactured for use with Ordinary Portland Cement as a bonding agent. The proportions of cement, water and admixture shall be in accordance with the manufacturer's directions.

### Cement Mortar Requirements

#### COMPOSITION:

Cement mortar for steel pipe lining shall be composed of cement, sand, water, and if required, admixture, that is well mixed and of proper consistency to obtain a dense, homogeneous coating of the required thickness that will adhere firmly to the pipe surface.

#### PROPORTIONS:

The mortar mix shall be designed to produce mortar which will attain the specified compressive and flexural strengths and which will in addition have high density and impermeability. Cement mortar shall have a minimum cement to water ratio by mass of 2.8 and a minimum sand to cement ratio by mass of 1.0.

The workability of the mortar shall be the consistence measured by the dropping ball penetration test carried out in accordance with BS 4551-1:1998.

The proportions of cement, sand and water shall be based upon laboratory tests made with the cement, sand and water to be used on the work. These proportions together with the design workability shall be stated by the Tenderer in the relevant Returnable Schedule. The exact proportions of the constituents shall be determined by the characteristics of the sand used, the condition of the cleaned pipe surface, the thickness of the lining, the size of pipe and the lining equipment used.

Two mortar mixes shall be designed: one suitable for machine application and one suitable for hand application where machine application is impracticable. Guide workability levels for designing these mixes are a nine mm penetration and a six mm penetration respectively.

The Contractor shall timeously submit a report in detail of the proposed cement mortar mix designs to the Engineer for his approval before the work begins. This report, from an approved testing laboratory, shall show that the mixes comply with the specification and shall give for each design mix for at least three different water contents, one of which corresponds to the design workability level stated in the relevant Returnable Schedule, the 7-day and 28-day mortar prism compressive and flexural strengths and consistence obtained when using the materials proposed for the work.

#### STRENGTH:

The mortar compressive and flexural strength shall be determined from 160 mm by 40 mm by 40 mm prisms stored, demoulded, cured and tested in accordance with the "ISO" SANS Method 866. High frequency (200 Hz) vibration shall be used to compact the mortar when moulding in order to expel all the air entrained when mixing. A minimum period of two minutes shall be used.

Table PSL10: The minimum mortar strengths below which not more than five per cent of results may fail are:

| <b>Age of Cement Mortar</b> | <b>Compressive Strength (MPa)</b> | <b>Flexural Strength (MPa)</b> |
|-----------------------------|-----------------------------------|--------------------------------|
| 7 day                       | 45                                | 5,5                            |
| 28 day                      | 60                                | 6,5                            |

At least six representative prisms shall be made by the Contractor for each day of machine lining application. Three of these prisms shall be tested at seven day's age and three at 28 day's age. The six prisms shall be made from one batch of mortar sampled whenever possible from the hopper of the lining machine.

#### BATCHING, MIXING AND WORKABILITY

All mortar shall be batched and mixed under the supervision of a competent and experienced person. All materials shall be batched by mass and the combined error in weighing the materials shall not exceed two per cent. Equipment performance shall be checked when required by the Engineer and the Contractor shall provide the necessary apparatus for this testing.

- (a) All weighing and measuring equipment shall be checked daily, and if necessary adjusted, before cement mortar mixing commences.
- (b) The quantity of water used in each batch of mortar shall be carefully adjusted to maintain the cement to water ratio required for the approved mix.
- (c) Allowance must be made for the moisture content of the sand which shall be determined either by weighing and drying or by the speedy moisture meter. Allowance shall also be made for moisture collecting on the interior of pipe surfaces, the method of transporting the mortar from the mixer to the lining machine and the trowelling system used.
- (d) Mixing shall be continued for not less than 90 seconds after all the materials including water are in the mixer. All mortar shall be thoroughly mixed and the whole of each batch shall be uniform, free of lumps and free from segregation. The minimum time of 1½ minutes may be increased at the discretion of the Engineer.
- (e) Adequacy of mixing shall be judged visually and if in the Engineer's opinion mixing is unsatisfactory, the mixer shall be replaced by a machine which will produce acceptable mixing.
- (f) Any batch not complying with the specification shall be removed from site or disposed of as directed by the Engineer or Inspector.

The workability of the freshly mixed mortar shall be determined periodically from a sample taken immediately prior to being transported to the lining machine, or where practicable from a sample taken at the lining machine itself.

Once the optimum workability for the day's run is determined the consistence shall not vary by more than one mm DB penetration.

Freshly batched mortar shall be applied to the pipe and finished before the initial set has commenced. Under no circumstances shall the addition of extra water to the unplaced mortar in order to restore workability be allowed. Fresh mortar that has lost its workability due to the onset of initial set shall be removed from site or disposed of as directed by the Engineer or Inspector.

#### Application of the mortar lining

The cement mortar is applied to the inside of pipes and fittings in such a way that the lining has maximum compaction and a surface condition that aids the flow of water. Frozen material shall not be used and the mortar shall be applied at a temperature in excess of 5°C; so as to permit its correct curing.

After application, the lining shall be kept damp, and the temperature of the steel pipe shall not be allowed to fall below 5°C. To prevent the lining from drying too rapidly, the pipe ends shall be capped or as otherwise specified so that the lining is allowed to cure under moist/warm conditions in a draught-free closed space. The curing period shall be sufficient to ensure that the pipes and fittings can be transported and stacked without the lining being damaged.

The Contractor shall cover exterior surfaces of pipe exposed to sunlight with a minimum of three layers of hessian which shall be sprinkled with water and kept damp in the daytime during the period of lining, finishing and curing so as to prevent cracking of the lining due to temperature effects.

Cement mortar linings are mainly applied in three ways:

- i. The spinning-method in which the pipe and mortar are spun at a high rotational speed after mortar distribution along the length of the pipe. Under the action of centrifugal force the solid components of the mortar are compacted to form a smooth lining, and part of the original water content is driven out. The partly dewatered lining withstands the transportation of the tube to the curing site;
- ii. The spraying-head-method in which the mortar is thrown at the wall of the pipe or fitting, mostly through the centrifugal force exerted by a rotating spinner head. In this method the original water content of the mortar remains virtually unchanged in the process of application. Some additional smoothing of the mortar layer surface can be carried out by:
- iii. Rotation of the pipe by spinning;
- iv. Mechanical rotary trowels or drag trowel cones.
- v. The manual-method in which the mortar is trowelled onto the steel surface by hand. This is normally done in order to repair defects in a lining and often in order to line fittings.

#### Machine application of mortar lining

The lining shall be applied in one layer by use of a machine with an applicator head which will centrifugally or otherwise place mortar against the surface of the pipe without injurious rebound and with sufficient velocity or pressure to cause the mortar to be densely packed and to adhere in place. The use of compressed air in direct contact with the cement mortar will not be permitted in the process of mixing or application. The rate of travel of the machine and the rate of discharge of mortar against the wall of the pipe shall be entirely mechanically controlled so as to produce a smooth lining of uniform thickness throughout the interior of the pipeline. The lining machine shall be provided with attachments for mechanically trowelling the mortar. Both the application and trowelling of the mortar shall take place at the rear of the machine so that the freshly placed and trowelled mortar will not again be disturbed or touched until after it has set. The trowel attachment shall be such that the pressure applied to the lining will be uniform, producing a smooth surface without shoulders or undulations, and producing a lining of uniform thickness. Preferably a rotary type trowel should be used for larger diameter pipes. The details of the lining machine should be provided in Returnable Schedule A37.

#### Thickness and surface finish of the lining

The mean thickness of the lining shall range between 10mm and 12mm. The maximum unbiased standard deviation of thickness measurements made in accordance with the relevant section of this specification shall be less than 3.5 mm.

The lining surface finish shall be free from an excessive number of defects and when tested in shall have a minimum pass rate of 50 per cent.

| Nominal Pipe Sizes<br>(mm) | Thickness<br>(mm) | Tolerances<br>(mm) |
|----------------------------|-------------------|--------------------|
| 300-600                    | 10                | 3.5                |
| 600-800                    | 12                | 3.5                |
|                            |                   |                    |

### Curing

Curing operations shall begin immediately following completion of machine mortar lining of a pipe or the hand mortar lining of a bend, branch, taper, or special. The lined pipe ends shall be sealed off with airtight covers, and the lining shall be maintained in a surface wet condition until the lining is coated with an approved curing agent.

The airtight covers or seals shall comprise a timber, hardboard or sheet steel backing securely wired to the pipe or fitting and covered with an un-punctured sheet of plastic material secured with wire ties or polypropylene strapping.

As soon as the lining has been inspected, any defects repaired, and the lining approved a water based epoxy resin emulsion curing agent which is not harmful to human consumption (ref SANS 241) is to be applied in accordance with the manufacturer's specifications. The curing agent is to be approved by the Engineer and is sprayed or brushed onto the lining not later than two days after lining application.

The Contractor shall inspect each section that is undergoing curing twice a day to ensure it has adequate curing moisture and that all seals are in place. When necessary, water shall be spray applied to maintain a surface wet lining and any seal found damaged shall be replaced.

### Inspection and testing of the lining

Appearance and composition of the lining:

The appearance of the lining is inspected visually and shall comply with the following:

- Mortar lining shall be uniformly smooth and free from cavities and any visible foreign bodies, though a few isolated particles of sand protruding from the surface are acceptable;
- Unless otherwise specified at the time of the enquiry and/or order isolated cracks with widths smaller than 1.6mm are acceptable for drinking water application, provided that they are not deleterious to the stability of the lining;
- For water of an aggressive nature (e.g. wastewater, saltwater), the crack width shall be limited to 0.5 mm;
- Should the cracks be larger, then pre-treatment with drinking water could be used until the maximum crack width has been reduced to 0.5 mm for water of an aggressive nature

and 1.6 mm for drinking water. When pre-treatment with drinking water is not suitable, the cracks shall be repaired;

- e) Smoothing of defective areas of limited size is permitted. This may be carried out manually within 24 hours of application of the lining with a mortar compatible with the original mortar and if necessary, containing a permitted additive;
- f) NOTE Experience shows that isolated cracks generally close up on contact of the lining with drinking water through the swelling of the mortar and/or autogenous healing. However, the self-healing capability of the cement mortar decreases when stored for long periods in moist atmospheric conditions.

The Contractor shall inspect the pipes following the application of cement mortar lining to identify defective areas in the lining, to determine the quality of the lining and to determine compliance with the specifications.

Documentation of the inspection and testing of cement mortar lining and mortar prisms shall be submitted to the Engineer regularly in terms of the quality control plan specified in the relevant section of this specification.

#### Inspection of completed mortar lining

As soon as the lining has hardened to the stage that it will not be damaged by workmen, or their means of transport in the pipe, the lined surfaces shall be inspected for surface finish, thickness and other defects and the defective areas shall be marked for repair. The Contractor shall provide facilities for lighting and inspection as required by the Inspector.

In each pipe that has been lined, measurement stations will be marked out one metre away from the pipe ends and in the middle of the pipe for man-entry size pipes. The lining at each measurement station will be checked for thickness at eight points on the pipe circumference, 45 degrees apart starting at the crown of the pipe.

The lining thickness will be determined with a handheld eddy-current thickness gauge that has been calibrated against known thicknesses of mortar. The thickness gauge will also be used to locate and mark areas of lining between measurement stations that are too thin or too thick.

The lining surface finish will be measured using a 305 mm long straight edge and a 1.6 mm feeler gauge. At each measurement station the gaps between the lining and a straight edge laid parallel to the pipe axis at opposite ends of the pipe diameter, shall be checked to see if they are greater than 1.6 mm. Any one or more gaps bigger than 1.6 mm will result in a failure being recorded for that straight edge location. The ends of only one pipe diameter at each measurement station shall be checked for surface finish and this diameter shall change in a clockwise rotation of 45 degrees to the adjacent diameter at the next measurement station. The surface finish pass rate for a pipe section is the number of straight edge locations measured less the number of failures, expressed as a percentage of the measured locations.

The Contractor shall not be allowed to proceed with lining application until the Inspector has received, verified and agreed in writing the previous day's record of lining thickness, surface finish and identification of lining defects to be repaired.

#### Lining defects

Defects in cement mortar lining which may include but are not limited to sand pockets or porous spots, voids, blisters, tears, gaps, excessively cracked areas, excessively debonded areas, areas of lining thinner or thicker than specified, unsatisfactory surface finish and mortar that does not meet the strength requirements specified, shall be repaired by the Contractor notwithstanding that the lined area may previously have been inspected and passed by the Inspector. This may involve the removal of large sections of lining, re-cleaning of the pipe surface and re-lining of the pipe, the costs of which shall be borne by the Contractor.

Small defective areas shall be repaired by manual removal of the defective lining and by hand application of mortar lining. In removing the defective lining, the mortar shall be cut back to a square shoulder, and no chamfered joints will be permitted. Defective areas encompassing the full circumference of the pipe shall be replaced by machine application. Only small defective areas that are too thin and less than two square metres in extent may be thickened up by hand in accordance with this specification, in which case feather edge joints will be permitted.

Cracks bigger than 1.6 mm shall be repaired as required by the Engineer or Inspector. This may include the brushing and wiping of cement slurry into the cracks or autogenous healing assisted by additional moist curing or a combination of both.

Defective lining removed from the pipeline, waste cement mortar from trial mixes, cleaning of pump hoses and equipment, and any other debris from the lining operations, shall be collected and temporarily deposited in a suitable heap or container and shall not litter the site. It shall be transported off site and disposed.

#### Repairs

Pipes with defects as well as those which have been subjected to destructive control tests shall be repaired where instructed by the Engineer at the cost of the contractor. The repair procedure must be submitted by the Contractor to the Engineer for approval prior to commencing repairs.

#### Data for coatings and linings

Full data (as per the schedules and data sheets) must be provided at tender stage for all coating and linings proposed. The data sheets / schedules must be complete in all regards, and where necessary, additional technical data shall be provided by the tenderer in support of the proposed coating or lining product.

The required lining for the portions pipeline of pipelines and specials is as follows:

### **EPOXY PAINT INTERNAL LINING**

#### **Material:**

The internal protective lining for the pipeline shall comprise of a type 1B solvent-free chemically cured epoxy material that complies with the requirements of the draft South African Standard 1217 ED2 Guidelines for internal and external organic coating protection for buried steel pipelines. The coherent lining shall be bonded to the inside surface of each pipe in order to prevent corrosion of the inner steel pipe surface, and to provide low hydraulic wall friction.

The internal protective lining for the pipeline shall comply with all the requirements for external coating that are also relevant and applicable to internal lining except where they are amended in the following clauses.

The lining material shall meet all the physical and performance requirements shown in **PSL12**.

The Tenderer must supply the brand of the epoxy internal lining, the analysis of the internal lining and the mix ratio of the manufacture, if applicable, to the Engineer. The results of the control standards for the epoxy internal lining from the manufacturer need to be presented to the Engineer.

Full details of the protective lining including the precautions proposed to ensure an adequate bond with the steel and the prevention of cracking and flaking of the coating shall be submitted with the tender in the relevant returnable schedule.

If, during the course of the contract, any material deteriorates or fails to conform to the specification, all such material shall be rejected.

Table PSL12: Physical and performance requirements of lining material

| Property                                                                                                                                                                                                                                                | Type 1 B<br>Solvent-free<br>chemically cured<br>epoxy lining material<br>requirement | Test method or clause                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-----------------------------------------|
| Adhesion, MPa, min.<br>(laboratory)                                                                                                                                                                                                                     | 10                                                                                   | ASTM D 4541 (tester type III, IV, or V) |
| Impact resistance, J, min.                                                                                                                                                                                                                              | 4                                                                                    | ASTM G 14                               |
| Water absorption, g/m <sup>2</sup> , max                                                                                                                                                                                                                | 10                                                                                   | Draft SANS 1217 ED2                     |
| Dielectric strength, kV/mm<br>thickness, min.                                                                                                                                                                                                           | 105                                                                                  | ASTM D 149-97a, draft SANS 1217 ED2     |
| Resistance to abrasion, g, max.                                                                                                                                                                                                                         | 0,180                                                                                | ASTM D 4060, CS 17, 1kg, 1000 cycles    |
| Cathodic disbonding,<br>disbonded area, mm ECD <sup>b</sup> ,<br>max.                                                                                                                                                                                   |                                                                                      |                                         |
| 28 d test period at 23°C                                                                                                                                                                                                                                | 25                                                                                   | ASTM G 8                                |
| 90 d test period at 23°C                                                                                                                                                                                                                                | 35                                                                                   | ASTM G 95                               |
| Flexibility of material                                                                                                                                                                                                                                 | pass                                                                                 | ASTM D 522-93a, 180°, 75 mm mandrel     |
| ECD = Equivalent circle diameter                                                                                                                                                                                                                        |                                                                                      |                                         |
| <sup>a</sup> Requirements for type 1C coating of other materials to be agreed between the purchaser and supplier<br><br><sup>b</sup> Calculation of ECD: $ECD = [(A \times 4) \div \pi]^{1/2}$ , where A = disbonded area less the initial holiday area |                                                                                      |                                         |

**Surface Preparation:**

The interior of pipes to receive the epoxy coating system shall be cleaned by abrasive grit blasting and will not be accepted unless the operation provides a roughened surface with a degree of cleanliness equivalent to Sa3 in accordance with EN ISO 8501-1 and SIS 05 59 00 - 1967. The surface profile shall be 25µm - 75µm following the grit blasting.

**Application:**

Within four hours after cleaning and inspection, the internal surface shall be coated with hot applied, solvent-free two component epoxy coating applied by a machine designed for the hot

application of such material, in accordance with the manufacturer's specification. The machine shall be equipped to heat the two components to the temperature recommended by the epoxy manufacturer and control the temperature thermostatically within 5°C or better and to meter the components to the mixing head accurately in the prescribed proportions. The components shall be completely mixed and sprayed on to the surface by airless spray. The design shall be such as to prevent gelation of the material in the equipment. The dry film thickness shall have an average of not less than 600 microns and the minimum thickness at any point shall be 600 microns. Particular care shall be taken to coat weld seams and edges adequately.

#### Internal Lining Requirements and Testing:

Once the pipe internal lining has reached sufficient cure (elapsed time and temperature) according to the lining materials manufacturer, the lining shall be inspected and the following tests carried out to check that its properties comply with the requirements given in **PSL13**. Lining material shall comply with the appropriate requirements given in Table 1 of SANS 1217 (presented below as Table and the will be done at the request of the client's QCP and this test shall be deemed to be included in your price.

Table PSL13: Test properties of applied lining

| Property                                   | Type 1 B<br>Solvent-free chemically<br>cured epoxy lining<br>material requirement | Test method or clause |
|--------------------------------------------|-----------------------------------------------------------------------------------|-----------------------|
| Total dry film thickness,<br>microns, min. | 600                                                                               | SANS 2808             |
| Adhesion, MPa, min. (pipe)                 | 10                                                                                | ASTM D 4541           |
| Electrical discontinuity.                  | ND                                                                                | ASTM D 5162           |
| ND = No defects                            |                                                                                   |                       |

A cathodic protection design will be undertaken during construction by specialists engaged by the Employer which will be submitted to the Employer for approval and then implemented by the Contractor during the Contract.

### **PSL3.9.3 PROTECTION AGAINST ELECTROLYTIC CORROSION**

**Add the following new sub-clause to Clause 3.9.3**

#### **PSL 3.9.3.1 CATHODIC PROTECTION**

Soil resistivity tests and a stray current survey are to be carried out by the Specialist appointed by the Employer and be done to SANS 10199:2010.

The design of the Cathodic Protection System shall be carried out by an approved Specialist in this field, one calendar month before commencing construction, for acceptance.

A Provisional Sum has been allowed in the Tender Documents for the testing, design, supply and construction of a cathodic or other corrosion protection system. After acceptance by the Engineer of the design of the system the Contractor shall within fourteen days prepare a detailed cost proposal, including schedules of quantities, for the supply and installation of the system for approval by the Engineer. The proposal shall be supported by a full breakdown of costs with supporting documentation such as quotations from suppliers etc. Payment may be claimed after completion of the relevant item, at the approved rates, in the monthly Certificates in the normal manner. The contractor shall allow in his programme for completion of the design prior to commencement of laying of pipes. Any pipes which have to be removed subsequent to laying for implementation of a corrosion protection system shall be to the Contractor's cost.

### **PSL3.9.5 JOINTS, BOLTS, NUTS AND WASHERS.**

**Replace sub-clause 3.9.5 with the following:**

All bolts, nuts and washers shall be hot-dip galvanised in accordance with SANS 121:2011 SANS 1700. Under no circumstances shall electro-plating be accepted as an alternative means of corrosion protection.

### **PSL 3.10 VALVES**

**Add the following sub-clauses to Clause 3.10:**

The scope of work shall include the supply of all materials, manufacture, shop assembly and testing, corrosion protection, delivery to Site, storage and installation at Site, site corrosion protection repairs, putting to work, testing (both at the Manufacturer's Works and on Site), Tests on Completion, and maintenance (other than normal operating maintenance) and provision of Operation and Maintenance Manuals of the following Plant and Equipment and which is described in detail hereinafter.

All bolts, nuts, studs, washers, packing for mounting the valves and all components required for the valve installation into the pipe system are included in this Particular Specification.

All drawings required for manufacture of the valves and all accessories to be supplied under this Contract shall be prepared by the Contractor for approval by the Engineer.

The period of guarantee shall read 12 (twelve) months from the date of issue of the Commissioning Certificate by the Engineer to the Contractor or on completion of full flow testing, whichever is the latest and shall terminate with the issue of the Final Certificate by the Engineer. In order to avoid expiry of the guarantee while these valves are still in storage prior to installation and commissioning, the Engineer will request the reinstatement of the guarantee at the time of commissioning.

Tenderers shall indicate in the Bill of Quantities the cost of reinstating the guarantee as at the time of Tender. Should the implementation of this option be free of charge, the Tenderer shall state this on the Bill of Quantities.

(a) Flanges to SANS 1123, to appropriate pressure rating; raised face; gramophone finish.

(b) Valves shall be required to open against maximum unbalanced head, manually.

(c) Valves shall be required to close against maximum flow at full head.

(d) Gearbox Orientation is only applicable to butterfly valves. The first description is the gearbox orientation, either left hand side (L/H) or right hand side (R/H). The second description is the hand wheel projection, either left hand side (L/H) or right hand side (R/H).

(e) Valve shall have 25mm (1") female thread on both sides.

(f) Valve shall be required to open against maximum unbalanced head manually.

This Particular Specification shall be read in conjunction with the latest of the following:

- STANDARD SPECIFICATION DWS 2510: SUPPLY OF VALVES – GENERAL VALVE SPECIFICATION
- STANDARD SPECIFICATION DWS 2510/02: SUPPLY OF VALVES – AUXILIARY DRIVES SPECIFICATION (Rev.2; January 2007 edition)
- STANDARD SPECIFICATION DWS 2510: SUPPLY OF VALVES – AIR RELEASE AND VACUUM CONTROL VALVES
- STANDARD SPECIFICATION DWS 2510: SUPPLY OF VALVES – BUTTERFLY VALVES
- STANDARD SPECIFICATION DWS 2510: SUPPLY OF VALVES – GATE VALVES
- STANDARD SPECIFICATION DWS 2510/09: SUPPLY OF VALVES – NON RETURN VALVES (June 2000 edition)
- STANDARD SPECIFICATION DWS 2510/13: SUPPLY OF VALVES – SLEEVE VALVES (Rev.3; January 2007 edition)

- STANDARD SPECIFICATION DWS 2510/14: SUPPLY OF VALVES – SPHERICAL VALVES (June 2000 edition)
- STANDARD SPECIFICATION DWS 2020: QUALITY CONTROL SPECIFICATION (October 2001 edition)
- STANDARD SPECIFICATION DWS 9900: CORROSION PROTECTION SPECIFICATION (October 2002 edition)

## **MATERIALS**

All fasteners, including washers, used in the construction of the valves shall be of stainless-steel Grade 304 or higher quality. All fasteners, including washers, for joining of the valves to the pipe work, shall be hot dip galvanised to SANS 121.

Welding electrodes for welding mild steel to stainless steel shall have a high nickel/chrome content.

## **DESIGN AND CONSTRUCTION**

Flange drilling and dimensions

All valves shall be double flanged, and the design shall be in accordance with STANDARD SPECIFICATION DWS2510. Flanges shall be designed to have a uniform thickness, adequate in terms of an appropriate design code, to withstand 1,5 times the Nominal Pressure rating within specified stress levels, and subject to the approval of the Engineer. Flange shall have a pressure rating PN16Bar (1600 kPa); full face gaskets and raised faces. The mounting flanges of the valves shall be drilled equi-spaced, off-centre and shall have flange body dimensions and Drilling Tables to SANS 1123; 1600/3. Sufficient clearance shall be allowed between the body and the flange to enable bolts to be tightened to required torque.

## **BOLTS AND NUTS**

All bolts and nuts shall be in accordance with SANS 1700 and shall be hot dip galvanised to SANS 121. Bolted joints shall have a washer underneath both the bolt head and nut.

## **OPERATION AND MAINTENANCE MANUALS**

In addition to the requirements in the STANDARD SPECIFICATION DWS2510: GENERAL TECHNICAL SPECIFICATION, the Contractor shall also provide one complete electronic copy of the Operation & Maintenance Manual.

The 309L or 316L deposit weld specified in DWS 2510/04 for the seal retaining groove shall apply to all seal types. This deposit welding shall extend onto the circumference of the valve blade, away from the bottom of the cut-out for deposit welding, by a distance of 10 mm for valves up to and including 1000 mm NB and by a distance of 20 mm for valves larger than 1000 mm NB. Similarly, the mounting flange of the removable seat in the valve body shall also be deposit welded by using stainless steel 309L or 316L. The minimum thickness of all deposit welded sections shall be 1 mm of pure, uncontaminated stainless steel deposit weld material

after final machining. These deposit welding procedures shall be performed by a welder coded for hard facing (wear resistant) and corrosion resistant overlays.

The valve seat shall be located on the valve body. The stainless-steel seat shall be removable, but positively held to the mounting flange in the body bore with stainless steel screws. Pressed-in, bonded-in or weld deposited seats shall not be acceptable.

The stub axles shall have thrust support bearings that shall keep the valve blade concentrically in the valve body.

## **MOUNTING**

The valves will be mounted onto stainless steel 304 L pipe work with mild steel flanges for which the necessary hot dip galvanized bolts, studs, nuts, washers, packing, fibre insulating sleeves, etc. shall be supplied by the Tenderer.

The Tenderer shall indicate in his offer if any of his valves require to be supported on the floor below such valve. If required, all such supports shall be deemed to be included in this Particular Specification.

All DN600mm, DN450mm and DN300mm and other valves shall be supplied complete with supports. These supports shall be easily removable and shall not interfere with the installation and tightening of flange bolts. Details of all valve support installations shall be provided with the Tender.

## **VALVE DESIGN INTEGRITY**

The Tenderer shall submit comprehensive, detailed and accurate calculations at the Tender stage for the requirements below. Failure to submit such calculations with the Tender Offer may lead to the Tender being disqualified.

1. The dynamic torque generated during unbalanced conditions at the design head of 1 000 kPa and a flow velocity of 10 m/s.
2. The unseating and bearing friction torque under unbalanced conditions at the design head of 1 000 kPa and a flow velocity of 10 m/s.
3. The maximum combined stresses in the blade when conforming to Clause 2.2 of DWS 2510/04:

### **SUPPLY OF VALVES – BUTTERFLY VALVES.**

4. The maximum stress in keys, dowel pins or taper pins when conforming to Clause 2.6 of DWS2510/04: **SUPPLY OF VALVES – BUTTERFLY VALVES.**
5. The maximum shaft stress generated whilst unseating a closed valve as well as the maximum shaft stress generated by the dynamic torque under the design head and velocity of 10 m/s.

## **CORROSION PROTECTION**

Corrosion protection of Plant supplied under this Particular Specification shall conform to DWS 9900 – CORROSION PROTECTION. Technical details of all corrosion protection products shall be submitted to the Engineer for approval before application.

## **TOXICITY OF LINING MATERIAL**

Materials used for the lining of valves and pipes shall be non-toxic and shall not impart any odour, taste, or colour to the water. Certification shall be submitted to the Corrosion Engineer for his approval.

### **PSL 3.10.1 BUTTERFLY VALVES:**

#### **Valve Body**

The body shall be flanged at both ends and sufficient clearance shall be allowed between the body and the flange tenable flange bolts to be tightened to the required torque (Refer SAE wrench clearances).

Hubs for shaft bearing housings shall be integral with the valve body.

The valve shall be stable and capable of operating at any opening without variation of the disc position and there shall be no flutter of the disc.

The disc shall close with a positive action and there shall be no possibility of it slamming shut. If required suitable gearing shall be provided to prevent slamming.

A flow direction arrow shall be cast on the body of the valve.

The valve body shall be provided with adjustable mechanical stops to prevent overtravel of the valve disc on the open or closed positions.

#### **Disc**

The Disc shall be streamlined to provide minimum resistance to flow of water.

The disc structure shall be adequate to minimize distortion. Ribs casted in if required.

The disc shall be adequate to sustain full working differential pressure across the closed valve disc without exceeding a stress of 20% of the tensile strength of the material used.

### **Valve shaft**

The valve shaft shall extend through the valve bearings and into the disc.

The connection between the shaft and the disc shall be designed to transmit shaft torque equivalent to at least 75% of the torsional strength of the shaft. Dowel and taper pins shall be mechanically secured.

### **Valve seats and seals**

Valves with body spool seals are not acceptable. Valves with body seals that depend on a press fit for securement is not acceptable.

The valve seat shall be design to seal through the complete range of pressures as for the valve pressure rating. Sealing seat and seal retaining rings shall be stainless steel.

The seal shall be placed in the disc or body and shall be renewable without removing the valve from the pipeline.

### **Valve bearings**

Each valve shall be fitted with sleeve type bearings contained in the hubs of the valve body. The valve shall be equipped with at least one thrust bearing to hold the valve disc secure in the centre of the valve seat.

### **Stuffing box**

The design of the stuffing box assembly shall be such that the packing can be adjusted or completely replaced under pressure without disturbing any part of the valve or operator assembly.

### **Manually operated actuators**

The valve shall be fitted with an actuator that requires a maximum input force on the handwheel of not more than 250 Newton pull to seat and unseat the valve under the Nominal Pressure and to operate the valve while water is flowing through the valve at a velocity up to 5,0 metres per second.

Actuator gears shall be machine cut and of substantial design.

Each actuator shall be furnished with a device to hold the valve in a fixed position for an extended period of time. All valves shall open by clockwise rotation of the actuator main spindle.

All valves shall have a gearbox or actuator installed on the right hand side of the valve (looking in the direction of flow), unless otherwise indicated in the contract.

## Indicators

A direction of rotation indicator shall be permanently attached to each handwheel and a pointer attached to the valve shall indicate when the valve is fully open or shut and each 10 degrees of intermediate travel. The indicators shall be weatherproof and of robust and rigid design; the embossed markings shall be large enough to be plainly visible from a distance of 2 metres.

## Project and material requirements

Butterfly valves should be, a double offset (double eccentric), double flanged to DIN EN 593 and of **Long** Body Type.

The valve assembly should comply with:

- PN16 Pressure Rating;
  - Shaft bearing / bushes made of Phosphor Bronze, maintenance-free and self-lubricating and fitted in the valve body;
  - Medium-free bearing by double O-ring seal and closed bearing lugs at the disc;
  - Microfinished body seat face;  
Automatic sealing system with chambered and pressure-supported profiled seal, easily replaceable;
  - Anti-blowout shaft and shaft seal;
  - With self-locking, encapsulated, maintenance-free worm gear in protection degree IP68, incl. mechanical position indicator;
  - Tightness to DIN EN 12 266-1, leak-rate A;
  - Flange connection dimensions to EN 1092 / BS4504; 1 Set of matching flanges required;
  - Body and disc made of Ductile iron SG BS 2789 Grade 420/12 (to EN-JS1030) or higher quality;
  - Disc / Body seal made of EPDM Rubber;
  - Disc Shaft made of stainless steel grade 1.4462;
  - Seal Retaining ring made of stainless steel ;
  - Internal fasteners made of stainless steel;
- 
- Corrosion protection:
  - Outside of body epoxy-coated, colour: RAL 5005 blue, coating thickness >250 µm

See STANDARD SPECIFICATION DWS 2510: SUPPLY OF VALVES – BUTTERFLY VALVES latest edition

## PSL 3.10.2      WEDGE GATE VALVES:

### CONDITIONS OF OPERATION

All Wedge Gate valves shall be capable of being opened or shut in an emergency under an unbalanced pressure equal to the Nominal Pressure rating and shall be designed to seal over the total range up to 1,5 times the Nominal Pressure.

## **VALVE BODY**

The body shall be flanged on both ends and sufficient clearance shall be allowed between the body and the flange to allow flange bolts to be tightened (refer SAE wrench clearance).

The body shall be able to minimize distortion under pressure and ribs shall be provided cast into the body if required.

Dove-tailed recesses with an included angle of not more than 80 degrees and with bottom stop-end shall be provided to contain the extruded brass channel guides.

Each valve shall be provided with a 12,7mm BSP screwed plug in the top of the bonnet for release of air. A substantial boss shall be cast into the body to house the plug.

## **WEDGE GATE OR DISC**

The design and manufacturing of the gate shall be such that it operates satisfactorily over the full range that the valve is designed for.

A distinctive mark, corresponding to a similar mark on the valve body, shall be made on one of the faces of the gate to ensure that if the gate is removed from the body, it will be possible to be replaced in the correct position.

## **MAIN SPINDLE**

The valve spindle shall be forged from high tensile stainless steel in accordance with BS 970 Grade 431 S29 and shall be a non-rising spindle type. The minimum diameters of main spindles and lengths of spindle nuts are given in the Table below. The spindle shall be sufficiently long to ensure that when the gate is fully raised, a completely clear passage is left through the valve opening. The thread load area of the spindle and nut assembly should be designed to prevent stripping of the assembly thread. All Wedge Gate valves will be opened by clockwise turning of the input or reduction spindle.

The valve spindles shall have machine cut stub acme threads in accordance with ASME/ANSI B1.5-1988. The thread shall be free of sharp edges and burrs. Thread pitches are given in the Table below.

Each spindle shall be submitted to the Engineer's Representative for inspection before assembly.

Each gate nut shall be manufactured from nickel aluminium bronze which shall be completely free from casting or other defects. Each nut shall be submitted to the Engineer's Representative for inspection before assembly. The nickel aluminium bronze shall be in accordance with BS 1400: 1973 AB2.

The spindle thrust collar shall be fitted with a thrust assembly adequate to withstand the full thrust induced during operation at the shop test and provision shall be made for the radial thrust on the spindle. Bearings shall be accurately fitted into the thrust housing which shall be equipped

with seals designed to contain the lubricant and exclude dust. Full details of the bearing and sealing systems shall be shown on the drawings submitted with the tender.

## **STUFFING BOX**

The stuffing box assembly shall incorporate a back seal between the spindle and bonnet to facilitate the repacking of the gland under pressure without shutting off the water. Gland bolts shall be made of stainless steel. The Gland packing shall be pure PTFE fibre braided type.

The design of the stuffing box assembly shall be such that the packing can be adjusted or completely replaced without disturbing any part of the valve or operator assembly.

Two or more Nitrile or Viton rubber O-ring seals shall be fitted to the stuffing box to prevent fluid leakage past the spindle. A wiper ring shall be fitted to the stuffing box to prevent ingress of dirt.

## **SEALING RINGS**

The body and the gate of the valves shall be supplied with integral weld-deposited seats. A Welding procedure and details of the consumables to be used shall be provided if requested by the Engineer. Stainless steel sealing rings in accordance with BS 970 Grade 316 on the body and nickel aluminium bronze in accordance with BS 1400 Grade AB2 on the gate.

The leading edges of the rings shall be lightly chamfered.

The internal diameter of the body sealing faces shall not be less than the bore and the face shall be co-axial with the centre of the valve bore.

The valve seat shall be designed to seal when tested over the total range to 1,5 times the Nominal Pressure rating.

## **GATE SHOES**

Each valve shall have integral weld-deposited stainless steel gate shoes in accordance with BS 970 Grade 316 or nickel aluminium bronze in accordance with BS 1400 Grade AB2. Pinning is not acceptable.

## **CHANNEL GUIDES**

Suitable channel guides in extruded brass in accordance with BS 1400 Grade PB2 and which shall be as long and deep as possible, shall be fitted to support the gate during its travel. Channel guides shall be of dovetail section to match the recesses described above. The gate shoes shall be accurately machined and fitted in the guides to ensure that the sealing rings do not make contact before the gate is seated. When the valve is fully open at least half of the shoe shall be supported by the guides.

Guides shall be accurately fitted into the body recesses and shall be secured with an approved metal adhesive. Pinning of guides is not acceptable. The channel guide shall be fixed at each end so that there will be no sliding of the guide in the recess.

The all-around clearance between gate shoes and channel guides for valves of 600mm diameter and larger shall be not less than 3mm and shall not exceed the requirements specified above.

## **GEARING**

Type A Multi-stage spur gearing with 6:1 minimum ratio, having operating spindles on the input spindle and at a stage where the valve can be stroked without exceeding the maximum input torque as tabulated in the Table for Maximum input torque if no differential pressure is applied to the valve (To be demonstrated if requested by the Engineer).

Type B Single-stage spur gearing with 4:1 ratio having one spindle to operate with a 1:1 ratio and a second spindle to operate with a 4:1 ratio.

Type B 90° Single-stage 90° bevel gearing with 4:1 ratio having one spindle to operate with a 1:1 ratio and a second spindle to operate with a 4:1 ratio.

Type B 45° Single-stage 45° bevel gearing with 4:1 ratio having one spindle to operate with a 1:1 ratio and a second spindle to operate with a 4:1 ratio.

Type C Direct operation on main spindle

Type C 90° Single-stage 90° bevel gearing with 1:1 ratio with one operating spindle only

Type C 45° Single-stage 45° bevel gearing with 1:1 ratio with one operating spindle only

Type E Electrically operated actuators

Type B 90° and Type C 90° gearing are required to allow valves installed the direction of flow vertical to be operated from a vertical position above the valve, parallel to the direction of flow.

The gears shall be robust and machine cut and their mounting shall be of substantial design. Enclosed gearboxes are not acceptable for Wedge Gate valves.

The operating spindles shall be square at the top to fit keys that will be provided with the valves.

Each pinion gear spindle shall be supported between two bearings or alternatively one bearing of sufficient depth to prevent misalignment of the pinion gear and spindle. The bearings shall be fitted with bronze bushes and shall be provided with grease nipple lubricating prior to delivery.

All valves shall open by clockwise rotation of the main spindle and gearboxes shall be fitted with an intermediate idler where necessary to enable the valve to open by clockwise rotation of either spindle.

The Tenderer shall state in the Tender the time required in seconds to fully open manually operated Wedge Gate valves under unbalanced conditions (at the Nominal Pressure).

**The gearbox shall be set such that on the Main Isolating Wedge Gate valve the time in seconds to close the last 15% of the valve opening should be not less than 300 and not more than 400.**

The Table below specifies the maximum input torque on any input spindle to seal or stroke a valve:

| Valve size (mm) | Torque (Nm) |
|-----------------|-------------|
| 100 – 300       | 150         |
| 300 – 450       | 240         |
| ➤ 450           | 275         |

In case of Type A and Type B gearing a shear pin or other safety device shall be incorporated between the high and low gears to prevent damage to the valve if excessive force is applied. Two spare pins shall be attached to each valve.

Shear pins shall be easily replaced in the field. Hard-driven taper pins will not be accepted as shear and location shall be submitted with the Tender.

All points to be lubricated shall be fitted with 1/8 inch (3,2mm) BSP straight nipples for grease-gun lubrication. Adequate lubrication shall be provided for all gear and indicator bushes.

## **LIMIT STOPS**

Each valve larger than 300mm diameter shall have two limit stops fitted in the body at approximately 15 degrees of the vertical line of the valve. The limit stops shall be located in substantial bosses cast into the body and shall be fitted with watertight seals and spacer clips. Limit stops shall not protrude below the level of valve supports.

The Tenderer shall provide adequate means of securing the limit stops after they have been set to prevent abuse of the components.

## **INDICATORS**

Each manually operated valve shall be provided with a permanently secured cast gunmetal or cast brass direction-indicator dial of substantial design with an embossed arrow showing the direction for opening the valve.

All valves larger than 300mm diameter shall be fitted with a substantial indicator to show the position of the gate. If gear driven indicator wheels are used these may be cut from mild steel plate but shall have firmly fixed to them embossed marking plates of cast gunmetal or cast brass. If a pointer is used it shall be of cast gunmetal or brass. The indicator shall show clearly:

- When the valve is fully open
- Each 100mm of intermediate position
- When the valve is fully closed

## **PROJECT AND MATERIAL REQUIREMENTS**

Ductile Iron bodies should be to SANS 936 SG 42 /BS 2789 GR. 420/12 and stainless steel trim, and shall conform with all relevant sections of SANS 664 or BS 5163, specifications and subsequent amendments. Flanges shall be drilled to BS4504 or SANS 1123 for 16 bar Nominal Pressure as specified, and compatible with pipework flanges. Valves should be supplied with a set of matching flanges.

Gate valves shall be of the wedge gate metal seated type, VOSA, AVK (Premier) or similar approved. Approval shall only be given for the specified or equivalent valves from well established and well known manufacturers with a proven record of supply and service of equivalent products within the southern African region. Valves shall be Class 16 as specified or shown on the drawings, clockwise opening and shall have non-rising spindles of high quality high tensile stainless steel as specified above. Where extended spindles are required, they shall be suitably supported to prevent swaying and buckling, and to guarantee the intended use of the valve. All gate valves shall be drop tight when tested in accordance with the requirements of BS 5163.

Valves shall be grit blast cleaned to S15 standard and a solvent-free sintered epoxy powder applied in one coat by the use of arc-spray machines to provide a dry film thickness of not less than 450 micron.

Flanged valves shall be complete with galvanised or titanium coated bolts and nuts, gaskets, insertion rings and a set of matching flanges.

All isolating Resilient Seal Wedge Gate valves for air valves shall be supplied with a cast iron hand wheel. All other Wedge Gate valves shall be provided with a cap top for use with a valve key.

See STANDARD SPECIFICATION DWS 2510: SUPPLY OF VALVES – GATE VALVES latest edition.

## **WEDGE GATE RESILIENT SEAL VALVES**

The Wedge Gate Resilient Seal valves are to be used only below the Air Valves.

All Specifications that are mentioned for the Wedge Gate valves apply to the Wedge Gate Resilient Seal valves as well.

The gate shall be completely covered with Nitrile Rubber. The shore hardness of the rubber shall be suitable for the respective test pressures of the valves. The rubber covering on the gate shall be of adequate thickness to ensure a drop tight seal over the whole range of pressures up to the Nominal pressure. The seal shall remain drop tight in the possible event of particles up to a maximum diameter of 2mm being trapped between the gate and the body.

Gate guides shall be incorporated in the bonnet and shall be of the tongue and groove type and shall support the gate until seating has commenced.

Project and material requirements

All valves shall be of PN16 or PN25 pressure rating. See Bill of Quantities.

See STANDARD SPECIFICATION DWS 2510: SUPPLY OF VALVES – GATE VALVES latest edition.

## **PSL 3.10.3      AIR VALVES**

### **CONSTRUCTION AND DESIGN**

Air release and vacuum break valves shall be double orifice, of type "Vent-O-Mat Series RBX" or similar approved.

The air release and vacuum break valve shall be of the compact single chamber design with solid cylindrical H.D.P.E. control Floats housed in a tubular Stainless Steel Body with epoxy powder coated Mild Steel or Stainless Steel ends secured adequately to withstand 1,5 times the Nominal Pressure.

The valve shall have an integral 'Anti-Shock' Orifice mechanism which shall operate automatically to limit transient pressure rise or shock induced by closure up to 1,5 times the Nominal Pressure rating of the valve.

The intake orifice area of the air valve shall be equal to the nominal size of the valve i.e., a 150mm valve shall have a 150mm intake orifice.

Large orifice sealing shall be effected by the flat face of the control float seating against a EPDM rubber 'O' ring housed in a dovetail groove circumferentially surrounding the orifice.

Discharge of pressurized air shall be controlled by the seating & unseating of a Small Orifice Nozzle on an EPDM rubber seal affixed into the control float. The Nozzle shall have a flat seating land surrounding the orifice so that the damage to the rubber seal is prevented.

The valve construction shall be proportioned with regard to material strength characteristics, so that deformation, leaking or damage of any kind does not occur by submission to 1,5 times the Nominal Pressure rating.

The valve design shall incorporate an over pressure safety feature that will fail without an explosive effect, such as is normally the case when highly compressed air is released suddenly. The feature shall consist of easily replaceable components such as Gaskets, Seals or the like.

Connection to the valve inlet shall be facilitated by a screwed BSP (ISO R7) or NPT male end (DN25 (1") & DN50 (2") only) or a flanged end conforming to PN10, 16, 25 or 40 ratings of BS4504 or SANS 1123 Standards and ANSI B16.5 Class 150 or Class 300 Standards.

Flanged ends for DN80 and DN100 and DN150 shall be supplied with the requisite number of Stainless Steel screwed studs inserted for alignment to the specified standard. Nuts, washers, or jointing gaskets shall be excluded.

Care shall be taken where air valves are mounted on sloping pipes that the air valves is mounted level.

## **OPERATION**

1. Prior to the ingress of liquid into the valve chamber, as when the pipeline is being filled, valves shall vent through the large orifice when water approach velocities are relative to a transient pressure rise, on valve closure, of  $< 1.5 \times$  valve rated pressure. At higher water approach velocities, which have a potential to induce transient pressure rises  $> 1.5 \times$  valve rated pressure on valve closure, the valve shall automatically discharge air through the Anti Shock Orifice and reduce water approach velocity, so that on closure a maximum transient pressure rise of  $< 1.5 \times$  valve rated pressure is realised.

2. Valves shall not exhibit leaks or weeping of liquid past the large orifice seal at operating pressures of 0.5 bar (7.25 psi) to one and a half times the rated working pressure.

3. Valves shall respond to the presence of air by discharging it through the small orifice at pressures within a specified design range, i.e. 0.5 bar (7.25 psi) to 16 bar (232 psi), 25 bar (363 psi) or 40 bar (580 psi), and shall Remain leak tight in the absence of air.

## **TEST SPECIFICATION**

All air release valves supplied shall be subjected to the following testing procedures in the order laid down:

(A) A high pressure strength and leak test whereby the valve is filled with water and pressurized to 1.5 times the rated Nominal pressure which shall be held for a period of 2 minutes. Any leaking, weeping or sweating shall be reason for rejection.

(B) A low head leak test whereby the valve is filled with water and pressurized to a maximum of 0.5 bar (7.25 psi) using a visible water column connected to the test rig. The valve shall be rejected if leak tightness is not maintained for 2 minutes.

(C) Every tenth air release valve of the same size and pressure rating must be subjected to a small orifice function test - "DROP TEST" - whereby the valve is filled with water, pressurized to above rated Nominal pressure and isolated from the test rig by closure of an isolating valve. A chamber in the test rig immediately prior to the isolating valve must be filled with compressed air at a pressure equal to that being maintained in the air release valve. The isolating valve is then opened so as to allow the air to rise in the air release valve without the pressure dropping lower than 2 - 3 bar (29 - 44 psi) above rated working pressure of the air release valve. The "DROP TEST" is then carried out by slowly bleeding off the pressure through a suitable cock until rated Nominal pressure is reached and the float drops away from the orifice to allow discharge. Failure of the air release valve to function in the manner described will be reason for rejection.

On request the manufacturer shall provide batch certificates of test compliance which shall be cross referenced to serial numbers indelibly marked onto the identity label of each valve.

It is impossible to inject air into an incompressible liquid, air injection can only be achieved if the liquid can be displaced which implies that the pressure in the test rig must be reduced to atmospheric, and absolutely nothing is proven by discharge through the small orifice of the air release valve at atmospheric pressure. "DROP TESTING" in this manner is not acceptable.

## **PROJECT AND MATERIAL REQUIREMENTS**

Air valves shall be PN16Bar.

See STANDARD SPECIFICATION DWS 2510: SUPPLY OF VALVES – AIR RELEASE AND VACUUM CONTROL VALVES latest edition

### **PSL 3.10.4 NON-RETURN VALVES**

#### **CONDITION OF OPERATION**

Each Non-return valve will be used to automatically prevent the reversal of flow in the event of pumps being tripped or in the case of pipelines which are cross connected and shall be designed to seal over the complete range of pressures up to the nominal pressure rating.

Non-return valves will be of the single door, multi-door or Nozzle Check types.

## **BODY**

The body shall be flanged on both ends and sufficient clearance shall be allowed between the body and the flange to allow flange bolts to be tightened (refer SAE wrench clearance).

## **DOORS FOR SINGLE AND MULTI DOOR NON-RETURN VALVES**

Each valve shall be fitted with doors that are designed to operate freely with the minimum loss of head (pressure). Single door tilting disc type non-return valves with suitable dampers will be considered.

Tenderers shall state the minimum area of the opening through the valve and the estimated loss of head (pressure) through the valve when the velocity at the entrance is 1; 2; 2,5 and 3,5 metres per second.

Each door shall be restricted in its travel so that its maximum lift is below the horizontal position and ensure this feature permanent stops shall be provided for each door. These stops shall have substantial rubber facings to prevent wear due to metal contact. The rubber facings shall be returned over the stops and shall be vulcanized onto the metal and secured by means of countersunk screws into the sides of the stops. Details and drawings of the stops offered shall be submitted with the tender.

If the doors are provided with double hinges, suitable provisions shall be made to prevent the door(s) fluttering; a metallic spring is not considered suitable or adequate for this purpose.

An inspection cover shall be provided to enable the doors to be examined.

Each door spindle shall be extended through a stuffing box on one side of the body only and a pointer shall be fitted to the extended spindle so that the open and closed positions of the valve door can be registered on a brass indicator plate. In order to reduce friction in the gland the neck bush shall be self-lubricating, thermo-plastic or of an approved material suitable for continuous and designed to prevent ingress of foreign matter. Such material shall be dimensionally stable in continuous contact under all operational conditions.

In addition to the positions indicator, the non-return valve shall be provided, if so requested, with a position transmitter for each valve door, or system of doors. The transmitters shall be of the two wire type, powered from an external 24 Volts Direct Current power supply and shall provide a 4 – 20mA signal proportional to the valve door positions. The transmitters shall be capable of driving the 4 – 20mA signal into an internal load of 750ohms. The transmitters shall be housed in a robust IP or higher quality housing. As the position transmitters will be used to monitor door movement, flutter etc, the transmitters shall have a positional accuracy of better than 0,5%, a hysteresis of better than 0,5% and a time constant of typically less than 0,1 second.

## **SEALING FACES**

The body and the gate of the valves shall be supplied with integral weld deposit seats. Stainless steel seats in accordance with BS 970 Grade 316 on the body and nickel aluminium bronze seats in accordance with BS 1400 Grade AB2 on the door. A welding procedure and details of the consumables used shall be provided if requested by the Engineer. Pinning will not be accepted. The seats will be accurately faced to enable the conditions for testing.

## **BEARINGS**

The Tenderer shall give full particulars of the type of bearings offered and the method of lubrication. The main bearings shall be external and accessible without emptying the valve body. Bronze or gunmetal bearings are preferred.

## **COUNTER WEIGHTS**

The non-return valves shall be supplied with suitable designed counter weights and lever arms on each door shaft. The position of the counter weights shall be adjustable to ensure closure of the valve and to reduce any unnecessary stresses in the valve body doors.

The counter weights shafts shall be fitted with suitable bushes and glands and shall be so designed that the glands can be repacked during operational pressures equivalent to the Nominal pressure.

The doors and lever arms shall be desired to the shafts by suitable keys and keyways. The counter weight arm, shaft and keys shall be designed to enable the door to be lifted by applying manual leverage to the arm under balanced pressure conditions.

Each counter weight shall be designed and supplied with an end fixture to prevent the counter weights from accidentally sliding off the arm during operation or adjustment of the counter weights.

Details of the counter weight leverage designs shall be stated by the Tenderer in the Tender.

## **NOZZLE CHECK (NON-RETURN) VALVES**

Each valve shall be fitted with a disc that is designed to operate freely with the minimum loss of head (pressure). Tenderers shall state the minimum area of the opening through the valve and the estimated loss of head (pressure) through the valve when the velocity at the entrance is 1; 2; 2,5 and 3,5 metres per second.

### **PSL 3.10.4      PRESSURE REDUCING CONTROL VALVES**

Pressure reducing control valves (Clayton or similar approved by Engineer) shall be double flanged with ductile iron bodies and covers and shall have stainless steel internals. Flanges shall be drilled in accordance with SANS 1123 Table 1600 and rated for a minimum of 16 bar working pressure. The valve shall be supplied complete with valve position indicator and pressure gauge.

Valves shall be capable of modulating flows over a wide range without noise or vibration in order to achieve the desired reduction in outlet pressure by means of a diaphragm and pilot valve arrangement.

Valves shall be protected from corrosion by the application of a fusion bonded epoxy internal and external coating of dry film thickness not less than 250 microns.

Approval shall only be given for the specified or equivalent valves from well-established and well known manufacturers with a proven record of supply and service of equivalent products.

### **PSL 3.10.5      FLOW CONTROL VALVES**

Flow control valves (SINGER 106-RF or similar approved by Engineer) shall be double flanged with ductile iron bodies and covers and shall have stainless steel internals. Flanges shall be drilled in accordance with SANS 1123 Table 1600 and rated for a minimum of 16 bar working pressure. The valve shall be supplied complete with valve position indicator and pressure gauge.

The pilot shall be a normally open Rate of Flow Pilot that reacts to small changes in differential pressure across a downstream orifice plate, which acts to modulate the main valve bonnet pressure to hydraulically adjust the inner valve assembly position to maintain a maximum flow rate as a function of the orifice plate bore and differential pressure control setting.

### **PSL 3.10.6      STRAINERS**

Strainers shall be double flanged with cast steel bodies and covers and shall have stainless steel internals. Flanges shall be drilled in accordance with SANS 1123 Table 1600 and rated for a minimum of 16 bar working pressure. The function of the strainer is to protect the downstream pressure reducing valve from foreign debris and matter in the flow stream.

Strainers shall be protected from corrosion by the application of a fusion bonded epoxy internal and external coating of dry film thickness not less than 250 microns.

Approval shall only be given for the specified or equivalent strainers from well-established and well known manufacturers with a proven record of supply and service of equivalent products.

**Add the following Clauses:**

**PSL 3.12 METERS**

**PSL 3.12.1 FLOW METERS**

Water meters listed under this section shall be applicable to distribution pipework with diameters greater than DN160. Magnetic Flow Meters specified shall be IP68 rated Endress & Hauser or similar approved by Engineer magnetic flow type meters suitable for measuring flows in the ranges specified and for installation in a pipeline of diameter specified. The unit shall be capable of link up to the existing telemetry system and shall have 2 x 4 to 20mA outputs and two relays.

Measurement accuracy shall be within 0.2%. Maximum head loss through the meter and taper sections (if any) shall not be greater than 0.3m.

The rate tendered shall include for selection, supply and fitting of the meter with all necessary fittings and specials to fit the meter in a nominal specified diameter pipe, linking up to power supply, link up to the existing telemetry system located within 50m, including all necessary fittings and sundries to provide a complete working installation, testing and commissioning.

Mechanical flow meters, where specified, shall be able to provide pulsed output for continuous flow rate monitoring suitable for telemetry link-up. Flanged in-line strainers shall be provided with all mechanical flow meters installed. The strainers shall have removable components to allow access for cleaning and maintenance without removing the flanged strainer body.

The rate tendered shall include for selection, supply and fitting of the mechanical meter with all necessary fittings, specials and sundries to provide a complete working installation, testing and commissioning.

Supply and installation of strainers shall be measured separately.

### **PSL 3.12.2 WATER METERS**

Water Meters listed under this section shall be applicable to reticulation pipework with diameters less than DN160. The meters shall be of the semi-positive rotary piston volumetric type and be to Class C specification.

Bulk water meters shall be supplied and built into the meter chambers as detailed in the drawings. Fittings and the construction of the chambers will be measured elsewhere.

Water meters must comply with the SANS Specification No. 1529-1: 2006 and must be approved in terms of Section 18 of the Trade Metrology Act, Act No. 77 of 1973, as amended by the Trade Metrology Amendment Act, Act No. 42 of 1994.

All water meters offered must be tested and sealed by an authorised official in an SANS 17025 accredited laboratory, situated within the borders of the Republic of South Africa.

## **PSL 5 CONSTRUCTION**

### **PSL 5.1 LAYING**

#### **PSL 5.1.1 GENERAL**

*Add the following to sub-clause 5.1.1*

- a) The laying of pipelines shall be performed only by a qualified person who is registered by the company as an artisan in the plumbing or pipefitting trades or who is qualified by the reason of having attended and passed the course in pipe laying of the Civil Engineering Industry Training Board (CEITB).
- b) The pipes shall be off-loaded and placed on approved sandbag supports timeously provided at the pipe storage strip which has been cleared of all vegetation and treated with an effective weed killer. The sandbag supports shall be arranged so that the bearing area is adequate to prevent damage to the external coating and no portion of the coated pipe is in contact with the ground.

Approved sandbags are constructed from durable woven material of sufficient strength to maintain proper pipe support. They shall be filled with sand for concrete complying with the requirements. The volume of each sand bag shall be approximately 25 litres.

In the pipe trench, each pipe shall be laid on two rows of sandbags spaced sufficiently far apart to maintain a clearance under the pipe barrel of at least 200mm and to provide stable support while working on the pipe.

- c) Pipe-laying shall not be carried out in trenches which have not been approved by the Engineer.
- d) The pipes at all stages, shall be protected against damage, and shall be lifted by means of approved broad-band slings and spreader beams.
- e) The use of chains, wire ropes, etc, will not be permitted and the pipes shall be supported on sand bag supports provided by the Contractor while in the temporary laydown areas or when placed alongside the trench. (Sawdust filled bags shall not be used).
- f) Pipes shall be handled and laid in accordance with the manufacturer's specifications.
- g) When making joints or doing any other work inside the pipe, every care shall be taken to avoid damage to protective lining or coatings. Rubber matting or timber duck-boards at least 400mm wide shall protect the invert surfaces of the pipe when working inside the pipe. The coatings shall be protected during welding from weld spatter, hot slag, etc. using rubber matting.

#### Cleaning of Joints

Immediately prior to the installation of any section of pipe, all foreign matter of any nature and all protective material shall be removed from the surfaces that are to be in contact at joints, so as to leave thoroughly clean surfaces for metal-to-metal contact in the field joints.

#### Laying Pipe

Each pipe shall be accurately laid on the prepared bed to the required line and grade. In placing pipe in the trench, the pipe shall be held by an approved sling, at least 0.4m wide, and the pipe shall not be dragged on the bottom of the trench but shall be supported by the sling while being fitted to the adjacent pipe section.

After each pipe has been set into position it shall be attached to the adjoining pipe by means of an arc-welded joint. The use of dogs, clips, lugs or equivalent devices welded to the pipe for the purpose of forcing it into position will not be permitted.

h) Large changes in horizontal or vertical alignment of the pipeline will be accommodated by special bends as detailed on the drawings and/or Schedule of Quantities.

i) Small changes in horizontal or vertical alignment will be accommodated at the pipe joints. In no case shall the deflection exceed two thirds of the recommendations of the relevant SANS, BS or other relevant specification, or of the pipe manufacturer.

j) Except where otherwise indicated, no section of the water main shall be laid at a grade flatter than 0.5 percent. When the total length of completed water mains which have not yet been commissioned exceeds 500m, no further pipe laying shall take place without approval.

k) Before a pipe or special pipe section is placed in the trench the internal and external protective coatings shall be examined visually and by means of a holiday detector of the correct type and rating for the particular coating system. No pipe shall be laid without the permission of the Engineer's Representative. The Tenderer shall state in Returnable Schedule details of the equipment that will be provided to carry out holiday detection on the site.

Any manufacturing defects located in the coatings shall be reported immediately to the Engineer who will make arrangements for the repair of the defects.

Any damage to the sheathing caused during unloading or while the pipes are stored on the site the Contractor shall make the site good.

When making joints or doing any other work inside the pipe, every care shall be taken to avoid damage to protective lining or coatings. Rubber matting or timber duck-boards at least 400mm wide shall protect the invert surfaces of the pipe when working inside the pipe. The coatings shall be protected during welding from weld spatter, hot slag, etc. using rubber matting.

l) Each pipe shall be accurately laid on the prepared bed to the required line and grade. In placing pipe in the trench, the pipe shall be held by an approved sling, at least 0.4m wide, and the pipe shall not be dragged on the bottom of the trench but shall be supported by the sling while being fitted to the adjacent pipe section.

After each pipe has been set into position it shall be attached to the adjoining pipe by means of an arc-welded joint. The use of dogs, clips, lugs or equivalent devices welded to the pipe for the purpose of forcing it into position will not be permitted.

m) The Contractor shall remove any dents, which appear in the wall of the pipe, General: The pipes and specials shall be manufactured exclusively at the works of the Contractor or on site or by such makers as may be approved by the Engineer and at only one works unless otherwise agreed to by the Engineer in writing.

Pipe sections and specials shall be consecutively numbered from the commencement of fabrication. Each pipe section number shall be punched on the inside of the pipe at each end of the pipe and each circumferential weld made at the Contractor's works, to joint pipes, shall be marked with the welder's identifying stamp.

### **PSL 5.1.3 Keeping pipelines clean**

In addition to the provisions of Sub-clause 5.1.3 of SANS 1200 L the following shall apply:

Pipe laying operations and precautions taken during pipe laying shall be aimed at eliminating the necessity for cleaning of completed mains. However, should foreign matter have entered or remained in the pipelines, the Contractor shall arrange for the mains to be cleaned (at the Contractor's expense) to the satisfaction of the Engineer prior to testing.

### **PSL 5.1.4 Depth and Cover**

Add the following to sub-clause 5.1.4.1

During construction there shall be not less than 1 m of cover over the pipes where construction traffic is liable to cross the pipeline, Road crossings shall not be utilised until the construction of the road layers has reached the stage where 1 m cover over the pipe is available.

Where the actual clearance between pipe crossings or other services is less than the minimum clearance of 350 mm the main shall be laid beneath the service crossed at an invert level which allows for the minimum clearance. The main shall be laid horizontally at this level for a distance of at least 5.0 m on either side of the centreline of the service crossed and then gradually revert to the minimum cover as specified above.

No decrease in cover or clear space between the pipe barrels as specified will be permitted unless otherwise instructed by the Engineer in writing (This will apply throughout the pipeline route especially at the above ground crossings and sections preceding and succeeding the crossing areas).

A minimum cover of 1 m from natural ground level and maximum of 1.2 m to top of pipe shall be maintained throughout, unless otherwise specified or shown on the drawings.

## **PSL 5.2**

### **PSL 5.2.2 Flanges (Steel Pipelines)**

All flanges shall be installed with bolt holes off-centre and symmetrically off-set from the vertical centre line of the flange. Flanges shall be installed truly square to the axis of the pipe.

The Contractor shall ensure that the correct jointing materials, i.e gaskets, bolts and nuts are available when required. Only correct diameters and lengths of bolts and studs shall be used. Flat washers shall be used under all nuts. The length of bolts and studs shall be such that at least two threads protrude from the nut when fully tightened. The threads of bolts, studs and nuts shall be thoroughly cleaned and then coated with a graphite/grease compound immediately prior to assembly.

Flanged fittings shall be so installed that there are no stresses induced into the pipe work, specials or fittings by forcing ill-fitting units into position or by bolting up flanges with faces not uniformly in contact with their gaskets over their whole faces.

### **PSL 5.2.3 Welding (Steel pipelines of Diameter 600mm or greater)**

*Add the following:*

Welding joints shall be made in accordance with approved welding techniques and to the standard specified in API 1104.

#### **Butt welding of pipe joints**

All welding shall be electric fusion welding, be acceptable to the Engineer and shall comply with the following requirements:

(a) Uniformity of appearance: All welds shall be substantially uniform in appearance and shall show full fusion and penetration throughout their lengths.

(b) Undercut: Welds shall be substantially free from undercut and, if present,

(i) the depth of the undercut shall not exceed  $12\frac{1}{2}$  per cent of the nominal wall thickness or 1 mm, whichever is the lesser in depth and,

(ii) the aggregate length of undercut in any 1m length of welding shall not exceed 50mm.

(c) Weld bead tolerances: The outer weld bead shall not exceed a height of 3 mm for nominal wall thickness of 10 mm and under and shall not exceed a height of 5 mm in pipes having thicker walls. The inner weld bead shall not project more than 1 mm, and all excess weld metal shall be removed by grinding to the satisfaction of the Engineer.

For butt welds made from one side only a root groove may be present provided that it has a rounded outline and does not penetrate below the level of the adjacent surfaces of the parent plate.

(d) Freedom from defects: The weld, heat affected zone and surrounding parent metal shall be free from cracks, porosity cavities and trapped slag and other defects described in API Specification 5L.

(e) Transverse tensile strength of welded joint: The welded joint shall have an ultimate tensile strength at least equal to 95 per cent of the minimum tensile strength of the parent plate.

(f) Resistance to bending: Test specimens prepared and tested in accordance with Clause 5 shall show no crack (on the outer surface) greater in length than 5 mm in any direction.

#### Fillet welding of pipe joints

Fillet welding shall comply with the following requirements and the details of API 1104.

A visual inspection shall be carried out after cleaning the slag off every fillet weld before completion of the external coatings

Welds shall not have a concave surface. There shall be no undercutting of adjacent plate. Welds shall be free from cracks, slag intrusions and porosity.

### Testing for field welds (See also PSL 7.2)

The Contractor shall allow a specialist (to be nominated by the Engineer) to carry out radiographic examination, in accordance with American Petroleum Institute Standard 1104, of the full length of 10% of the circumferential welds made during installation of the pipeline, after 100% x-rays results have been accepted on the first 10 sequential joints. Should 100% pass rate not be achieved on these initial joints, x-rays shall continue to be taken until 10 sequential joints results are achieved.

Cracks, lack of complete penetration, or lack of complete fusion shall be considered injurious defects. The standard for acceptance of minor imperfections such as slag inclusions or gas pockets shall be that laid down in Clauses 6.5 and 6.6 of American Petroleum Institute Standard 1104

Any weld rejected as a result of radiographic examination shall be repaired by the Contractor and such repair shall be carried out in accordance with "Repairs" as below. The repaired weld shall be re-examined radiographically and re-examination shall extend for the full length of the weld in which the repair has been carried out.

### Repairs

Repairs of welded joints shall be permitted in accordance with approved repair procedures. Repairs shall be re-examined using the relevant non-destructive testing method. Where repairs are required the defective weld metal shall be cut out, and the parent metal prepared by grinding and re-welded to the satisfaction of the Engineer. All costs associated with the repair of defective welds will be borne by the Contractor

On discovery of rejected welds the Engineer may, at his discretion, call for additional radiographic examination at the Contractor's cost until it is shown that the necessary standard is being maintained.

### **Repairs to Main pipe coating following field welding**

#### Surface Preparation:

Adequate protection to undamaged coating shall be provided. The steel surface preparation shall be through abrasive grit blasting to Sa2½ (nearly white metal) of SIS 05 59 00 – 1967. The steel surface profile shall be between 50µm - 100µm following grit blasting. The method of preparation and cleaning of the steel pipe prior to applying the protective coating shall be

stated in the relevant Returnable Schedule. Full details shall be given for the removal of dust, rust, scale, etc.

#### Repairs to external coating

Coating shall be applied according to the qualities referred to for the initial application, albeit:

**RIGID POLYURETHANE EXTERNAL COATING** rigid 100% solid Poly-urethane 1:1mix.

**MODIFIED BITUMEN EXTERNAL COATING** (Bituguard)

**POLYETHYLENE EXTERNAL COATING**

Overlap should at least 25mm.

The following methodology may be considered by the Engineer:

The surface shall, following the surface preparation as above be treated with Denso Primer D in accordance with the Manufacturer's Specification. Subsequent to drying of the Primer, two successive layers of 300mm wide DensoTherm Tape shall be applied in accordance with the Manufacturer's Specification to a finished thickness of not less than 5mm on the external surface. All air bubbles shall be excluded and where necessary an approved bitumen mastic filler shall be used before applying the DensoTherm Tape.

## **PSL 5.6 VALVE AND HYDRANT CHAMBERS**

### **PSL 5.6.1 General**

*Add the following:*

The Contractor shall provide the Engineer with all relevant dimensions of valves fittings and specials for the purposes of finally sizing chambers and the designing of the reinforcement at least 40 working days prior to such sizes and reinforcement schedules being required. No extensions of time for delays resulting from failure to supply this information on time will be entertained. Any redesign costs due to supply of incorrect information will be to the Contractor's account.

## **PSL 5.10      DISINFECTION OF PIPELINE**

**Replace the Sub-clause with the following:**

### **Introduction**

The price for testing, flushing out and disinfecting pipelines and fittings is included in the schedule of items for supply and installation.

On completion of construction, after pressure testing and prior to commissioning the pipeline is to be flushed out and disinfected by the Contractor in accordance with this specification.

### **Definitions**

Within this document the term HYPOCHLORITE SOLUTION means a commercial solution of sodium hypochlorite containing 10 % to 15 % of available chlorine. Also, 10 % HYPOCHLORITE S

OLUTION means hypochlorite solution diluted one in ten with water which thus has approximately 1 % of available chlorine.

Bulk supplies of sodium hypochlorite solution (Chloros for instance), are supplied at 10 to 15% available chlorine. This fraction declines progressively as the hypochlorite decays to chloride, chlorate and oxygen. Assume in practice that there is only 10 % available chlorine.

Within this document AVAILABLE CHLORINE and all chlorine concentrations means FREE CHLORINE available to the water environment for its disinfection.

### **Completed installation**

Ensure that all water used for disinfection purposes has a free chlorine residual of at least 20 mg/l. Refer to Table 1 and 2 in the section on dosage of chlorinating agents.

During chlorination the pipeline shall be kept full of water.

## New mains

Do not connect any new main into supply until the water from designated sampling points, having stood in the main for at least 20 hrs and has met the criteria specified herein.

New mains are laid with the intention of ensuring as far as possible, the exclusion of debris and contamination, but presume at the disinfection stage that debris and contamination does exist and that this debris is resistant to disinfection, e.g. compacted soil or detritus at the joints.

The disinfection procedure, which should follow pressure testing, includes the following:

- (a) Swabbing and flushing of the main.
- (b) Soaking of the main for a minimum period of 20 hrs, using a minimum concentration of 20 mg/l of available chlorine in mains water.
- (c) Removal of excess chlorine by flushing the main.

## Dosage rates of chlorination agents

Tables 1 and 2 provide estimates of the minimum dose rates of sodium hypochlorite solution, chlorine gas or bleach powder, tablets or granules to achieve chlorine levels of 20 mg per litre when dilute mains water which has a zero chlorine demand.

**Table 1** – dosage for 1,000 m of pipeline to give 20 mg available chlorine per litre

| Pipe diameter | Volume of 1000m pipeline | Weight of bleaching powder granules or tablets to 20 mg/l | Weight of chlorine to give 20mg/l | Volume of hypochlorite solution to give 20 mg/l |
|---------------|--------------------------|-----------------------------------------------------------|-----------------------------------|-------------------------------------------------|
| mm            | m <sup>3</sup>           | gm                                                        | gm                                | litres                                          |

|     |       |        |      |      |
|-----|-------|--------|------|------|
| 50  | 1,9   | 80     | 40   | 0,4  |
| 75  | 4,4   | 180    | 90   | 0,8  |
| 100 | 7,9   | 320    | 160  | 1,5  |
| 150 | 17,7  | 700    | 350  | 3,5  |
| 200 | 31,4  | 1,260  | 630  | 6,2  |
| 250 | 49,1  | 2,000  | 980  | 9,7  |
| 300 | 70,7  | 2,800  | 1400 | 14,0 |
| 350 | 96,2  | 3,800  | 1900 | 19,0 |
| 400 | 125,6 | 5,000  | 2500 | 24,6 |
| 500 | 196,3 | 7,800  | 3900 | 38,4 |
| 600 | 282,6 | 11,200 | 5600 | 55,4 |

**Table 2** – dose rates for 20 mg available chlorine per litre

| Flow rate in pipeline* |                    | Hypochlorite solution injection rate for 20 mg/ℓ |        | Cholorine injection rate for 20mg/ℓ |
|------------------------|--------------------|--------------------------------------------------|--------|-------------------------------------|
| litres/sec             | m <sup>3</sup> /hr | litres/hr                                        | ml/sec | gm/hour                             |
| 1                      | 3,6                | 0,7                                              | 0,2    | 72                                  |
| 2                      | 7,2                | 1,4                                              | 0,4    | 144                                 |
| 3                      | 10,9               | 2,2                                              | 0,6    | 216                                 |
| 4                      | 14,4               | 2,9                                              | 0,8    | 288                                 |
| 5                      | 18,0               | 3,6                                              | 1,0    | 360                                 |
| 6                      | 21,6               | 4,3                                              | 1,2    | 430                                 |
| 7                      | 25,2               | 5,0                                              | 1,4    | 500                                 |
| 8                      | 28,8               | 5,8                                              | 1,6    | 576                                 |
| 9                      | 32,4               | 6,5                                              | 1,8    | 650                                 |

\* For flows greater than 9 litre/sec the dose rates can be calculated as follows:-

e.g flow of 186 litres/sec = 100+ 80+ 6= 100x1 +10x8 + 6 litres/sec

hypochlorite solution injection rate = 100x0.7 +10x 5.8 + 4,3 =70 + 58 +4.3 = 132,3 litres/hr

## Disposal of chlorinated water

When the pipeline has passed all disinfection criteria it must be drained without causing a hazard.

The following can be explored as possible methods of the disposal of the chlorinated water, and the most suitable method will be employed.

- Foul Sewer
- Overland
- Watercourse

### PSL 7 TESTING

#### PSL 7.1 GENERAL

##### Add the following:

The price for testing is included in the schedule of items for supply and installation.

#### PSL 7.2 INITIAL TESTS ON WELDED PIPES

##### Add the following:

Testing pressures for factory manufactured pipes:

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

$$P = \frac{2\,000 * t * f}{D}$$

Where,

$P =$  the test pressure in kPa.

$f =$  75 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 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 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 to pass the test.

The Engineer may require one or more pipes to be tested to destruction. If practicable the Engineer may require the Contractor to repair the pipes and retest them.

### **7.3.1 Test pressure and time of test**

#### **7.3.1.4 Replace with the following:**

Hydrostatic pressure test shall be done on portions of the completed pipeline at the following pressures at any point:

$$P = ( \text{Design Head} - \text{Elevation of pipe invert} ) \times 10$$

Both Design Head and Elevation measured in metres above mean sea level

P = test pressure in kPa

#### **7.3.1.5**

##### **Add the following:**

....and concrete pipes and steel pipes with cement mortar linings, each section shall be filled with water 24 hours before the test pressure is applied to ensure saturation of the pipeline.

A Hydrostatic testing plan and method statement shall be submitted for approval prior to testing.”

Hydrostatic Acceptance tests are to be carried out as detailed in the Hydrostatic Test Certificate as issued on site.

Following partial backfill and compaction (as minimum the completion of embedment having circumferential and non-factory joints exposed for inspection during and subsequent to hydrostatic in the field testing) hydrostatic testing shall be done in agreed sections with the Engineer.

On completion of the laying of the specific sections of the pipeline and associated structures, the Contractor shall, where necessary, supply temporary pressure testing domes, install and weld the domes on the end of the pipeline, make the necessary preparations, provide the testing equipment and carry out water tightness and structural strength tests of the pipeline system. The length of each section to be individually tested will be defined by the Engineer.

After filling the section to be tested the section shall be allowed to stand for a minimum of 24 hours before the test pressure is applied to ensure saturation of the pipeline.

### **7.3.2 Visible leaks**

#### **Add the following:**

The Contractor shall place the pipeline under a test pressure corresponding to the relevant design head for that section of the pipeline determined by interpolation from the design elevations from the mean seal level as indicated on the general long section and on the hydraulic long section. The test pressure shall be maintained until all circumferential welding joint and all joints that could not be tested in the factory have been inspected.

Any visible leak in the pipeline shall be made good by the Contractor. If any valve leaks it will be made tight by the supplier of the valve.

### 7.3.3 Permissible leakage rates

#### Add the following:

Water shall be fed into the system through a calibrated meter and the pressure in the system measured by a calibrated gauge. The Contractor shall provide the necessary pumping system, connection, meter gauges and labour. Each test shall continue for at least 8 hours. Any decrease in pressure shall be made up every hour and the quantity of makeup water measured. The pipeline will not be considered satisfactory until the average leakage rate is less than:

$$\text{Water absorption (Leakage) rate (litres per hour)} < 0.075 \times D(\text{mm}) \times L(\text{km}) \times P^{0.5}$$

D = Diameter of the pipeline portion to be tested (mm)

L = Length of the pipeline portion to be tested (km)

$P = ( \text{Design Head} - \text{Elevation of pipe invert} ) \times 10 \text{ (kPa)}$

If the average leakage per 8 hours from each individually tested section of the pipeline is greater than that specified, the Contractor shall take immediate steps to reduce the leakage and shall at his own expense do any excavating necessary to locate and repair leaks or other defects which may develop under test, including removal of backfill already placed, shall make all repairs necessary to secure the necessary water tightness, shall replace such excavated materials, after which the test shall be repeated until the pipe under test is found satisfactory.

Water used for one filling of the pipeline for hydraulic testing, one filling for disinfection and one filling after draining the disinfection water will be provided by the Employer free of charge. Additional water used due to unsuccessful hydraulic tests will be charged at R5.00 per kilolitre

Charging of the pipeline for hydraulic testing shall be carried out under the supervision of the Engineer.

The pipeline will have to be drained before the disinfection process begins and may need to be drained to carry out remedial measures. The pipeline shall be drained from scour valves

in a manner that does not cause erosion of the streambeds or negatively impact on the environment in any way. Any such drainage of the pipeline shall be carried out under the supervision of the Engineer.

The pipeline will be considered commissioned and practically complete once all associated structures have been sufficiently completed to carry out their structural or hydraulic function and the hydraulic test and disinfection of the entire pipeline have been successfully completed.

## **PSL 8                    MEASUREMENT AND PAYMENT**

### **PSL 8.2    SCHEDULED ITEMS**

#### **PSL 8.2.1   Supply, Lay and Bed Pipes Complete with Couplings**

*Add the following:*

“The pipeline should also be tested through acceptable and approved test methods by the Engineer. The steel pipe used should adhere to the specifications outlined in PSL 3.4.2. Pipeline to be joined by welding unless otherwise stated, but flanges suitable for SANS 1123 / BS4504 Class 16 pipes to be provided for future connections and for connections to fittings and valves. Rate to allow for non-destructive factory testing, corrosion protection, field repair and inspection of joints on site.

A maximum payment of 80% of the tendered rate shall be made for the completed section of pipeline which has not been hydraulically pressure tested and disinfected. A further payment of 15% of the tendered rate will be made upon successful completion of the pressure testing for the relevant section of pipeline. The final 5% of the tendered rate will be made upon completion of disinfection of the pipeline.

Notwithstanding the above, the rate for “supply, lay and bed pipes” excludes the cost associated with pressure testing and disinfection of the pipeline. Separate items have been included in the Bill of Quantities for the cost associated with pressure testing and disinfection of the pipeline.”

#### **PSL 8.2.2   Extra-over 8.2.1 for the Supplying, Laying and Bedding of Specials Complete with Couplings**

*Add the following:*

“The tendered rate shall include for the welded steel fittings (outside chambers) along the pipeline length. The fittings specifications should match those of the steel pipeline outline in PSL 3.4.2 Steel Pipeline. The fittings should also include any other non-steel specified fittings outside chambers such as HDPE, uPVC, GRP etc.”

**PSL 8.2.5 Supply and fit, incl. Bed, test and disinfect (for potable water) pipes, valves, and specials: (short pipe runs)**

*Add the following:*

“The tendered rate shall include for the supply, place, fixing, anchoring, bedding, installation and final testing of the respective assembly as shown on the drawings issued for construction. All assemblies contained hereunder shall require the approval of the Engineer once the assembly has been constructed and tested. Should the Engineer find a variance to the construction drawing, the specification or his discretion, the Contractor shall rectify the variance to the Engineer’s satisfaction

All fittings contained hereunder shall comply to that of those outlined in the project specification PSL 3.10 Valves. Should there be a variance to the installed fitting and that outlined in PSL 3.10 Valves or insufficient information, the Contractor shall require written approval from the Engineer before continuing with the Works.”

**PSL 8.2.11 Anchor blocks/Thrust blocks and pedestals**

*Insert "concrete" before "and" in the last line of the last paragraph.*

Notwithstanding Sub-clause 8.2.11 anchor/thrust blocks and pedestals will be measured only by volume of concrete to the net dimensions shown on the drawings or ordered. The rate shall cover the cost of excavation, concrete and formwork. Anchor blocks can also be in the form of structural steel lattice by which the measurement unit will be No. of lattices. This will be indicated on the drawings whether lattice or concrete thrust blocks will be used.

**PSL 8.2.16 Marker blocks:**

(a) Marker Blocks .....Unit: number

The tendered rate shall include full compensation for all excavation and backfill, labour, equipment and materials to manufacture and install the blocks as shown on the Drawings.

**PSL 8.2.17 Manholes:**

(a) Manholes .....Unit: number

The tendered rate shall provide for supply, installation and testing of manholes located at chamber access points.

## **SECTION PSLB:BEDDING (PIPES)** (Applicable to SANS 1200 LB - 1983)

### **PSLB 2.3      DEFINITIONS**

Main fill:

Delete "150 mm" in second line and substitute "300 mm".

### **PSLB 3          MATERIALS**

#### **PSLB 3.1      SELECTED GRANULAR MATERIAL**

(For bedding material for steel pipes see PSLB 3.3 below)

In the second line delete "19 mm" and substitute "10 mm".

Add to the Sub-Clause:

The maximum compactibility factor shall be 0,4.

#### **PSLB 3.2      SELECTED FILL MATERIAL**

Not required. All material up to the underside of backfill shall be measured as selected granular. (for bedding material for steel pipes see PSLB 3.3)

#### **PSLB 3.3      BEDDING**

Add to the Sub-Clause:

All steel pipes and fittings laid under this Contract will be considered as being flexible pipes. Bedding (selected granular and selected fill material) for steel pipes shall be fine sand or fine non-cohesive soil, carefully selected, with maximum particle size of 5 mm and which shall not cake nor form lumps when drying. Samples of bedding sand shall be submitted by the Contractor to the Engineer for approval well in advance of construction. Only after the Contractor has received written approval from the Engineer, may he/she proceed with placing sand as selected granular material.

No sharp-edged stones shall be allowed to come into contact with the pipes or fittings. Joint holes (pockets) shall be provided in the trench bottom and bedding, at each pipe joint to facilitate

welding, and no extra payment will be made for forming or filling the joint holes (pockets) with padding sand.

All bedding used for the cradle beneath and surrounding the coated steel pipes shall comply with the following requirements:

| ADING ANALYSIS RANGE |                    |
|----------------------|--------------------|
| SIEVE SIZE (mm)      | PERCENTAGE PASSING |
| 6,7                  | 98 to 100          |
| 4,76                 | 85 to 100          |
| 2,36                 | 55 to 95           |
| 1,18                 | 30 to 75           |
| 0,60                 | 20 to 50           |
| 0,425                | 16 to 38           |
| 0,30                 | 13 to 27           |
| 0,15                 | 5 to 18            |
| 0,075                | 0 to 12            |

The material shall be free of organic matter and shall have a compatibility factor of not more than 0.4. The material should be classified as silty to fine sand having a stiffness ratio of not less than 5,0 MPa. Furthermore, the origin of the materials should, preferably, be river transported since it is preferable that the larger grains (3,0 to 4,8 mm in size) be rounded and not sharp and angular.

The Contractor will be required to carry out his/her own quality control testing of the material to ensure that it meets the padding sand requirements and complies with this specification at all times. At least one grading analysis shall be carried out for every 100 lineal metres of bedding placed. The results of these tests shall be forwarded to the Engineer within 24 hours of completion of the test. Should the material not comply with the specification, the Contractor shall remove and replace it with approved material at his/her own cost.

Depending on the actual material supplied by the Contractor, the moisture content may be critical to enable satisfactory placing and compaction and the Contractor will be deemed to have allowed in his tendered rate for any and all adjustments required to the moisture content of the bedding material at all times.

Items have been provided in the Bill of Quantities for the provision of approved bedding sand from approved Commercial or other approved off-site sources for bedding sand.

No extra payment will be made for forming or filling joint holes (pockets).

#### **PSLB 3.4      SELECTION**

##### **PSLB 3.4.1      Suitable Material Available from Trench Excavation**

Delete the Sub-Clause and substitute the following:

The excavation of a pipe trench shall comply with the requirements of Sub-Clause 5.4 of SANS 1200 DB and the provisions of Sub-Clause 3.7 of SANS 1200 DB (in terms of which, for the purposes of providing bedding materials, the Contractor is not required to use selective methods of excavating) shall apply. Nevertheless, the Contractor shall take every reasonable precaution to avoid burying or contaminating material that is suitable and is required for bedding or covering the pipeline. If, in the opinion of the Engineer, bedding material can be produced from the excavated material, the Contractor shall, if so, ordered by the Engineer, screen or otherwise treat (as scheduled) the excavated material in order to produce material suitable for bedding (see also Sub-Clause PSLB 8.1.2).

#### **PSLB 5              CONSTRUCTION**

##### **PLSB 5.1          GENERAL**

##### **PSLB 5.1.2              DETAILS OF BEDDING**

Delete and replace with:

Pipes shall be bedded and protected in accordance with the details shown on construction drawings.

##### **PSLB 5.1.2.1 Stone Drainage Layer Beneath Bedding (New Sub-Clause)**

Add new Sub-Clause:

Where indicated on the drawings, or as otherwise indicated by the Engineer, a 200 mm thick layer of 19 mm stone shall be placed beneath the bedding layer to act as a drainage channel for excessive groundwater. This layer shall be wrapped in bidim and provided with outlet pipes if and where indicated.

#### **PSLB 5.1.4     Compacting**

Delete the second line and substitute:

top of the pipeline) shall be 93% mod AASHTO.

Add to Sub-Clause 5.1.4:

Steps will have to be taken by the Contractor to ensure that flexible pipes do not deform excessively in cross-section during and after construction and backfilling operations. The maximum deflection which will be acceptable at any stage during or after construction is 2% of the pipe diameter horizontally or vertically. The Contractor will be required to provide the necessary apparatus and to monitor deflection during construction.

Pipe deformations will only be maintained within the specified tolerances by correct backfilling practice. No heavy compaction equipment will be permitted for compaction of any pipe bedding, only pneumatic or hand rammers being acceptable. To this end, and to achieve the 93% compaction specified it is required that the bedding material be brought up evenly on either side of the pipe. The use of complete saturation of the material as a method of achieving the specified compaction may, subject to the Engineer's approval, be used. However, in this regard, Tenderers are advised that the presence of excessive quantities of water in the pipe trench could lead to flotation of the pipe.

Prior to the commencement of pipe laying the Contractor will be required to submit, to the Engineer, for his approval, his proposed methods of placing, and compacting methods which he proposes to implement in order to ensure compliance with the specification.

#### **PSLB 5.1.5                     Testing (New Sub-Clause)**

Flexible and flanged joints shall be left exposed with a minimum of 300 mm clearance around the bottom of the pipe during hydraulic pressure testing of the pipe to facilitate inspection.

#### **PSLB 5.2.5     Stone Bedding (New Sub-Clause)**

In areas where waterlogged conditions exist or where ordered by the Engineer, special drains consisting of a 150 mm thickness (See PSDB 5.5) of single sized stone with a geofabric filter surround ("Bidim" Grade A4 or similar approved) extending the full width of the trench shall be provided below the bedding to the pipes. The excavation for these drains will be measured in cubic metres at the contract rate applying to unsuitable excavation below the bottom of the trench. The stone filling will be paid for per cubic metre and the geofabric filter will be paid for per square metre. All measurements in this connection will be to a width equal to the base widths and depths ordered.

### **PSLB 5.3      Placing and Compacting Flexible Pipes**

#### **PSLB 5.3 (a) Bedding Cradle**

Delete the sub-clause and substitute the following:

The pipes shall be bedded on a minimum 100 mm thick layer of compacted granular bedding material on which a 50 mm thick layer of uncompacted granular bedding material has been placed and spread. Loose granular bedding material lying next to the pipe shall be placed into the haunch area and compacted with suitable hand tools (covered with rubber to prevent damage to the pipe coating), and additional selected granular material shall be added and compacted in 150 mm thick layers up to the mid point of the pipe diameter in the vertical plane. The remainder of the bedding i.e. the selected fill blanket, shall be placed in layers up the sides of the pipe, each layer being compacted until a level of 300 mm above the crown of the pipe is reached.

All bell (fox) holes shall be filled with bedding material.

#### **PSLB 5.3(b) Selected Fill Blanket**

Delete "200 mm" from title.

### **PSLB 6            TOLERANCES**

#### **PSLB 6.1        Moisture Content and Density**

Add to the Sub-Clause:

The permissible deviations applicable are to be those for Degree of Accuracy II class of work.

### **PSLB 8            MEASUREMENT AND PAYMENT**

#### **PSLB 8.1.3      Volume of Bedding Materials**

Add to the Sub-Clause:

- (c) The volume of bedding material shall be measured net i.e. the volume of the pipe is to be deducted.
- (d) No additional payment will be made for bedding material placed in bell (fox) holes

### **PSLB 8.1.6Free-haul**

*Delete the words "of 0,5 km" in the first line of this subclause.*

### **PSLB 8.2.1 Provision of Bedding from Trench Excavation**

Delete the Sub-Clause and substitute the following:

Without the need for screening:

- a) Selected granular material Unit : m<sup>3</sup>

The rates shall cover the cost of acquiring, from any point along the trench excavation as may be selected by the Engineer, bedding that complies with the relevant requirements of the specification, of delivering it to points alongside the trench spaced to suit the Contractor's methods of working, of making good any backfill deficiency from points where backfill has been acquired, and of disposing of displaced material.

Including for screening:

- b) Selected granular material Unit : m<sup>3</sup>

The rates shall cover the cost of screening or otherwise treating excavated material, at any point along the trench excavation as may be selected by the Engineer, in order to produce bedding that complies with the relevant specification, delivering it to points alongside the trench, spaced to suit the Contractor's methods of working, of making good any backfill deficiency there may be from points where screened backfill material has been acquired, and of disposing of displaced material.

### **PSLB 8.2.2 Provision of Bedding by Importation**

Delete the sub-clause and substitute the following:

Including for screening and/or other treatment:

- a) Selected granular material Unit : m<sup>3</sup>

- b) Bedding sand to specified bedding dimensions Unit : m<sup>3</sup>

The rates shall cover the cost of acquiring, loading, transporting, offloading, screening or otherwise treating excavated material in order to produce bedding that complies with the relevant specification, delivering it to points alongside the trench spaced to suit the Contractor's methods of working and of disposing of displaced material.

**NOTE:** The rate for the supply and laying of pipelines covers the cost of handling the bedding material from alongside the trench, placing it under the pipeline, forming joint holes and completing the bedding around and over the pipeline.

### **PSLB 8.2.3 Concrete Bedding Cradle**

Add the following paragraph to the Sub-Clause:

All concrete bedding to pipes will require formwork. The rate for concrete bedding shall include for the supply, installation and stripping of all formwork.

### **PSLB 8.2.4 Encasing of Pipes in Concrete**

Delete the fifth and sixth lines and substitute the following:

encasing the pipe in concrete 150mm thick each side of the pipe and to 150mm above the crown of the pipe including the cost of formwork, (if any), etc. and the cost of formwork to form stop ends on either side of collars, couplings, joints etc if instructed by the Engineer.

The rate for concrete encasing shall include for the supply, installation and stripping of all formwork.

### **PSLB 8.2.5 Overhaul of Material for Bedding Cradle and Selected Fill Blanket**

Delete the sub-clause.

### **PSLB 8.2.6 Drainage Layer (New Sub-Clause)**

Add the new sub-clause:

Supply and place beneath pipe, 150mm crushed stone layer as ground water drainage layer. The excavation for these drains will be measured in cubic metres at the tendered rate applying to unsuitable excavation below the bottom of the trench (SANS 1200 DB 8.3.2 c).

The rate for stone filling shall be per cubic metre of stone fill, measured according to a width equal to the base widths and depths ordered. Unit : m<sup>3</sup>

Supply and installation of geofabric filter material (BIDIM Grade A4 or similar) around stone. The rate shall be per square metre of geofabric to enclose the stone material, measured net according to a width equal to the base widths and depths ordered. Unit : m

## DRAWINGS LIST

| Description of Drawing                                           | Drawing Number               |
|------------------------------------------------------------------|------------------------------|
| Site layout plan                                                 | 2023/CG/1080/10CV/014/001/01 |
| Cell longitudinal Section Road 02 CH 500 – CH 1035               | 2023/CG/1080/10CV/035/002/02 |
| Cell longitudinal Section Road 03                                | 2023/CG/1080/10CV/035/002/03 |
| Cell longitudinal Section Road 04 + Road 05 + Road 06            | 2023/CG/1080/10CV/035/002/04 |
| Road Details                                                     | 2023/CG/1080/10CV/035/012/01 |
| Cell road layout plan, longitudinal section and setting out data | 2023/CG/1080/10CV/035/002/01 |
| Cell G stormwater layout plan and setting out data               | 2023/CG/1040/30D/035/003/01  |
| Stormwater detail sheet of 01 of 03                              | 2023/CG/1080/10CV/050/011/01 |
| Stormwater detail sheet of 02 of 02                              | 2023/CG/1080/10CV/050/011/02 |
| Stormwater detail sheet of 03 of 03                              | 2023/CG/1080/10CV/050/011/03 |
| Cell G stormwater longitudinal sections                          | 2023/CG/1040/30D/035/003/02  |
| Road marking layouts                                             | 2023/CG/1080/10CV/035/009/01 |
| Information Board                                                | 2023/CG/1200/10CV/035/010/01 |
| Proposed Guardhouse Details                                      | 1321/100                     |
| Foundation Layout + Reinforcement Details of Guardhouse          | 1321/300                     |
| Guardhouse Surface Bed Layout + Details                          | 1321/301                     |
| Septic Tank + Soakaway Details                                   | 1321/SK01                    |
| Sliding Gate Details                                             | 1321/SK02                    |

The Principal Contractor will receive 3 sets of construction drawings, of which 1 set shall be designated for as-built records and updated by the Principal Contractor on a daily basis. The latter shall be:

- Made available to the Engineer or his/her duly authorised representative within 24 hours on request.
- Submitted to the Engineer with the completion of each project

*Take note:* The information contained in the drawings, relating to the position, material and size of the existing services, may not be 100% accurate,

**PS4** - Remove existing prefabricated and relocate to JHB Zoo ( $\pm$  50km).

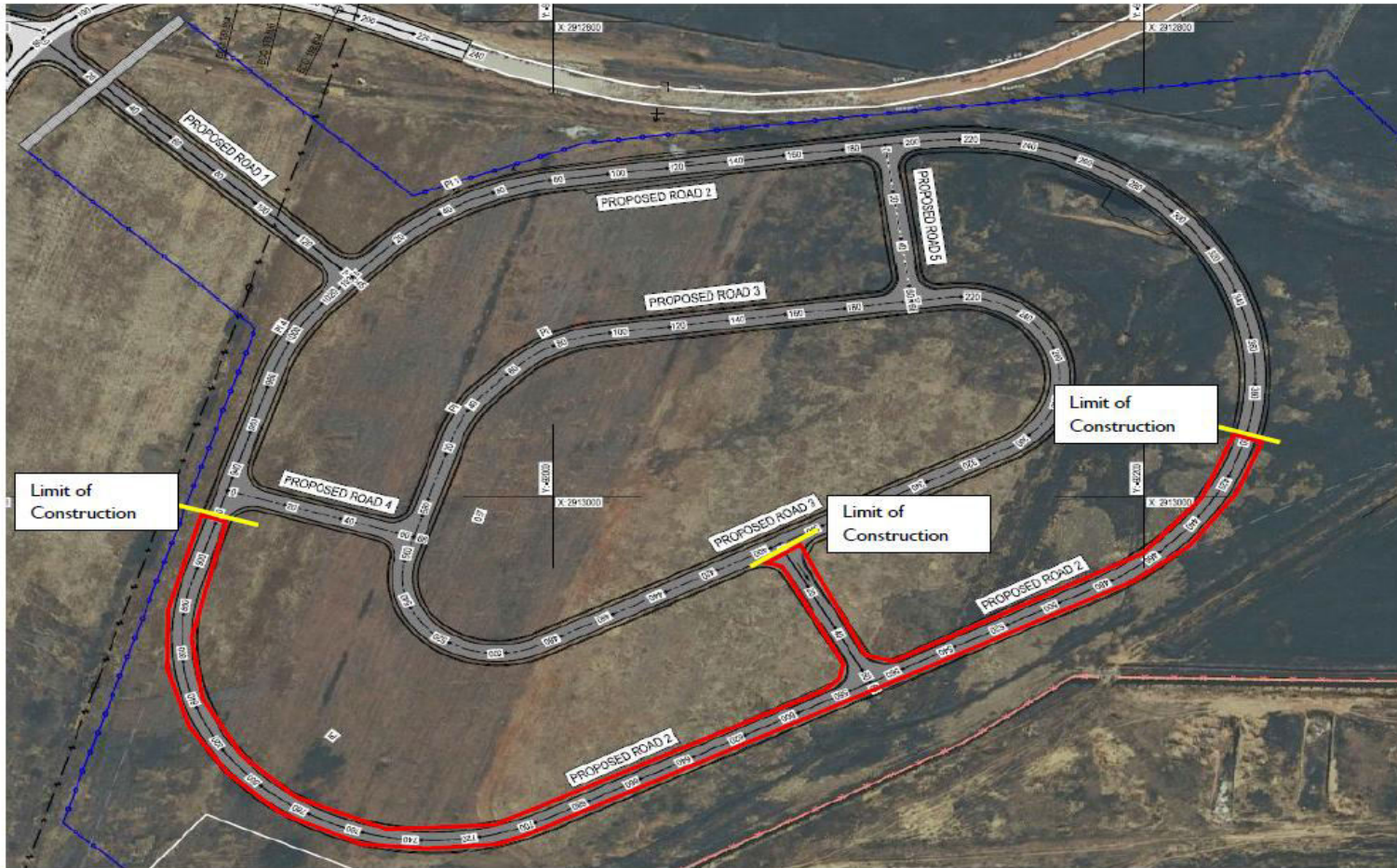
**PS5- New Guardhouse + Septic Tank + Soakaway + Entrance + Electricity**

The unit of measurement shall be as per the BOQ (Bill of Quantities).

These rates shall include full compensation including costs for all, plant, labour, materials and interim protection measures, loading, transporting and offloading required to undertake this operation and as directed by the Engineer on Site.

**Please refer to the following Drawings:**

| Description of Drawing                                  | Drawing Number |
|---------------------------------------------------------|----------------|
| Proposed Guardhouse Details                             | 1321/100       |
| Foundation Layout + Reinforcement Details of Guardhouse | 1321/300       |
| Guardhouse Surface Bed Layout + Details                 | 1321/301       |
| Septic Tank + Soakaway Details                          | 1321/SK01      |
| Sliding Gate Details                                    | 1321/SK02      |



# **FUNCTIONALITY ASSESMENT TABLE: \***

(A bidder who obtained the minimum threshold for Functionality of 70 points will be considered further)

| Description of Evaluation and Evidence Required                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Weights | Total Weight  | Points                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------------|--------------------------|
| <p><b>Qualifications, certification &amp; experience of permanent key site personnel</b> (person in charge of site upon handover &amp; decision making)</p> <p>Provide detailed CV indicating qualifications &amp; experience in:</p> <ul style="list-style-type: none"> <li>- Civil Engineering &amp; Civil Works Construction</li> <li>- <b>AND</b> attach compulsory full delegation of authority letter, (if CV &amp; Qualifications is not for the owner of the company)</li> <li>- <b>Note 1: Should Key site personnel be replaced the second candidate to have the same or exceed the qualification/ experience.</b></li> <li>- <b>Note 2: CV and qualifications provided below must be for the same person in order to score points.</b></li> <li>- <b>Note 3: if qualifications / registration submitted below differs from the key personnel on CV, no points will be scored.</b></li> </ul> <p><i>Appropriate &amp; recently <b>certified</b> Qualifications of permanent key site personnel in Civil Work / Road Construction. (stamp not older than 3 months from tender closing date)</i></p> <ul style="list-style-type: none"> <li>- National Diploma or higher up to Doctoral Degree</li> <li>- Certification of Construction Management / Civil Engineering or Higher from SACPCMP / ECSA or any recognized institution under the Council for the Built Environment in the engineering field (registration number required for verification with the registration body).</li> </ul> |         | Name Surname  |                          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |         | Maximum score | CIVIL WORKS CONSTRUCTION |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |         |               |                          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |         |               | DOA attached             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |         |               | Scored points            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |         | 10            |                          |
| <p><b>COMPANY EXPERIENCE in CIVIL CONSTRUCTION development (CE)</b></p> <p>Number of years of company providing construction in civil / road construction works. Provide company profile indicating number of years, project start &amp; end date, names &amp; contacts of clients serviced in line with <b>Final Completion Certificates</b> submitted below. Company cannot score points on number of years if failed to submit supporting Final Completion certificates requested below.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 5/10    |               |                          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 10/10   |               |                          |
| 1 to 3 years                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 15/25   | 25            |                          |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                           |                                           |                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-------------------------------------------|----------------------|
| 4 to 8 years<br>9 years and above<br>Note: number of years providing construction in civil / road construction will only be calculated based on when the first civil construction was done up to when the last project was completed – not on when the company was registered.                                                                                                                                                                                                                                                                                           | 20/25<br>25/25            |                                           |                      |
| <b>Number of CIVIL CONSTRUCTION projects completed.</b><br><br>Provide signed <b>Final Completion Certificates</b> as related to civil / road construction works with <b>contactable</b> references, nature of work & date of completion as listed on the above company profile.<br><br>1 to 3 Final Completion certificates<br>4 to 8 Final Completion certificates<br>9 and above final completion certificate<br><b>N.B –Final Completion Certificates not listed on company profile will NOT be considered.</b><br><br><b>NO REFERENCE LETTERS WILL BE ACCEPTED.</b> | 15/25<br>20/ 25<br>25/ 25 | <b>Maximum score</b><br><br><br><b>25</b> | <b>Scored points</b> |
| <b>Submit a detailed WORK PROGRAMME for project specific scope of work.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                           |                                           |                      |
| <b>-No programme or poorly detailed programme.</b> <ul style="list-style-type: none"> <li>Not related to project scope/ No specific scope of project captured</li> <li>Incorrect project activities sequencing</li> <li>No project duration recognized/adhered to.</li> </ul>                                                                                                                                                                                                                                                                                            | 0/10                      |                                           |                      |
| <b>-Detailed programme.</b> (Sequence follows in logical order. Works that run parallel are indicated. All main items listed in the BOQ are included). <ul style="list-style-type: none"> <li>Specific project scope captured.</li> <li>Good project activities sequencing from the BOQ.</li> <li>Parallel tasks identification (if any)</li> <li>Project duration recognized/adhered to.</li> </ul>                                                                                                                                                                     | 7/10                      |                                           |                      |
| <b>-Detailed programme with critical path-</b> (is indicated and is within the timeframe allowed) <ul style="list-style-type: none"> <li>Specific project scope captured.</li> <li>Good project activities sequencing from the BOQ.</li> <li>Parallel tasks identification (if any)</li> </ul>                                                                                                                                                                                                                                                                           | 10/10                     | <b>10</b>                                 |                      |

- [illegible]

## INVITATION TO BID

|                                                                                                                                                              |                                                                 |               |                                                                                                            |               |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|---------------|------------------------------------------------------------------------------------------------------------|---------------|--|
| <b>YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF THE (NAME OF MUNICIPALITY/ MUNICIPAL ENTITY)</b>                                                        |                                                                 |               |                                                                                                            |               |  |
| BID NUMBER:                                                                                                                                                  |                                                                 | CLOSING DATE: |                                                                                                            | CLOSING TIME: |  |
| DESCRIPTION                                                                                                                                                  |                                                                 |               |                                                                                                            |               |  |
| <b>THE SUCCESSFUL BIDDER WILL BE REQUIRED TO FILL IN AND SIGN A WRITTEN CONTRACT FORM (MBD7).</b>                                                            |                                                                 |               |                                                                                                            |               |  |
| BID RESPONSE DOCUMENTS MAY BE DEPOSITED IN<br>THE BID BOX SITUATED AT (STREET ADDRESS                                                                        |                                                                 |               |                                                                                                            |               |  |
| Johannesburg City Parks and Zoo                                                                                                                              |                                                                 |               |                                                                                                            |               |  |
| City Parks House, Ground Floor                                                                                                                               |                                                                 |               |                                                                                                            |               |  |
| 40 De Korte Street                                                                                                                                           |                                                                 |               |                                                                                                            |               |  |
| Braamfontein                                                                                                                                                 |                                                                 |               |                                                                                                            |               |  |
| Johannesburg                                                                                                                                                 |                                                                 |               |                                                                                                            |               |  |
| <b>SUPPLIER INFORMATION</b>                                                                                                                                  |                                                                 |               |                                                                                                            |               |  |
| NAME OF BIDDER                                                                                                                                               |                                                                 |               |                                                                                                            |               |  |
| POSTAL ADDRESS                                                                                                                                               |                                                                 |               |                                                                                                            |               |  |
| STREET ADDRESS                                                                                                                                               |                                                                 |               |                                                                                                            |               |  |
| TELEPHONE NUMBER                                                                                                                                             | CODE                                                            |               | NUMBER                                                                                                     |               |  |
| CELLPHONE NUMBER                                                                                                                                             |                                                                 |               |                                                                                                            |               |  |
| FACSIMILE NUMBER                                                                                                                                             | CODE                                                            |               | NUMBER                                                                                                     |               |  |
| E-MAIL ADDRESS                                                                                                                                               |                                                                 |               |                                                                                                            |               |  |
| VAT REGISTRATION NUMBER                                                                                                                                      |                                                                 |               |                                                                                                            |               |  |
| TAX COMPLIANCE STATUS                                                                                                                                        | TCS PIN:                                                        |               | OR                                                                                                         | CSD No:       |  |
| B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE [TICK APPLICABLE BOX]                                                                                           | <input type="checkbox"/> Yes<br><br><input type="checkbox"/> No |               | B-BBEE STATUS LEVEL SWORN AFFIDAVIT<br><br><input type="checkbox"/> Yes<br><br><input type="checkbox"/> No |               |  |
| <b>[A VALID CK DOCUMENT AND SHARE CERTIFICATE AS WELL AS RATES AND TAXES OR LEASE AGREEMENT MUST BE SUBMITTED IN ORDER TO QUALIFY FOR PREFERENCE POINTS]</b> |                                                                 |               |                                                                                                            |               |  |

|                                                                                                      |                                                                                    |                                                                                 |                                                                                        |
|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| <b>ARE YOU THE ACCREDITED REPRESENTATIVE IN SOUTH AFRICA FOR THE GOODS /SERVICES /WORKS OFFERED?</b> | <input type="checkbox"/> Yes <input type="checkbox"/> No<br>[IF YES ENCLOSE PROOF] | <b>ARE YOU A FOREIGN BASED SUPPLIER FOR THE GOODS /SERVICES /WORKS OFFERED?</b> | <input type="checkbox"/> Yes <input type="checkbox"/> No<br>[IF YES, ANSWER PART B:3 ] |
| <b>TOTAL NUMBER OF ITEMS OFFERED</b>                                                                 |                                                                                    | <b>TOTAL BID PRICE</b>                                                          | R                                                                                      |
| <b>SIGNATURE OF BIDDER</b>                                                                           | .....                                                                              | <b>DATE</b>                                                                     |                                                                                        |
| <b>CAPACITY UNDER WHICH THIS BID IS SIGNED</b>                                                       |                                                                                    |                                                                                 |                                                                                        |
| <b>BIDDING PROCEDURE ENQUIRIES MAY BE DIRECTED TO:</b>                                               |                                                                                    | <b>TECHNICAL INFORMATION MAY BE DIRECTED TO:</b>                                |                                                                                        |
| DEPARTMENT                                                                                           | Supply Chain Management                                                            | CONTACT PERSON                                                                  | Solomon Sumbane                                                                        |
| CONTACT PERSON                                                                                       | Derrick Hlatshwayo                                                                 | TELEPHONE NUMBER                                                                | 067 774 7326                                                                           |
| TELEPHONE NUMBER                                                                                     | 011-712 6625                                                                       | FACSIMILE NUMBER                                                                |                                                                                        |
| FACSIMILE NUMBER                                                                                     |                                                                                    | E-MAIL ADDRESS                                                                  | <a href="mailto:ssumbane@jhbcityparks.com">ssumbane@jhbcityparks.com</a>               |
| E-MAIL ADDRESS                                                                                       | <a href="mailto:dhlathwayo@jhcityparks.com">dhlathwayo@jhcityparks.com</a>         |                                                                                 |                                                                                        |

## TERMS AND CONDITIONS FOR BIDDING

### 1. BID SUBMISSION:

- 1.1. BIDS MUST BE DELIVERED BY THE STIPULATED TIME TO THE CORRECT ADDRESS. LATE BIDS WILL NOT BE ACCEPTED FOR CONSIDERATION.
- 1.2. **ALL BIDS MUST BE SUBMITTED ON THE OFFICIAL FORMS PROVIDED–(NOT TO BE RE-TYPED) OR ONLINE**
- 1.3. THIS BID IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2022, THE GENERAL CONDITIONS OF CONTRACT (GCC) AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT.

### 2. TAX COMPLIANCE REQUIREMENTS

- 2.1 BIDDERS MUST ENSURE COMPLIANCE WITH THEIR TAX OBLIGATIONS.
- 2.2 BIDDERS ARE REQUIRED TO SUBMIT THEIR UNIQUE PERSONAL IDENTIFICATION NUMBER (PIN) ISSUED BY SARS TO ENABLE THE ORGAN OF STATE TO VIEW THE TAXPAYER'S PROFILE AND TAX STATUS.
- 2.3 APPLICATION FOR THE TAX COMPLIANCE STATUS (TCS) CERTIFICATE OR PIN MAY ALSO BE MADE VIA E-FILING. IN ORDER TO USE THIS PROVISION, TAXPAYERS WILL NEED TO REGISTER WITH SARS AS E-FILERS THROUGH THE WEBSITE [WWW.SARS.GOV.ZA](http://WWW.SARS.GOV.ZA).
- 2.4 FOREIGN SUPPLIERS MUST COMPLETE THE PRE-AWARD QUESTIONNAIRE IN PART B:3.
- 2.5 BIDDERS MAY ALSO SUBMIT A PRINTED TCS CERTIFICATE TOGETHER WITH THE BID.
- 2.6 IN BIDS WHERE CONSORTIA / JOINT VENTURES / SUB-CONTRACTORS ARE INVOLVED, EACH PARTY MUST SUBMIT A SEPARATE TCS CERTIFICATE / PIN / CSD NUMBER.
- 2.7 WHERE NO TCS IS AVAILABLE BUT THE BIDDER IS REGISTERED ON THE CENTRAL SUPPLIER DATABASE (CSD), A CSD NUMBER MUST BE PROVIDED.

### 3. QUESTIONNAIRE TO BIDDING FOREIGN SUPPLIERS

- 3.1. IS THE ENTITY A RESIDENT OF THE REPUBLIC OF SOUTH AFRICA (RSA)? ☐ YES ☐ NO
- 3.2. DOES THE ENTITY HAVE A BRANCH IN THE RSA? ☐ YES ☐ NO
- 3.3. DOES THE ENTITY HAVE A PERMANENT ESTABLISHMENT IN THE RSA? ☐ YES ☐ NO
- 3.4. DOES THE ENTITY HAVE ANY SOURCE OF INCOME IN THE RSA? ☐ YES ☐ NO
- 3.5. IS THE ENTITY LIABLE IN THE RSA FOR ANY FORM OF TAXATION? ☐ YES ☐ NO

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

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

SIGNATURE OF BIDDER: .....

CAPACITY UNDER WHICH THIS BID IS SIGNED: .....

DATE: .....



**PRICING SCHEDULE – FIRM PRICES  
(PURCHASES)**

**NOTE: ONLY FIRM PRICES WILL BE ACCEPTED. NON-FIRM PRICES (INCLUDING PRICES SUBJECT TO RATES OF EXCHANGE VARIATIONS) WILL NOT BE CONSIDERED**

**IN CASES WHERE DIFFERENT DELIVERY POINTS INFLUENCE THE PRICING,  
A SEPARATE PRICING SCHEDULE MUST BE SUBMITTED FOR EACH DELIVERY  
POINT**

|                     |                    |
|---------------------|--------------------|
| Name of Bidder..... | Bid Number.....    |
| Closing Time .....  | Closing Date ..... |

OFFER TO BE VALID FOR **30 DAYS** FROM THE CLOSING DATE OF BID.

| ITEM NO.                                                                                                                                                                                                                                                                                 | QUANTITY<br>(QTY) | DESCRIPTION | UNIT PRICE<br>(P) | TOTAL PRICE<br>(QTY*P) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------|-------------------|------------------------|
|                                                                                                                                                                                                                                                                                          |                   |             |                   |                        |
|                                                                                                                                                                                                                                                                                          |                   |             |                   |                        |
|                                                                                                                                                                                                                                                                                          |                   |             |                   |                        |
|                                                                                                                                                                                                                                                                                          |                   |             |                   |                        |
|                                                                                                                                                                                                                                                                                          |                   |             |                   |                        |
| <b>SUB-TOTAL</b>                                                                                                                                                                                                                                                                         |                   |             |                   | <b>R</b>               |
| <b>VAT AT 15%</b>                                                                                                                                                                                                                                                                        |                   |             |                   | <b>R</b>               |
| <b>GRAND TOTAL (BID PRICE IN RSA CURRENCY WITH ALL APPLICABLE TAXES INCLUDED)</b>                                                                                                                                                                                                        |                   |             |                   | <b>R</b>               |
| I (full name) _____, in my capacity as _____,<br>the duly authorized representative of _____ (company<br>name) hereby declares that the offer is in accordance with the attached specification, notes to<br>suppliers & accepts all conditions/ clauses contained in the said documents. |                   |             |                   |                        |
| Signature of duly authorized representative                                                                                                                                                                                                                                              |                   |             | Date:             |                        |

- 
- Required by: .....
  - At: .....  
.....
  - Brand and Model .....
  - Country of Origin .....
  - Does the offer comply with the specification(s)? \*YES/NO
  - If not to specification, indicate deviation(s) .....
  - Period required for delivery .....  
\*Delivery: Firm/Not firm
  - Delivery basis .....

Note: All delivery costs must be included in the bid price, for delivery at the prescribed destination.

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

\*Delete if not applicable

## DECLARATION OF INTEREST

1. No bid will be accepted from persons in the service of the state<sup>1</sup>.
2. Any person, having a kinship with persons in the service of the state, including a blood relationship, may make an offer or offers in terms of this invitation to bid. In view of possible allegations of favouritism, should the resulting bid, or part thereof, be awarded to persons connected with or related to persons in service of the state, it is required that the bidder or their authorised representative declare their position in relation to the evaluating/adjudicating authority.

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

- 3.1 Full Name of bidder or his or her representative:.....
- 3.2 Identity Number: .....
- 3.3 Position occupied in the Company (director, trustee, hareholder<sup>2</sup>):.....
- 3.4 Company Registration Number: .....
- 3.5 Tax Reference Number:.....
- 3.6 VAT Registration Number: .....
- 3.7 The names of all directors / trustees / shareholders members, their individual identity numbers and state employee numbers must be indicated in paragraph 4 below.
- 3.8 Are you presently in the service of the state? **YES / NO**
- 3.8.1 If yes, furnish particulars. ....
- .....

<sup>1</sup>MSCM Regulations: "in the service of the state" means to be –

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

<sup>2</sup> Shareholder” means a person who owns shares in the company and is actively involved in the management of the company or business and exercises control over the company.

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

3.9.1 If yes, furnish particulars.....

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

3.10.1 If yes, furnish particulars.....

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

3.11.1 If yes, furnish particulars

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

3.12.1 If yes, furnish particulars.

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

3.13.1 If yes, furnish particulars.

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

3.14.1 If yes, furnish particulars:

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

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

.....  
**Signature**

.....  
**Date**

.....  
**Capacity**

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

**DECLARATION FOR PROCUREMENT ABOVE R10 MILLION (ALL APPLICABLE TAXES INCLUDED)**

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

1 Are you by law required to prepare annual financial statements for auditing? **\*YES / NO**

1.1 If yes, submit audited annual financial statements for the past three years or since the date of establishment if established during the past three years.

.....

.....

2 Do you have any outstanding undisputed commitments for municipal services towards any municipality for more than three months or any other service provider in respect of which payment is overdue for more than 30 days?

**\*YES / NO**

2.1 If no, this serves to certify that the bidder has no undisputed commitments for municipal services towards any municipality for more than three months or other service provider in respect of which payment is overdue for more than 30 days.

2.2 If yes, provide particulars.

.....

.....

.....

.....

\* Delete if not applicable

3 Has any contract been awarded to you by an organ of state during the past five years, including particulars of any material non-compliance or dispute concerning the execution of such contract?

**\* YES / NO**

3.1 If yes, furnish particulars

.....

.....

4. Will any portion of goods or services be sourced from outside the Republic, and, if so, what portion and whether any portion of payment from the municipality / municipal entity is expected to be transferred out of the Republic?

**\*YES / NO**

4.1 If yes, furnish particulars

.....

.....

### **CERTIFICATION**

**I, THE UNDERSIGNED (NAME)** .....

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

**I ACCEPT THAT THE STATE MAY ACT AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.**

.....  
Signature

.....  
Date

.....  
Position

.....  
Name of Bidder

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

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

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

### 1. GENERAL CONDITIONS

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

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

### 1.2 To be completed by the organ of state

*(delete whichever is not applicable for this tender).*

- a) The applicable preference point system for this tender is the **90/10** preference point system.
- b) The applicable preference point system for this tender is the **80/20** preference point system.
- c) Either the **90/10 or 80/20 preference point system** will be applicable in this tender. The lowest/ highest acceptable tender will be used to determine the accurate system once tenders are received.

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

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

### 1.4 To be completed by the organ of state:

The maximum points for this tender are allocated as follows:

|                                                  | POINTS     |
|--------------------------------------------------|------------|
| <b>PRICE</b>                                     | 80         |
| <b>SPECIFIC GOALS:</b>                           | 20         |
|                                                  |            |
| <b>Total points for Price and SPECIFIC GOALS</b> | <b>100</b> |

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

1.6 The organ of state reserves the right to require of a tenderer, either before a tender is

adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the organ of state.

## 2. DEFINITIONS

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

## 3. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES

### 3.1. POINTS AWARDED FOR PRICE

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

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

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

Where

Ps = Points scored for price of tender under consideration

Pt = Price of tender under consideration

Pmin = Price of lowest acceptable tender

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

## GENERATING PROCUREMENT

### 3.2.1. POINTS AWARDED FOR PRICE

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

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

Where

- Ps = Points scored for price of tender under consideration  
Pt = Price of tender under consideration  
Pmax = Price of highest acceptable tender

## 4. POINTS AWARDED FOR SPECIFIC GOALS

- 4.1. In terms of Regulation 4(2); 5(2); 6(2) and 7(2) of the Preferential Procurement Regulations, preference points must be awarded for specific goals stated in the tender. For the purposes of this tender the tenderer will be allocated points based on the goals stated in table 1 below as may be supported by proof/ documentation stated in the conditions of this tender:
- 4.2. In cases where organs of state intend to use Regulation 3(2) of the Regulations, which states that, if it is unclear whether the 80/20 or 90/10 preference point system applies, an organ of state must, in the tender documents, stipulate in the case of—
- (a) an invitation for tender for income-generating contracts, that either the 80/20 or 90/10 preference point system will apply and that the highest acceptable tender will be used to determine the applicable preference point system; or
  - (b) any other invitation for tender, that either the 80/20 or 90/10 preference point system will apply and that the lowest acceptable tender will be used to determine the applicable preference point system,
- then the organ of state must indicate the points allocated for specific goals for both the 90/10 and 80/20 preference point system.

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

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

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

| The specific goals allocated points in terms of this tender                                               | Number of points allocated (90/10 system)<br>(To be completed by the organ of state) | Number of points allocated (80/20 system)<br>(To be completed by the organ of state) | Number of points claimed (90/10 system)<br>(To be completed by the tenderer) | Number of points claimed (80/20 system)<br>(To be completed by the tenderer) |
|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| Price                                                                                                     | N/A                                                                                  | 80                                                                                   | N/A                                                                          |                                                                              |
| <b>Specific Goals 1:</b><br>Business owned by 51% or more – Women                                         | N/A                                                                                  | 10                                                                                   | N/A                                                                          |                                                                              |
| <b>Specific Goals 2:</b><br>Enterprises located within the City of Johannesburg Metropolitan Municipality | N/A                                                                                  | 10                                                                                   | N/A                                                                          |                                                                              |
|                                                                                                           |                                                                                      |                                                                                      |                                                                              |                                                                              |
|                                                                                                           |                                                                                      |                                                                                      |                                                                              |                                                                              |
|                                                                                                           |                                                                                      |                                                                                      |                                                                              |                                                                              |
|                                                                                                           |                                                                                      |                                                                                      |                                                                              |                                                                              |

#### DECLARATION WITH REGARD TO COMPANY/FIRM

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

4.4. Company registration number: .....

4.5. TYPE OF COMPANY/ FIRM

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

[TICK APPLICABLE BOX]

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

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

.....  
**SIGNATURE(S) OF TENDERER(S)**

**SURNAME AND NAME:** .....

**DATE:** .....

**ADDRESS:** .....

.....

.....

.....

## DECLARATION OF BIDDER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES

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

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

|             |                                                                                                                                                                                                                                        |                                 |                                |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|--------------------------------|
| 4.2.1       | If so, furnish particulars:                                                                                                                                                                                                            |                                 |                                |
| 4.3         | Was the bidder or any of its directors convicted by a court of law (including a court of law outside the Republic of South Africa) for fraud or corruption during the past five years?                                                 | Yes<br><input type="checkbox"/> | No<br><input type="checkbox"/> |
| 4.3.1       | If so, furnish particulars:                                                                                                                                                                                                            |                                 |                                |
| <b>Item</b> | <b>Question</b>                                                                                                                                                                                                                        | <b>Yes</b>                      | <b>No</b>                      |
| 4.4         | Does the bidder or any of its directors owe any municipal rates and taxes or municipal charges to the municipality / municipal entity, or to any other municipality / municipal entity, that is in arrears for more than three months? | Yes<br><input type="checkbox"/> | No<br><input type="checkbox"/> |
| 4.4.1       | If so, furnish particulars:                                                                                                                                                                                                            |                                 |                                |
| 4.5         | Was any contract between the bidder and the municipality / municipal entity or any other organ of state terminated during the past five years on account of failure to perform on or comply with the contract?                         | Yes<br><input type="checkbox"/> | No<br><input type="checkbox"/> |
| 4.5.1       | If so, furnish particulars:                                                                                                                                                                                                            |                                 |                                |

### CERTIFICATION

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

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

.....  
**Signature**

.....  
**Date**

.....  
**Position**

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

## **CERTIFICATE OF INDEPENDENT BID DETERMINATION**

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

<sup>1</sup> Includes price quotations, advertised competitive bids, limited bids and proposals.

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

**CERTIFICATE OF INDEPENDENT BID DETERMINATION**

I, the undersigned, in submitting the accompanying bid:

---

(Bid Number and Description)

in response to the invitation for the bid made by:

---

(Name of Municipality / Municipal Entity)

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

I certify, on behalf of: \_\_\_\_\_ that:

(Name of Bidder)

1. I have read and I understand the contents of this Certificate;
2. I understand that the accompanying bid will be disqualified if this Certificate is found not to be true and complete in every respect;
3. I am authorized by the bidder to sign this Certificate, and to submit the accompanying bid, on behalf of the bidder;
4. Each person whose signature appears on the accompanying bid has been authorized by the bidder to determine the terms of, and to sign, the bid, on behalf of the bidder;
5. For the purposes of this Certificate and the accompanying bid, I understand that the word "competitor" shall include any individual or organization, other than the bidder, whether or not affiliated with the bidder, who:
  - (a) has been requested to submit a bid in response to this bid invitation;
  - (b) could potentially submit a bid in response to this bid invitation, based on their qualifications, abilities or experience; and
  - (c) provides the same goods and services as the bidder and/or is in the same line of business as the bidder

6. The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However communication between partners in a joint venture or consortium<sup>3</sup> will not be construed as collusive bidding.
7. In particular, without limiting the generality of paragraphs 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
  - (a) prices;
  - (b) geographical area where product or service will be rendered (market allocation)
  - (c) methods, factors or formulas used to calculate prices;
  - (d) the intention or decision to submit or not to submit, a bid;
  - (e) the submission of a bid which does not meet the specifications and conditions of the bid; or
  - (f) bidding with the intention not to win the bid.
8. In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the products or services to which this bid invitation relates.
9. The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.

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

10. I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to bids and contracts, bids that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No 89 of 1998 and or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and or may be restricted from conducting business with the public sector for a period not exceeding ten (10) years in terms of the Prevention and Combating of Corrupt Activities Act No 12 of 2004 or any other applicable legislation.

.....  
Signature

.....  
Date

.....  
Position

.....  
Name of Bidder

### **AUTHORITY OF SIGNATORY**

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

| <b>A<br/>COMPANY</b> | <b>B<br/>PARTNERSHIP</b> | <b>C<br/>JOINT<br/>VENTURE</b> | <b>D<br/>SOLE<br/>PROPRIETOR</b> | <b>E<br/>CLOSE<br/>CORPORATION</b> |
|----------------------|--------------------------|--------------------------------|----------------------------------|------------------------------------|
|                      |                          |                                |                                  |                                    |

#### **A. Certificate for Company**

I, ....., Chairperson of the Board of Directors of ....., hereby confirm that by resolution of the Board taken on .....20..., Mr/Ms ....., acting in the capacity of ....., was authorised to sign all documents in connection with this bid and any contract resulting from it on behalf of the company.

#### **As Witnesses:**

1..... Chairperson: .....

2..... Date: .....

#### **B. Certificate for Partnership**

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

| <b>NAME</b> | <b>ADDRESS</b> | <b>SIGNATURE</b> | <b>DATE</b> |
|-------------|----------------|------------------|-------------|
|             |                |                  |             |
|             |                |                  |             |
|             |                |                  |             |
|             |                |                  |             |

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

### C. Certificate for Joint Venture

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

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

| Name of Firm | Address | Authorising Name and Capacity | Authorising Signatory |
|--------------|---------|-------------------------------|-----------------------|
| Lead Partner |         |                               |                       |
|              |         |                               |                       |
|              |         |                               |                       |
|              |         |                               |                       |

**Note: A copy of the Joint Venture Agreement indicating clearly the percentage contribution of each partner to the joint venture, is to be submitted with the bid. A board resolution, authorising each signatory who signed above to do so, it to be submitted with the bid.**

### D. Certificate for Sole Proprietor

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

#### As Witnesses:

1..... Sole owner: .....

2..... Date: .....

### E. Certificate for Close Corporation

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

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

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

**CONDITIONS OF BID**

**GOVERNMENT PROCUREMENT**

**GENERAL CONDITIONS OF CONTRACT**

**NOTES**

The purpose of this document is to:

- (i) Draw special attention to certain general conditions applicable to government bids, contracts and orders; and
- (ii) To ensure that clients be familiar with regard to the rights and obligations of all parties involved in doing business with government.

In this document words in the singular also mean in the plural and vice versa and words in the masculine also mean in the feminine and neuter.

- The General Conditions of Contract will form part of all bid documents and may not be amended.
- Special Conditions of Contract (SCC) relevant to a specific bid, should be compiled separately for every bid (if applicable) and will supplement the General Conditions of Contract. Whenever there is a conflict, the provisions in the SCC shall prevail.

## TABLE OF CLAUSES

1. Definitions
2. Application
3. General
4. Standards
5. Use of contract documents and information; inspection
6. Patent rights
7. Performance security
8. Inspections, tests and analysis
9. Packing
10. Delivery and documents
11. Insurance
12. Transportation
13. Incidental services
14. Spare parts
15. Warranty
16. Payment
17. Prices
18. Contract amendments
19. Assignment
20. Subcontracts
21. Delays in the supplier's performance
22. Penalties
23. Termination for default
24. Dumping and countervailing duties
25. Force Majeure
26. Termination for insolvency
27. Settlement of disputes
28. Limitation of liability
29. Governing language
30. Applicable law
31. Notices
32. Taxes and duties

## General Conditions of Contract

### 1. Definitions

1. The following terms shall be interpreted as indicated:
  - 1.1 “Closing time” means the date and hour specified in the bidding documents for the receipt of bids.
  - 1.2 “Contract” means the written agreement entered into between the purchaser and the supplier, as recorded in the contract form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein.
  - 1.3 “Contract price” means the price payable to the supplier under the contract for the full and proper performance of his contractual obligations.
  - 1.4 “Corrupt practice” means the offering, giving, receiving, or soliciting of any thing of value to influence the action of a public official in the procurement process or in contract execution.
  - 1.5 "Countervailing duties" are imposed in cases where an enterprise abroad is subsidized by its government and encouraged to market its products internationally.
  - 1.6 “Country of origin” means the place where the goods were mined, grown or produced or from which the services are supplied. Goods are produced when, through manufacturing, processing or substantial and major assembly of components, a commercially recognized new product results that is substantially different in basic characteristics or in purpose or utility from its components.
  - 1.7 “Day” means calendar day.
  - 1.8 “Delivery” means delivery in compliance of the conditions of the contract or order.
  - 1.9 “Delivery ex stock” means immediate delivery directly from stock actually on hand.
  - 1.10 “Delivery into consignees store or to his site” means delivered and unloaded in the specified store or depot or on the specified site in compliance with the conditions of the contract or order, the supplier bearing all risks and charges involved until the supplies are so delivered and a valid receipt is obtained.
  - 1.11 "Dumping" occurs when a private enterprise abroad market its goods on own initiative in the RSA at lower prices than that of the country of origin and which have the potential to harm the local industries in the RSA.
  - 1.12 "Force majeure" means an event beyond the control of the supplier and not involving the supplier's fault or negligence and not foreseeable.

Such events may include, but is not restricted to, acts of the purchaser in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.

- 1.13 “Fraudulent practice” means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of any bidder, and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the bidder of the benefits of free and open competition.
- 1.14 “GCC” means the General Conditions of Contract.
- 1.15 “Goods” means all of the equipment, machinery, and/or other materials that the supplier is required to supply to the purchaser under the contract.
- 1.16 “Imported content” means that portion of the bidding price represented by the cost of components, parts or materials which have been or are still to be imported (whether by the supplier or his subcontractors) and which costs are inclusive of the costs abroad, plus freight and other direct importation costs such as landing costs, dock dues, import duty, sales duty or other similar tax or duty at the South African place of entry as well as transportation and handling charges to the factory in the Republic where the supplies covered by the bid will be manufactured.
- 1.17 “Local content” means that portion of the bidding price which is not included in the imported content provided that local manufacture does take place.
- 1.18 “Manufacture” means the production of products in a factory using labour, materials, components and machinery and includes other related value-adding activities.
- 1.19 “Order” means an official written order issued for the supply of goods or works or the rendering of a service.
- 1.20 “Project site,” where applicable, means the place indicated in bidding documents.
- 1.21 “Purchaser” means the organization purchasing the goods.
- 1.22 “Republic” means the Republic of South Africa.
- 1.23 “SCC” means the Special Conditions of Contract.
- 1.24 “Services” means those functional services ancillary to the supply of the goods, such as transportation and any other incidental services, such as installation, commissioning, provision of technical assistance, training, catering, gardening, security, maintenance and other such obligations of the supplier covered under the contract.
- 1.25 “Written” or “in writing” means handwritten in ink or any form of electronic or mechanical writing.

- 2. Application**
- 2.1 These general conditions are applicable to all bids, contracts and orders including bids for functional and professional services, sales, hiring, letting and the granting or acquiring of rights, but excluding immovable property, unless otherwise indicated in the bidding documents.
- 2.2 Where applicable, special conditions of contract are also laid down to cover specific supplies, services or works.
- 2.3 Where such special conditions of contract are in conflict with these general conditions, the special conditions shall apply.
- 3. General**
- 3.1 Unless otherwise indicated in the bidding documents, the purchaser shall not be liable for any expense incurred in the preparation and submission of a bid. Where applicable a non-refundable fee for documents may be charged.
- 3.2 With certain exceptions, invitations to bid are only published in the Government Tender Bulletin. The Government Tender Bulletin may be obtained directly from the Government Printer, Private Bag X85, Pretoria 0001, or accessed electronically from [www.treasury.gov.za](http://www.treasury.gov.za)
- 4. Standards**
- 4.1 The goods supplied shall conform to the standards mentioned in the bidding documents and specifications.
- 5. Use of contract documents and information; inspection.**
- 5.1 The supplier shall not, without the purchaser's prior written consent, disclose the contract, or any provision thereof, or any specification, plan, drawing, pattern, sample, or information furnished by or on behalf of the purchaser in connection therewith, to any person other than a person employed by the supplier in the performance of the contract. Disclosure to any such employed person shall be made in confidence and shall extend only so far as may be necessary for purposes of such performance.
- 5.2 The supplier shall not, without the purchaser's prior written consent, make use of any document or information mentioned in GCC clause 5.1 except for purposes of performing the contract.
- 5.3 Any document, other than the contract itself mentioned in GCC clause 5.1 shall remain the property of the purchaser and shall be returned (all copies) to the purchaser on completion of the supplier's performance under the contract if so required by the purchaser.
- 5.4 The supplier shall permit the purchaser to inspect the supplier's records relating to the performance of the supplier and to have them audited by auditors appointed by the purchaser, if so required by the purchaser.
- 6. Patent rights**
- 6.1 The supplier shall indemnify the purchaser against all third-party claims of infringement of patent, trademark, or industrial design rights arising from use of the goods or any part thereof by the purchaser.
- 7. Performance security**
- 7.1 Within thirty (30) days of receipt of the notification of contract award, the successful bidder shall furnish to the purchaser the performance security of the amount specified in SCC.

- 7.2 The proceeds of the performance security shall be payable to the purchaser as compensation for any loss resulting from the supplier's failure to complete his obligations under the contract.
- 7.3 The performance security shall be denominated in the currency of the contract, or in a freely convertible currency acceptable to the purchaser and shall be in one of the following forms:
- (a) a bank guarantee or an irrevocable letter of credit issued by a reputable bank located in the purchaser's country or abroad, acceptable to the purchaser, in the form provided in the bidding documents or another form acceptable to the purchaser; or
  - (b) a cashier's or certified cheque
- 7.4 The performance security will be discharged by the purchaser and returned to the supplier not later than thirty (30) days following the date of completion of the supplier's performance obligations under the contract, including any warranty obligations, unless otherwise specified in SCC.

**8. Inspections,  
tests and  
analyses**

- 8.1 All pre-bidding testing will be for the account of the bidder.
- 8.2 If it is a bid condition that supplies to be produced or services to be rendered should at any stage during production or execution or on completion be subject to inspection, the premises of the bidder or contractor shall be open, at all reasonable hours, for inspection by a representative of the Department or an organization acting on behalf of the Department.
- 8.3 If there are no inspection requirements indicated in the bidding documents and no mention is made in the contract, but during the contract period it is decided that inspections shall be carried out, the purchaser shall itself make the necessary arrangements, including payment arrangements with the testing authority concerned.
- 8.4 If the inspections, tests and analyses referred to in clauses 8.2 and 8.3 show the supplies to be in accordance with the contract requirements, the cost of the inspections, tests and analyses shall be defrayed by the purchaser.
- 8.5 Where the supplies or services referred to in clauses 8.2 and 8.3 do not comply with the contract requirements, irrespective of whether such supplies or services are accepted or not, the cost in connection with these inspections, tests or analyses shall be defrayed by the supplier.
- 8.6 Supplies and services which are referred to in clauses 8.2 and 8.3 and which do not comply with the contract requirements may be rejected.
- 8.7 Any contract supplies may on or after delivery be inspected, tested or analyzed and may be rejected if found not to comply with the requirements of the contract. Such rejected supplies shall be held at the cost and risk of the supplier who shall, when called upon, remove them immediately at his own cost and forthwith substitute them with

supplies which do comply with the requirements of the contract. Failing such removal the rejected supplies shall be returned at the suppliers cost and risk. Should the supplier fail to provide the substitute supplies forthwith, the purchaser may, without giving the supplier further opportunity to substitute the rejected supplies, purchase such supplies as may be necessary at the expense of the supplier.

- 8.8 The provisions of clauses 8.4 to 8.7 shall not prejudice the right of the purchaser to cancel the contract on account of a breach of the conditions thereof, or to act in terms of Clause 23 of GCC.

## **9. Packing**

- 9.1 The supplier shall provide such packing of the goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit, and open storage. Packing, case size and weights shall take into consideration, where appropriate, the remoteness of the goods' final destination and the absence of heavy handling facilities at all points in transit.
- 9.2 The packing, marking, and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the contract, including additional requirements, if any, specified in SCC, and in any subsequent instructions ordered by the purchaser.

## **10. Delivery and documents**

- 10.1 Delivery of the goods shall be made by the supplier in accordance with the terms specified in the contract. The details of shipping and/or other documents to be furnished by the supplier are specified in SCC.
- 10.2 Documents to be submitted by the supplier are specified in SCC.

## **11. Insurance**

- 11.1 The goods supplied under the contract shall be fully insured in a freely convertible currency against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery in the manner specified in the SCC.

## **12. Transportation**

- 12.1 Should a price other than an all-inclusive delivered price be required, this shall be specified in the SCC.

## **13. Incidental services**

- 13.1 The supplier may be required to provide any or all of the following services, including additional services, if any, specified in SCC:
- (a) performance or supervision of on-site assembly and/or commissioning of the supplied goods;
  - (b) furnishing of tools required for assembly and/or maintenance of the supplied goods;
  - (c) furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied goods;
  - (d) performance or supervision or maintenance and/or repair of the supplied goods, for a period of time agreed by the parties, provided that this service shall not relieve the supplier of any warranty obligations under this contract; and

- (e) training of the purchaser's personnel, at the supplier's plant and/or on-site, in assembly, start-up, operation, maintenance, and/or repair of the supplied goods.

13.2 Prices charged by the supplier for incidental services, if not included in the contract price for the goods, shall be agreed upon in advance by the parties and shall not exceed the prevailing rates charged to other parties by the supplier for similar services.

#### **14. Spare parts**

14.1 As specified in SCC, the supplier may be required to provide any or all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the supplier:

- (a) such spare parts as the purchaser may elect to purchase from the supplier, provided that this election shall not relieve the supplier of any warranty obligations under the contract; and
- (b) in the event of termination of production of the spare parts:
  - (i) Advance notification to the purchaser of the pending termination, in sufficient time to permit the purchaser to procure needed requirements; and
  - (ii) following such termination, furnishing at no cost to the purchaser, the blueprints, drawings, and specifications of the spare parts, if requested.

#### **15. Warranty**

15.1 The supplier warrants that the goods supplied under the contract are new, unused, of the most recent or current models, and that they incorporate all recent improvements in design and materials unless provided otherwise in the contract. The supplier further warrants that all goods supplied under this contract shall have no defect, arising from design, materials, or workmanship (except when the design and/or material is required by the purchaser's specifications) or from any act or omission of the supplier, that may develop under normal use of the supplied goods in the conditions prevailing in the country of final destination.

15.2 This warranty shall remain valid for twelve (12) months after the goods, or any portion thereof as the case may be, have been delivered to and accepted at the final destination indicated in the contract, or for eighteen (18) months after the date of shipment from the port or place of loading in the source country, whichever period concludes earlier, unless specified otherwise in SCC.

15.3 The purchaser shall promptly notify the supplier in writing of any claims arising under this warranty.

15.4 Upon receipt of such notice, the supplier shall, within the period specified in SCC and with all reasonable speed, repair or replace the defective goods or parts thereof, without costs to the purchaser.

15.5 If the supplier, having been notified, fails to remedy the defect(s) within the period specified in SCC, the purchaser may proceed to take such remedial action as may be necessary, at the supplier's risk and expense and without prejudice to any other rights which the purchaser may have against the supplier under the contract.

- 16. Payment**
- 16.1 The method and conditions of payment to be made to the supplier under this contract shall be specified in SCC.
- 16.2 The supplier shall furnish the purchaser with an invoice accompanied by a copy of the delivery note and upon fulfillment of other obligations stipulated in the contract.
- 16.3 Payments shall be made promptly by the purchaser, but in no case later than thirty (30) days after submission of an invoice or claim by the supplier.
- 16.4 Payment will be made in Rand unless otherwise stipulated in SCC.
- 17. Prices**
- 17.1 Prices charged by the supplier for goods delivered and services performed under the contract shall not vary from the prices quoted by the supplier in his bid, with the exception of any price adjustments authorized in SCC or in the purchaser's request for bid validity extension, as the case may be.
- 18. Contract amendments**
- 18.1 No variation in or modification of the terms of the contract shall be made except by written amendment signed by the parties concerned.
- 19. Assignment**
- 19.1 The supplier shall not assign, in whole or in part, its obligations to perform under the contract, except with the purchaser's prior written consent.
- 20. Subcontracts**
- 20.1 The supplier shall notify the purchaser in writing of all subcontracts awarded under this contracts if not already specified in the bid. Such notification, in the original bid or later, shall not relieve the supplier from any liability or obligation under the contract.
- 21. Delays in the supplier's performance**
- 21.1 Delivery of the goods and performance of services shall be made by the supplier in accordance with the time schedule prescribed by the purchaser in the contract.
- 21.2 If at any time during performance of the contract, the supplier or its subcontractor(s) should encounter conditions impeding timely delivery of the goods and performance of services, the supplier shall promptly notify the purchaser in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the supplier's notice, the purchaser shall evaluate the situation and may at his discretion extend the supplier's time for performance, with or without the imposition of penalties, in which case the extension shall be ratified by the parties by amendment of contract.
- 21.3 No provision in a contract shall be deemed to prohibit the obtaining of supplies or services from a national department, provincial department, or a local authority.
- 21.4 The right is reserved to procure outside of the contract small quantities or to have minor essential services executed if an emergency arises, the supplier's point of supply is not situated at or near the place where the supplies are required, or the supplier's services are not readily available.

21.5 Except as provided under GCC Clause 25, a delay by the supplier in the performance of its delivery obligations shall render the supplier liable to the imposition of penalties, pursuant to GCC Clause 22, unless an extension of time is agreed upon pursuant to GCC Clause 21.2 without the application of penalties.

21.6 Upon any delay beyond the delivery period in the case of a supplies contract, the purchaser shall, without canceling the contract, be entitled to purchase supplies of a similar quality and up to the same quantity in substitution of the goods not supplied in conformity with the contract and to return any goods delivered later at the supplier's expense and risk, or to cancel the contract and buy such goods as may be required to complete the contract and without prejudice to his other rights, be entitled to claim damages from the supplier.

## **22. Penalties**

22.1 Subject to GCC Clause 25, if the supplier fails to deliver any or all of the goods or to perform the services within the period(s) specified in the contract, the purchaser shall, without prejudice to its other remedies under the contract, deduct from the contract price, as a penalty, a sum calculated on the delivered price of the delayed goods or unperformed services using the current prime interest rate calculated for each day of the delay until actual delivery or performance. The purchaser may also consider termination of the contract pursuant to GCC Clause 23.

## **23. Termination for default**

23.1 The purchaser, without prejudice to any other remedy for breach of contract, by written notice of default sent to the supplier, may terminate this contract in whole or in part:

- (a) if the supplier fails to deliver any or all of the goods within the period(s) specified in the contract, or within any extension thereof granted by the purchaser pursuant to GCC Clause 21.2;
- (b) if the Supplier fails to perform any other obligation(s) under the contract; or
- (c) if the supplier, in the judgment of the purchaser, has engaged in corrupt or fraudulent practices in competing for or in executing the contract.

23.2 In the event the purchaser terminates the contract in whole or in part, the purchaser may procure, upon such terms and in such manner as it deems appropriate, goods, works or services similar to those undelivered, and the supplier shall be liable to the purchaser for any excess costs for such similar goods, works or services. However, the supplier shall continue performance of the contract to the extent not terminated.

23.3 Where the purchaser terminates the contract in whole or in part, the purchaser may decide to impose a restriction penalty on the supplier by prohibiting such supplier from doing business with the public sector for a period not exceeding 10 years.

If a purchaser intends imposing a restriction on a supplier or any person associated with the supplier, the supplier will be allowed a time period of not more than fourteen (14) days to provide reasons why the envisaged restriction should not be imposed. Should the supplier fail to respond within the stipulated fourteen (14) days the purchaser may regard

the intended penalty as not objected against and may impose it on the supplier.

- 23.4 Any restriction imposed on any person by the Accounting Officer / Authority will, at the discretion of the Accounting Officer / Authority, also be applicable to any other enterprise or any partner, manager, director or other person who wholly or partly exercises or exercised or may exercise control over the enterprise of the first-mentioned person, and with which enterprise or person the first-mentioned person, is or was in the opinion of the Accounting Officer / Authority actively associated.
- 23.5 If a restriction is imposed, the purchaser must, within five (5) working days of such imposition, furnish the National Treasury, with the following information:
- (i) the name and address of the supplier and / or person restricted by the purchaser;
  - (ii) the date of commencement of the restriction
  - (iii) the period of restriction; and
  - (iv) the reasons for the restriction.

These details will be loaded in the National Treasury's central database of suppliers or persons prohibited from doing business with the public sector.

- 23.6 If a court of law convicts a person of an offence as contemplated in sections 12 or 13 of the Prevention and Combating of Corrupt Activities Act, No. 12 of 2004, the court may also rule that such person's name be endorsed on the Register for Tender Defaulters. When a person's name has been endorsed on the Register, the person will be prohibited from doing business with the public sector for a period not less than five years and not more than 10 years. The National Treasury is empowered to determine the period of restriction and each case will be dealt with on its own merits. According to section 32 of the Act the Register must be open to the public. The Register can be perused on the National Treasury website.

**24. Anti-dumping and countervailing duties and rights**

- 24.1 When, after the date of bid, provisional payments are required, or anti-dumping or countervailing duties are imposed, or the amount of a provisional payment or anti-dumping or countervailing right is increased in respect of any dumped or subsidized import, the State is not liable for any amount so required or imposed, or for the amount of any such increase. When, after the said date, such a provisional payment is no longer required or any such anti-dumping or countervailing right is abolished, or where the amount of such provisional payment or any such right is reduced, any such favourable difference shall on demand be paid forthwith by the contractor to the State or the State may deduct such amounts from moneys (if any) which may otherwise be due to the contractor in regard to supplies or services which he delivered or rendered, or is to deliver or render in terms of the contract or any other contract or any other amount which may be due to him

**25. Force Majeure**

- 25.1 Notwithstanding the provisions of GCC Clauses 22 and 23, the supplier shall not be liable for forfeiture of its performance security,

damages, or termination for default if and to the extent that his delay in performance or other failure to perform his obligations under the contract is the result of an event of force majeure.

- 25.2 If a force majeure situation arises, the supplier shall promptly notify the purchaser in writing of such condition and the cause thereof. Unless otherwise directed by the purchaser in writing, the supplier shall continue to perform its obligations under the contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the force majeure event.

**26. Termination  
for insolvency**

- 26.1 The purchaser may at any time terminate the contract by giving written notice to the supplier if the supplier becomes bankrupt or otherwise insolvent. In this event, termination will be without compensation to the supplier, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the purchaser.

**27. Settlement  
of Disputes**

- 27.1 If any dispute or difference of any kind whatsoever arises between the purchaser and the supplier in connection with or arising out of the contract, the parties shall make every effort to resolve amicably such dispute or difference by mutual consultation.
- 27.2 If, after thirty (30) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either the purchaser or the supplier may give notice to the other party of his intention to commence with mediation. No mediation in respect of this matter may be commenced unless such notice is given to the other party.
- 27.3 Should it not be possible to settle a dispute by means of mediation, it may be settled in a South African court of law.
- 27.4 Mediation proceedings shall be conducted in accordance with the rules of procedure specified in the SCC.
- 27.5 Notwithstanding any reference to mediation and/or court proceedings herein,
- (a) the parties shall continue to perform their respective obligations under the contract unless they otherwise agree; and
  - (b) the purchaser shall pay the supplier any monies due the supplier.

**28. Limitation  
of liability**

- 28.1 Except in cases of criminal negligence or willful misconduct, and in the case of infringement pursuant to Clause 6;
- (a) the supplier shall not be liable to the purchaser, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the supplier to pay penalties and/or damages to the purchaser; and
  - (b) aggregate liability of the supplier to the purchaser, whether under the contract, in tort or otherwise, shall not exceed the total contract price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment.

**29. Governing  
language**

- 29.1 The contract shall be written in English. All correspondence and other documents pertaining to the contract that is exchanged by the parties shall also be written in English.

**30. Applicable  
law**

- 30.1 The contract shall be interpreted in accordance with South African laws, unless otherwise specified in SCC.

**31. Notices**

- 31.1 Every written acceptance of a bid shall be posted to the supplier concerned by registered or certified mail and any other notice to him shall be posted by ordinary mail to the address furnished in his bid or to the address notified later by him in writing and such posting shall be deemed to be proper service of such notice
- 31.2 The time mentioned in the contract documents for performing any act after such aforesaid notice has been given, shall be reckoned from the date of posting of such notice.

**32. Taxes and duties**

- 32.1 A foreign supplier shall be entirely responsible for all taxes, stamp duties, license fees, and other such levies imposed outside the purchaser's country.
- 32.2 A local supplier shall be entirely responsible for all taxes, duties, license fees, etc., incurred until delivery of the contracted goods to the purchaser.

No contract shall be concluded with any bidder whose tax matters are not in order. Prior to the award of a bid the Department must be in possession of a tax clearance certificate, submitted by the bidder. This certificate must be an original issued by the South African Revenue Services.

## **SUPPLIER CODE OF ETHICAL BUSINESS CONDUCT**



## **JOHANNESBURG CITY PARKS AND ZOO**

## **SUPPLIER CODE OF ETHICAL BUSINESS CONDUCT**

**Prepared by: Company Secretary**

**Date: September 2022**

**Approval By: Executive Committee**

## **CONTENTS**

- 1.** Introduction
- 2.** Definitions
- 3.** Protection of Health and Safety
- 4.** Environmental Leadership and Sustainability
- 5.** Business Conduct Integrity
- 6.** Human Rights
- 7.** Confidentiality
- 8.** External Communications
- 9.** Raising Concerns
- 10.** Compliance
- 11** Queries

## 1. Introduction

Johannesburg City Parks and Zoo (JCPZ) is committed to conducting business honestly, openly, with integrity and in pursuit of the highest ethical standards. This Supplier Code of Ethics has been developed to ensure that JCPZ's values and ethical standards are clearly articulated to all JCPZ's Suppliers and Stakeholders who shall be obligated to abide thereby.

All Suppliers of goods, Service Providers and Business Partners are required to operate in accordance and in full compliance with the applicable laws, rules and regulations of the Republic of South Africa at all times.

This Code determines the ethical values, standards, principles and guidelines which bind our suppliers in all their dealings with JCPZ.

JCPZ is committed to ensuring that all employees, including those of our suppliers are treated with the necessary respect and dignity and provided with safe working conditions. JCPZ is furthermore committed to ensuring that the procurement of all goods and provision of services are undertaken in an environmentally sensitive, sustainable and on a socially responsible basis.

JCPZ undertakes to ensure that a good working relationship is maintained with all its suppliers. To ensure this, all Suppliers are expected to comply with the following basic principles:

- a) Protection of Health and Safety
- b) Environmental Leadership and Sustainability
- c) Business Conduct Integrity
- d) Human Rights
- e) Confidentiality
- f) External Communications
- g) Raising Concerns
- h) Compliance

In the event of any non-conformity being identified, the reporting of any contraventions or illegal activity, Suppliers are directed to contact the following offices immediately:

- (a) City of Johannesburg anti-fraud hotline -0800 002 587,
- (b) the Head of Internal Audit - [fmqhavule@jhbcityparks.com](mailto:fmqhavule@jhbcityparks.com) / 011 646 200 ext 250/218,  
or
- (c) the Ethics Manager – [ethics@jhbcityparks.com](mailto:ethics@jhbcityparks.com) / 011 712 6600.
- (d) Accounting Officer – 011 712 6600

## 2. Definitions

The following words are used in the context of the interpretations as defined below.

| <b><u>Word</u></b> | <b><u>Definition</u></b>                                                                                                       |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Gift               | The provision of something of value without receiving payment or any form of compensation from the recipient.                  |
| Goods              | A product which is a tangible and visible item of value.                                                                       |
| JCPZ               | Johannesburg City Parks and Zoo, a municipal owned entity, non-profit organization.                                            |
| Misconduct         | Behaviour which is considered illegal in law, unacceptable or improper in accordance with societal mores, norms and practices. |
| Services           | An act or completion of Tasks performed for the benefit of the procuring party.                                                |
| SHEQ Department    | The JCPZ department responsible for Occupational Health and Safety                                                             |

| <b><u>Word</u></b>      | <b><u>Definition</u></b>                                                                         |
|-------------------------|--------------------------------------------------------------------------------------------------|
| Supplier                | A person or organization that provides something needed such as a product or service to another. |
| Supply Chain Management | The department within JCPZ who manage procurement on behalf of the organization.                 |
| Service Provider        | An individual or entity that provides services to another.                                       |

### **3. Health and Safety**

The safety of the public, employees, the environment, our clients and Suppliers is more than just a priority at JCPZ, it is a Core Value.

As a condition of engagement as a Supplier, JCPZ expects all Suppliers to understand the health & safety risks of their activities and apply good health & safety management systems, training and practices in all they do. Suppliers are expected to work safely and in compliance with all applicable safety, health and environmental related laws, standards, procedures, rules and with this Supplier Code, and with any additional requirements stipulated by JCPZ.

The basic safety and health expectations and requirements are set forth below. Additional requirements specific to the work undertaken by a Supplier may be specified in contractual documents.

#### **3.1 Public Safety**

A Supplier must ensure that there are no potential public safety or health hazards associated with any activity, service, product or equipment/tool supplied to or deployed in the execution of a service for or on behalf of JCPZ. Where potential hazards cannot be eliminated, they must be clearly identified and controlled in accordance with a formal risk assessment that is designed to put in place controls that meet acceptable regulatory limits and recognized industry best practices.

#### **3.2 Worker Safety**

A Supplier must provide its workforce with a clean, safe and healthy work environment in compliance with legally mandated standards for workplace health & safety where they operate, and good industry practices. The Supplier will identify, monitor and manage workforce exposure to safety hazards via risk assessments, job safety analysis and other appropriate procedures.

Hazards must be eliminated, controlled or mitigated appropriately. The supplier must provide its workforce with appropriate safety training at all times and adequate personal protective equipment ("PPE"). As critical partners in achieving our goal of zero workplace injuries, JCPZ's Suppliers are required to report all unsafe conditions, unsafe acts, near miss events and all injuries/illnesses, regardless of severity, as soon as practical. All Suppliers are empowered and expected to stop the job if they observe work being performed in an unsafe manner by either a JCPZ employee, another JCPZ Supplier, a client's personnel or third party conducting JCPZ related work.

#### **3.3 Vehicle Safety**

A Supplier must ensure that all vehicles used, and transportation activities undertaken, in the execution of JCPZ business are compliant with all applicable laws. JCPZ and its Suppliers are expected to adopt a "zero tolerance" policy with respect to the use of mobile/cellular telephones while operating a motorized vehicle.

When operating a vehicle for JCPZ business, drivers must hold a valid driver's license appropriate to the vehicle being operated, minimize all distractions while driving and obey all posted road/vehicle regulations.

3.4 Report Incidents, Injuries and Unsafe Conditions to JCPZ

A Supplier must report any Health and Safety related incidents including injuries and unsafe conditions to the JCPZ SHEQ Department – Ms TH Thopola, by e-mail at [tthopola@jhbcityparks.com](mailto:tthopola@jhbcityparks.com) or telephone 076 950 5187.

3.5 Emergency Preparedness

A Supplier must have appropriate documented emergency plans and response procedures in place and functional to sufficiently respond to any cases or emergency which may arise in performing its work.

3.6 Fitness for Work

A Supplier must have a process in place for ensuring members of their workforce are safely able to perform the essential requirements of their job without any risk to self, others or the environment, and to ensure that they are not impaired by drugs, alcohol or fatigue.

3.7 Sanitation, Food and Housing

Where applicable, members of Supplier's workforce must be provided at a minimum, with ready access to clean toilet facilities, potable water, and sanitary food preparation, storage and eating facilities.

Where hostels or other housing accommodations are provided by the Supplier or a labor agent, these must be maintained to be clean and safe and provided with appropriate emergency egress, hot water for bathing and showering, adequate heat and ventilation, and reasonable personal space.

#### **4. Environmental Leadership and Sustainability**

JCPZ is a key provider of environmental management services in the City of Johannesburg. The company is acutely aware of our responsibility to minimize our impact on the environment through the effective management of our business activities and project work. The environment is a key focus area within the UN Global Compact and JCPZ strives to embrace its values and promote these values within our sphere of influence. JCPZ is committed to being an environmental leader and demonstrating this through our actions, including conducting our business in full compliance with all applicable environmental laws and regulations and operating in an environmentally sensitive manner consistent with our values and Global Sustainability principles. JCPZ works with its Suppliers to assess and minimize our environmental impact with the aim of avoiding damage to the environment and pursuing the most efficient use of sustainable energy and resources. We expect all our Suppliers to use materials and processes which support sustainability of the environment throughout their supply chain.

##### **4.1 Risk and Impact Identification and Management**

Suppliers must work with JCPZ to identify and record all emissions, releases and waste occurring during the course of operations performed for or on behalf of JCPZ. Processes must be in place to identify, assess, mitigate and manage potentially significant contingent risks and impacts to human health and the environment.

##### **4.2 Compliance with Environmental Legal Requirements**

A Supplier must make themselves aware of and comply with all applicable environmental laws, regulations and standards. A Supplier will also comply with any additional environmental requirements specific to the products or services being provided to JCPZ, as called for in design and product specifications and contract documents. A Supplier must obtain, keep current, and comply with all required environmental permits and licensing requirements. A Supplier must comply with the reporting requirements of applicable permits and regulations.

##### **4.3 Pollution Prevention and Resource Preservation**

A Supplier must identify and implement opportunities to reduce or eliminate waste and pollution at its source and to continually improve resource and materials use efficiencies. A Supplier must implement a systematic approach to identify, manage, reduce, and responsibly dispose of or recycle hazardous and non-hazardous waste. A Supplier must prevent unauthorized discharges and spills from entering the environment generally. Further, a Supplier must manage and responsibly control noise and air emissions from its operations that pose a hazard to the environment or health.

#### **5. Business Conduct and Integrity**

##### **5.1 Supplier Duty**

In its relationship with JCPZ, a Supplier is responsible for:

- ✓ Complying with this Supplier Code, all applicable laws and regulations, and in accordance with the highest standards of ethical business conduct; and
- ✓ Taking reasonable steps to ensure that products and services procured are (as far as practicable and sustainable) from ethical sources.

JCPZ expects Suppliers to conduct business in accordance with the highest ethical standards at all times. This Supplier Code sets forth the principles and standards of conduct for Suppliers (and their workforce) who provide goods or services to JCPZ. JCPZ may require Suppliers to demonstrate that they are in compliance with this Supplier Code and failure to comply with the expectations outlined in this Supplier Code could result, in cessation of business with JCPZ.

## 5.2 Bribery and Corruption

JCPZ complies with the anti-bribery and anti-corruption laws of South Africa and supports all efforts to combat bribery and corruption. We expect the same of our Suppliers.

A Supplier must not engage in any form of bribery, corruption, extortion and embezzlement and must have adequate procedures in place to prevent any such bribery or corruption in their supply chain or by others acting for them.

Bribes or other means of obtaining undue or improper advantage are not to be offered or accepted. Behaviors or actions that may negatively influence, or appear to influence, supply chain management decisions must be avoided.

## 5.3 Anti-Competitive Behaviours

JCPZ is committed to doing business in a fair and transparent manner. We require our Suppliers to likewise deal with JCPZ and to conduct their business generally in a way, which is legal, ethical and honest.

When preparing and submitting bids or tenders to JCPZ, Suppliers must not engage in anti-competitive behaviour, price-fixing, bid sharing or otherwise collude with others improperly.

Any Supplier who is approached about, or becomes aware of any such anti-competitive behavior activities relating to JCPZ must immediately report it to JCPZ.

## 5.4 JCPZ and Municipal Officials

To avoid reputational harm or the appearance of impropriety, no gift, money, loan, entertainment, service or other item of value may be promised or provided to any JCPZ or Municipal official, or the official's friends or family members, in connection with work to be provided for or by JCPZ. For purposes of this Supplier Code, Municipal official includes any officer, employee, candidate, agent, representative, official or de facto official of the City of Johannesburg, its Entities or any government-owned or affiliated company.

When Municipal officials are involved, even simple business courtesies such as meals, entertainment or travel may be illegal. In the ordinary course of business, Suppliers may interact with Municipal agencies and employees. However, interactions with Municipal agencies, officials and employees are often regulated by disclosure requirements and ethics guidelines, National Treasury regulations and laws. Before attempting to influence any JCPZ decision, or before hiring or making any payment to an individual who is a Municipal official or employee, Suppliers may confer with the JCPZ Legal Department in writing for advice.

## 5.5 Tax Evasion

JCPZ has a "zero tolerance" approach to engaging in, or facilitating, tax evasion. Suppliers must prohibit all forms of tax evasion or facilitation of tax evasion. A Supplier's business should be conducted in a manner such that the opportunity for, and incidence of, tax evasion is prevented.

## 5.6 Legal Matters

A Supplier must inform JCPZ of any criminal investigations or charges, regulatory investigations, fines, penalties or citations, as well as any other claims or litigation against it or any of its affiliates or employees so that JCPZ can assess JCPZ's interests and the potential impacts of such investigations, claims, charges or litigation. Suppliers must report all such legal matters to JCPZ.

## 5.7 Accurate Books, Records, Disclosures and Communications

Suppliers must ensure that all records, disclosures and communications to JCPZ are full, fair, accurate, timely and understandable. The true nature of any transaction must never be hidden, altered, falsified or disguised, nor any endorsements, approvals, or authorizing signatures for any payment forged.

Records or disclosures that a Supplier knows (or should reasonably know) to be false or misleading must not be submitted, entered, processed or approved and must be reported to JCPZ immediately upon discovery.

## 5.8 Conflicts of Interest

A conflict of interest can arise if actions are taken or if there are interests that may make it difficult for a Supplier to perform JCPZ-related work objectively and effectively.

JCPZ expects Suppliers to exercise reasonable care and diligence to prevent any actions or conditions that could result in a conflict with the interests of JCPZ or a JCPZ client, the appearance of a conflict of interest, or that may compromise the exercise of independent judgment during the execution of work for, or on behalf of, JCPZ.

While engaged in JCPZ related work, a Supplier must not engage in any activity that creates a conflict of interest, or the appearance of a conflict of interest with JCPZ or in any way compromises the work that the Supplier is contracted to perform on behalf of JCPZ.

Any potential conflicts must be disclosed to JCPZ. The records relating to the declaration must be filed and preserved for a reasonable period of time by the Supplier.

If the Supplier is allowed to remain in a situation that could be perceived as a conflict, a confirmation in writing must be obtained.

Any questions relating to any conflicts of interest should be raised with JCPZ through the contacts provided.

## 5.9 Gifts and Hospitality to JCPZ Employees

It is understood that exchanging gifts and hospitality are common business practices. JCPZ is cognizant of the fact that the giving of gifts could give rise to an obligation or may create an impression of improper influence or obligation. Suppliers must therefore not provide any gift, meal or entertainment to JCPZ personnel or their family members.

Suppliers must not provide any enticement in any situation in which it might influence or appear to influence any decision in relation to the Supplier or create a sense of obligation or a perception or appearance of obligation.

Despite the above, JCPZ policies do make provision for a Supplier to provide modest gifts, meals or entertainment to JCPZ employees that do not exceed three hundred and fifty rands (R350) in any financial year / twelve (12) month period.

Any gift, meal or entertainment should comply with the following:

- ✓ It must be consistent with customary business practices and policies and should not appear extravagant or excessive or improper or frequent;
- ✓ It should not violate any law or policy;
- ✓ It can be supplier-company branded marketing or promotional items which are of minimal value; and
- ✓ It can include normal meals or refreshments in the course of a business meeting or marketing event.

- ✓ Must be disclosed by both receiving and offering parties.

## **6. Human Rights**

JCPZ is committed to supporting international human rights, both as part of our commitment to the UN Global Compact and in accordance with the UN Guiding Principles on Business and Human Rights. JCPZ seeks to respect and uphold the fundamental human rights and freedoms of everyone who works for us or with us, and of the people and communities where we operate. We expect our Suppliers to share this commitment and to respect and uphold the human rights of all persons, especially in Supplier's workforces, its supply chain and the communities in which it operates.

Suppliers will identify and avoid as far as possible any adverse human rights impacts caused or contributed to by their operations or activities. JCPZ will cease doing business with a Supplier who engages in abusive labor practices or exploits vulnerable worker groups.

No worker should perform any work that is likely to be hazardous or that maybe harmful to their health, physical, mental, social, spiritual or moral developments without adequate mitigation measures being effected including but not limited to the Provision of Training, Personal Protective Clothing and Equipment.

In addition to treating all persons with dignity and respect, Suppliers will provide workers with safe and humane working conditions. JCPZ expects its Suppliers to have adequate procedures in place to ensure they are not directly or indirectly through their supply chain involved in any form of involuntary or forced labour.

### **6.1 Freedom of Association and Employment**

Suppliers must not participate in the exploitation of workers and must not use forced, bonded or involuntary labor. All members of a Supplier's workforce must be free to leave the workplace and have the right to terminate their employment.

No workforce member must be required to surrender passports, official identity documents or work permits as a condition of employment (except for temporary processing or legal requirements) and the retention of such document must not be used to bind workers or restrict their rights and freedoms.

Any fees charged to the workforce must be transparent and reasonable and inappropriate or excessive fees are unacceptable. The rights of the workforce to associate freely, join or not join labor unions, seek representation and join workers' councils in accordance with local laws must be respected and upheld by a Supplier.

### **6.2 Child Labor**

A Supplier must not employ any person under the minimum legal age for employment as prescribed by the relevant labour legislation. Legitimate workplace apprenticeship programs, which comply with all laws and regulations, are acceptable.

A Supplier must comply with all legal requirements for the work of authorized young workers, including those relating to working hours, wages and safe working conditions.

### **6.3 Wages, Hours and Benefits**

Wage payments, working hours and benefits must comply with all applicable laws and regulations, and collective bargaining agreements. We draw your attention to the legislated minimum wage as amended from time to time. A Supplier will abide by applicable employment and residency laws, including visa and work permit requirements.

#### 6.4 Diversity and Inclusion

Due to our principles of respect and collaboration, JCPZ is committed to diversity and to equal opportunities in the workplace. We seek to provide a work environment where all persons have the opportunity to reach their full potential and contribute to JCPZ's success. We strive to promote the equal treatment of all persons.

As part of our commitment to fair inclusion of all persons, as well as our commitment to diversity, JCPZ prohibits discrimination on the basis of race, color, age, religion, sex, gender or gender identity, sexual orientation, national origin, disability, pregnancy, political affiliation, medical condition, veteran status, ancestry, union membership or marital status or under any other category protected under the laws of South Africa.

We will not tolerate racist, sexist or other discriminatory behavior. We expect our suppliers to share and uphold these legal and moral standards and to promote such fair and equal treatment.

#### 6.5 Harassment and Discrimination

A Supplier must not tolerate any form of harassment or discrimination. Harassment or discrimination includes without limitation, behavior, comments, jokes, slurs, email messages, pictures, photographs, or other conduct that contributes to an intimidating or offensive environment.

Prohibited behavior includes but is not limited to bullying, initiation activities, or hazing (regardless of the other person's willingness to participate). A Supplier will prohibit conduct or business entertainment that could reasonably be construed as discrimination or harassment based on race, color, age, religion, sex, gender or gender identity, sexual orientation, national origin, ethnicity, genetic information, disability, pregnancy, political affiliation, medical condition, veteran status, ancestry, union membership or marital status. These factors must not be used as grounds for discrimination in hiring and employment practices (e.g. advancement, disciplinary decisions, benefits, training or general workplace conduct).

#### 6.6 Workplace Violence

JCPZ has a "zero tolerance" policy for workplace violence. Acts or threats of physical violence are not allowed, including but not limited to physical abuse, corporal punishment, intimidation, coercion, stalking, bullying, or similar activities.

Any worker who engages in acts or threats of violence will be removed from any work assignment with JCPZ. A workplace violence incident may result in suspension or termination of a Supplier's contract with JCPZ, and also may result in civil or criminal legal proceedings.

#### 6.7 No Retaliation

A Supplier must ensure that their workforce is able to openly communicate and share grievances with their management, Unions or regulatory authorities regarding working conditions and management practices without fear of retaliation, intimidation or harassment.

#### 6.8 Combatting Modern Slavery

JCPZ supports international efforts on human rights and complies with the applicable laws, and all Suppliers are expected to do the same. A Supplier must not employ or use any form of modern slavery in the Supplier's business or in its own supply chain. Under international standards, this prohibition requirement includes forced, bonded or compulsory labor and human trafficking. JCPZ is committed to taking steps to ensure that modern slavery does not

occur in our business or our supply chain; and we expect our suppliers to do the same. We may request Suppliers from time to time to confirm to us the measures they are taking in their own operations to tackle the risk of Modern Slavery.

## **7. Confidentiality**

JCPZ requires Suppliers to protect the confidential and personal data not only of JCPZ and persons who work for JCPZ, but also of our clients and persons who work for our clients.

### **7.1 JCPZ Confidential and Protected Information and Intellectual Property**

Suppliers must maintain and protect the confidentiality, integrity and availability of information entrusted to it by JCPZ, except when disclosure is legally mandated or is authorized by JCPZ.

“Confidential and Protected Information” is JCPZ’s proprietary information or third-party information intended for use within JCPZ that, if disclosed to, or modified by, unauthorized individuals, could result in the risk of financial loss, productivity loss or damage to JCPZ’s reputation.

Confidential and Protected Information includes without limitation, client information, legal documents, contracts, proposals, information about a specific client or employee, intellectual property and trade secrets. Unauthorized disclosure of Confidential and Protected information is a violation of this Supplier Code, JCPZ contractual requirements, and, potentially, applicable law. Suppliers must report any actual or suspected data breach immediately following detection to the relevant contact person.

### **7.2 Data Privacy and Protection**

JCPZ is committed to the protection and security of the personal data of our staff, clients and others in line with data protection laws of South Africa, including but not limited to the Protection of Personal Information Act and equivalent laws.

“Personal Data” refers to any information describing or relating to an identified or identifiable individual by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that individual.

Suppliers who collect, record, organize, store, access, adapt, alter, retrieve, use, disclose, or otherwise process Personal Data on behalf of JCPZ are obliged to support this commitment. In particular, all Suppliers must:

- ✓ Duly observe their obligations under Data Protection Laws;
- ✓ Process, transfer, modify, disclose, amend or alter Personal Data in accordance with the written instructions of JCPZ (unless otherwise required by Law);
- ✓ Ensure that it has appropriate technical and organizational measures to prevent unauthorized processing, accidental loss, destruction, damage, alteration and/or destruction of Personal Data, and take measures necessary to uphold data protection laws, which measures may include, but not be limited to, encryption, pseudonymisation, resilience of processing systems and backing up of Personal Data;
- ✓ Not transfer any such Personal Data without the prior written consent of JCPZ.
- ✓ Comply with all specific laws related to transfers of such Personal Data - specifically, but not limited to, transfers of Personal Data to any country outside of South Africa;
- ✓ Ensure the reliability of any staff who have access to Personal Data, ensure that they are subject to appropriate confidentiality and security undertakings, and that they treat all Personal Data as confidential;
- ✓ Not permit any third party to process JCPZ Personal Data unless that party has entered into an agreement with the Supplier that incorporates these data protection obligations;

- ✓ Promptly notify JCPZ of any communications received from any person regarding the processing of Personal Data, and take reasonable steps to assist JCPZ to respond to those communications;
- ✓ Immediately notify JCPZ on becoming aware of any breach of data protection laws, and co-operate with JCPZ in the investigation and remediation of any such breach;
- ✓ Inform JCPZ if any instruction received from JCPZ might infringe applicable data protection laws;
- ✓ Permit JCPZ representatives to inspect and audit the facilities used by a Supplier to process Personal Data;
- ✓ Provide assistance to JCPZ with Personal Data protection impact assessments, as required; and
- ✓ Immediately cease processing any JCPZ Personal Data upon the termination of a Supplier's contract with JCPZ and, at JCPZ's option, either return or securely delete the Personal Data and confirm to JCPZ that this has been done.

### 7.3 Computer and System Security

Suppliers who have access to JCPZ's computer equipment and/or JCPZ's information systems, or are responsible for the storage, processing or transmission of JCPZ information, will ensure that the security of those systems comply with the applicable JCPZ information and cyber security policies and standards. Suppliers must immediately report the loss of any JCPZ equipment or any other equipment containing JCPZ data, as well as any suspected or actual breach of JCPZ's computer system or network security.

A Supplier must contact their JCPZ business contact person to report any JCPZ related security concerns. In addition, Suppliers must ensure the following:

- ✓ Depending on scope of engagement, a valid non-disclosure/confidentiality agreement has been signed and the receipt of which has been acknowledged by the Supplier's JCPZ business contact;
- ✓ Computer accounts, passwords and other types of authorization are assigned to individual authorized users and must not be shared with or divulged to others.
- ✓ Authorized users will be held accountable for all actions taken on their system with their user identification;
- ✓ Sexually suggestive or explicit material, gaming, file sharing or other inappropriate files or websites are not downloaded or accessed;
- ✓ Inappropriate or pirated content is not stored on JCPZ equipment and is not used (directly or indirectly) in the provision of any materials or services to JCPZ;
- ✓ Only approved, authorized and properly licensed software is used on JCPZ computer systems;
- ✓ Only JCPZ owned computers and equipment are used to connect to JCPZ networks;
- ✓ Internet access from JCPZ owned computers or devices is not used to conduct personal business, play computer games, gamble, conduct political campaigns, or for personal gain;
- ✓ Personal devices are not recharged using a JCPZ computer;
- ✓ No attempts are made to circumvent or attack security controls on a computer system or network;
- ✓ JCPZ issued equipment is protected from unauthorized access and theft at all times and all equipment must be password protected and locked when left unattended; and
- ✓ For those using mobile assets, applicable requirements from JCPZ are identified and implemented.

## 8. External Communications

### 8.1 News Media

Any media inquiries relating to JCPZ must be immediately referred to you're the JCPZ Media and Communications Office, Ms Jenny Moodley by email at [jmoodley@jhbcityparks.com](mailto:jmoodley@jhbcityparks.com) or telephonically at 011 712 6615 / 082 803 0748.

No Supplier shall represent itself to the media as speaking on behalf of JCPZ.

## 8.2 Social Media

Any Supplier to JCPZ must have processes in place to ensure that the use of social media by the Supplier, their workforce, representatives or agents does not negatively affect JCPZ's reputation. A Supplier's processes should specifically ensure against the following: Representation of any content in any social media regarding JCPZ without prior written approval by JCPZ; and Posting content about JCPZ staff or personnel, shareholders, customers, vendors, affiliates or competitors that is derogatory or in contravention of any standards in this Supplier Code.

## 8.3 Use of JCPZ Brand or Name

Suppliers must not use the JCPZ name or refer to JCPZ in any of its marketing or promotional materials/websites without JCPZ's prior written approval, including:

- ✓ Making unauthorized business commitments involving JCPZ;
- ✓ Using photographs, videos or audio recordings of either JCPZ or JCPZ client projects or operations without JCPZ's prior written approval; and
- ✓ Using JCPZ's logo, trademarks or proprietary graphics in any way, without JCPZ's prior written consent.

## 9. **Raising Concerns**

The standards of conduct described in this Supplier Code are critical to the ongoing success of JCPZ. If Suppliers encounter questionable activities, JCPZ encourages them to immediately bring them to JCPZ's attention through the relevant contact persons. This line of reporting can be used to raise or report matters specifically covered in this Supplier Code, and also to report any other concerns about questionable business conduct. Messages are handled confidentially by the designated offices, to the extent permitted by applicable laws. Further, JCPZ prohibits retaliation against anyone who, in good faith, raises concerns or is involved in an investigation and will investigate any reports of retaliation and take appropriate action.

## 10. **Compliance**

Suppliers are expected to take all appropriate actions to enable them to comply with the Laws of South Africa and the requirements under this Code. Suppliers must have adequate procedures in place to monitor and ensure such compliance. Suppliers are expected to take necessary corrective actions forthwith to promptly address and remedy any identified non-compliance. If a Supplier is unable or unwilling to do so, JCPZ may exercise its rights to suspend or terminate the relationship with any such Supplier.

## 11. **Queries**

If you have a question, concern or grievance related to work undertaken for or with JCPZ with regards to this Supplier Code or wish to report any fraud or questionable practice, please contact any one of the following:

- (a) City of Johannesburg anti-fraud hotline -0800 002 587,
- (b) the Chief Internal Auditor - [fmqhavule@jhbcityparks.com](mailto:fmqhavule@jhbcityparks.com) / 011 646 200 ext 250/218, or
- (c) the Ethics Manager – [ethics@jhbcityparks.com](mailto:ethics@jhbcityparks.com) / 011 712 6600.

## JOHANNESBURG CITY PARKS AND ZOO



## SUPPLIER CODE OF ETHICAL BUSINESS CONDUCT

**Prepared by:** Company Secretary

**Date:** September 2022

**Approval By:** Executive Committee

## CONTENTS

|            |                                                    |           |
|------------|----------------------------------------------------|-----------|
| <b>1.</b>  | <b>Introduction</b>                                | <b>3</b>  |
| <b>2.</b>  | <b>Definitions</b>                                 | <b>3</b>  |
| <b>3.</b>  | <b>Protection of Health and Safety</b>             | <b>4</b>  |
| <b>4.</b>  | <b>Environmental Leadership and Sustainability</b> | <b>6</b>  |
| <b>5.</b>  | <b>Business Conduct Integrity</b>                  | <b>6</b>  |
| <b>6.</b>  | <b>Human Rights</b>                                | <b>9</b>  |
| <b>7.</b>  | <b>Confidentiality</b>                             | <b>11</b> |
| <b>8.</b>  | <b>External Communications</b>                     | <b>13</b> |
| <b>9.</b>  | <b>Raising Concerns</b>                            | <b>14</b> |
| <b>10.</b> | <b>Compliance</b>                                  | <b>14</b> |
| <b>11</b>  | <b>Queries</b>                                     | <b>14</b> |

## 1. Introduction

Johannesburg City Parks and Zoo (JCPZ) is committed to conducting business honestly, openly, with integrity and in pursuit of the highest ethical standards. This Supplier Code of Ethics has been developed to ensure that JCPZ's values and ethical standards are clearly articulated to all JCPZ's Suppliers and Stakeholders who shall be obligated to abide thereby.

All Suppliers of goods, Service Providers and Business Partners are required to operate in accordance and in full compliance with the applicable laws, rules and regulations of the Republic of South Africa at all times.

This Code determines the ethical values, standards, principles and guidelines which bind our suppliers in all their dealings with JCPZ.

JCPZ is committed to ensuring that all employees, including those of our suppliers are treated with the necessary respect and dignity and provided with safe working conditions. JCPZ is furthermore committed to ensuring that the procurement of all goods and provision of services are undertaken in an environmentally sensitive, sustainable and on a socially responsible basis.

JCPZ undertakes to ensure that a good working relationship is maintained with all its suppliers. To ensure this, all Suppliers are expected to comply with the following basic principles:

- a) Protection of Health and Safety
- b) Environmental Leadership and Sustainability
- c) Business Conduct Integrity
- d) Human Rights
- e) Confidentiality
- f) External Communications
- g) Raising Concerns
- h) Compliance

In the event of any non-conformity being identified, the reporting of any contraventions or illegal activity, Suppliers are directed to contact the following offices immediately:

- (a) City of Johannesburg anti-fraud hotline -0800 002 587,
- (b) the Head of Internal Audit - [fmqhavule@jhbcityparks.com](mailto:fmqhavule@jhbcityparks.com) / 011 646 200 ext 250/218, or
- (c) the Ethics Manager – [ethics@jhbcityparks.com](mailto:ethics@jhbcityparks.com) / 011 712 6600.
- (d) Accounting Officer – 011 712 6600

## 2. Definitions

The following words are used in the context of the interpretations as defined below.

| <b><u>Word</u></b> | <b><u>Definition</u></b>                                                                                      |
|--------------------|---------------------------------------------------------------------------------------------------------------|
| Gift               | The provision of something of value without receiving payment or any form of compensation from the recipient. |
| Goods              | A product which is a tangible and visible item of value.                                                      |

|                         |                                                                                                                                |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| JCPZ                    | Johannesburg City Parks and Zoo, a municipal owned entity, non-profit organization.                                            |
| Misconduct              | Behaviour which is considered illegal in law, unacceptable or improper in accordance with societal mores, norms and practices. |
| Services                | An act or completion of Tasks performed for the benefit of the procuring party.                                                |
| SHEQ Department         | The JCPZ department responsible for Occupational Health and Safety                                                             |
| Supplier                | A person or organization that provides something needed such as a product or service to another.                               |
| Supply Chain Management | The department within JCPZ who manage procurement on behalf of the organization.                                               |
| Service Provider        | An individual or entity that provides services to another.                                                                     |

### 3. Health and Safety

The safety of the public, employees, the environment, our clients and Suppliers is more than just a priority at JCPZ, it is a Core Value.

As a condition of engagement as a Supplier, JCPZ expects all Suppliers to understand the health & safety risks of their activities and apply good health & safety management systems, training and practices in all they do. Suppliers are expected to work safely and in compliance with all applicable safety, health and environmental related laws, standards, procedures, rules and with this Supplier Code, and with any additional requirements stipulated by JCPZ.

The basic safety and health expectations and requirements are set forth below. Additional requirements specific to the work undertaken by a Supplier may be specified in contractual documents.

#### 3.1 Public Safety

A Supplier must ensure that there are no potential public safety or health hazards associated with any activity, service, product or equipment/tool supplied to or deployed in the execution of a service for or on behalf of JCPZ. Where potential hazards cannot be eliminated, they must be clearly identified and controlled in accordance with a formal risk assessment that is designed to put in place controls that meet acceptable regulatory limits and recognized industry best practices.

#### 3.2 Worker Safety

A Supplier must provide its workforce with a clean, safe and healthy work environment in compliance with legally mandated standards for workplace health & safety where they operate, and good industry practices. The Supplier will identify, monitor and manage workforce exposure to safety hazards via risk assessments, job safety analysis and other appropriate procedures.

Hazards must be eliminated, controlled or mitigated appropriately. The supplier must provide its workforce with appropriate safety training at all times and adequate personal protective equipment ("PPE"). As critical partners in achieving our goal of zero workplace injuries, JCPZ's Suppliers are required to report all unsafe conditions, unsafe acts, near miss events and all injuries/illnesses, regardless of severity, as soon as practical. All Suppliers are empowered and expected to stop the job if they observe work being performed in an unsafe manner by either a JCPZ employee, another JCPZ Supplier, a client's personnel or third party conducting JCPZ related work.

### 3.3 Vehicle Safety

A Supplier must ensure that all vehicles used, and transportation activities undertaken, in the execution of JCPZ business are compliant with all applicable laws. JCPZ and its Suppliers are expected to adopt a "zero tolerance" policy with respect to the use of mobile/cellular telephones while operating a motorized vehicle.

When operating a vehicle for JCPZ business, drivers must hold a valid driver's license appropriate to the vehicle being operated, minimize all distractions while driving and obey all posted road/vehicle regulations.

### 3.4 Report Incidents, Injuries and Unsafe Conditions to JCPZ

A Supplier must report any Health and Safety related incidents including injuries and unsafe conditions to the JCPZ SHEQ Department – Ms TH Thopola, by e-mail at [tthopola@jhbcityparks.com](mailto:tthopola@jhbcityparks.com) or telephone 076 950 5187.

### 3.5 Emergency Preparedness

A Supplier must have appropriate documented emergency plans and response procedures in place and functional to sufficiently respond to any cases or emergency which may arise in performing its work.

### 3.6 Fitness for Work

A Supplier must have a process in place for ensuring members of their workforce are safely able to perform the essential requirements of their job without any risk to self, others or the environment, and to ensure that they are not impaired by drugs, alcohol or fatigue.

### 3.7 Sanitation, Food and Housing

Where applicable, members of Supplier's workforce must be provided at a minimum, with ready access to clean toilet facilities, potable water, and sanitary food preparation, storage and eating facilities.

Where hostels or other housing accommodations are provided by the Supplier or a labor agent, these must be maintained to be clean and safe and provided with appropriate emergency egress, hot water for bathing and showering, adequate heat and ventilation, and reasonable personal space.

## **4. Environmental Leadership and Sustainability**

JCPZ is a key provider of environmental management services in the City of Johannesburg. The company is acutely aware of our responsibility to minimize our impact on the environment through the effective management of our business activities and project work. The environment is a key focus area within the UN Global Compact and JCPZ strives to embrace its values and promote these values within our sphere of influence. JCPZ is committed to being an environmental leader and demonstrating this through our actions, including conducting our business in full compliance with all applicable environmental laws and regulations and operating in an environmentally sensitive manner consistent with our values and Global Sustainability principles. JCPZ works with its Suppliers to assess and minimize our environmental impact with the aim of avoiding damage to the environment and pursuing the most efficient use of sustainable energy and resources. We expect all our Suppliers to use materials and processes which support sustainability of the environment throughout their supply chain.

### **4.1 Risk and Impact Identification and Management**

Suppliers must work with JCPZ to identify and record all emissions, releases and waste occurring during the course of operations performed for or on behalf of JCPZ. Processes must be in place to identify, assess, mitigate and manage potentially significant contingent risks and impacts to human health and the environment.

### **4.2 Compliance with Environmental Legal Requirements**

A Supplier must make themselves aware of and comply with all applicable environmental laws, regulations and standards. A Supplier will also comply with any additional environmental requirements specific to the products or services being provided to JCPZ, as called for in design and product specifications and contract documents. A Supplier must obtain, keep current, and comply with all required environmental permits and licensing requirements. A Supplier must comply with the reporting requirements of applicable permits and regulations.

### **4.3 Pollution Prevention and Resource Preservation**

A Supplier must identify and implement opportunities to reduce or eliminate waste and pollution at its source and to continually improve resource and materials use efficiencies. A Supplier must implement a systematic approach to identify, manage, reduce, and responsibly dispose of or recycle hazardous and non-hazardous waste. A Supplier must prevent unauthorized discharges and spills from entering the environment generally. Further, a Supplier must manage and responsibly control noise and air emissions from its operations that pose a hazard to the environment or health.

## **5. Business Conduct and Integrity**

### **5.1 Supplier Duty**

In its relationship with JCPZ, a Supplier is responsible for:

- ✓ Complying with this Supplier Code, all applicable laws and regulations, and in accordance with the highest standards of ethical business conduct; and
- ✓ Taking reasonable steps to ensure that products and services procured are (as far as practicable and sustainable) from ethical sources.

JCPZ expects Suppliers to conduct business in accordance with the highest ethical standards at all times. This Supplier Code sets forth the principles and standards of conduct for Suppliers (and their workforce) who provide goods or services to JCPZ. JCPZ may require Suppliers to demonstrate that they are in compliance with this Supplier Code and failure to comply with the expectations outlined in this Supplier Code could result, in cessation of business with JCPZ.

## 5.2 Bribery and Corruption

JCPZ complies with the anti-bribery and anti-corruption laws of South Africa and supports all efforts to combat bribery and corruption. We expect the same of our Suppliers.

A Supplier must not engage in any form of bribery, corruption, extortion and embezzlement and must have adequate procedures in place to prevent any such bribery or corruption in their supply chain or by others acting for them.

Bribes or other means of obtaining undue or improper advantage are not to be offered or accepted. Behaviors or actions that may negatively influence, or appear to influence, supply chain management decisions must be avoided.

## 5.3 Anti-Competitive Behaviours

JCPZ is committed to doing business in a fair and transparent manner. We require our Suppliers to likewise deal with JCPZ and to conduct their business generally in a way, which is legal, ethical and honest.

When preparing and submitting bids or tenders to JCPZ, Suppliers must not engage in anti-competitive behaviour, price-fixing, bid sharing or otherwise collude with others improperly.

Any Supplier who is approached about, or becomes aware of any such anti-competitive behavior activities relating to JCPZ must immediately report it to JCPZ.

## 5.4 JCPZ and Municipal Officials

To avoid reputational harm or the appearance of impropriety, no gift, money, loan, entertainment, service or other item of value may be promised or provided to any JCPZ or Municipal official, or the official's friends or family members, in connection with work to be provided for or by JCPZ. For purposes of this Supplier Code, Municipal official includes any officer, employee, candidate, agent, representative, official or de facto official of the City of Johannesburg, its Entities or any government-owned or affiliated company.

When Municipal officials are involved, even simple business courtesies such as meals, entertainment or travel may be illegal. In the ordinary course of business, Suppliers may interact with Municipal agencies and employees. However, interactions with Municipal agencies, officials and employees are often regulated by disclosure requirements and ethics guidelines, National Treasury regulations and laws. Before attempting to influence any JCPZ decision, or before hiring or making any payment to an individual who is a Municipal official or employee, Suppliers may confer with the JCPZ Legal Department in writing for advice.

## 5.5 Tax Evasion

JCPZ has a “zero tolerance” approach to engaging in, or facilitating, tax evasion. Suppliers must prohibit all forms of tax evasion or facilitation of tax evasion. A Supplier’s business should be conducted in a manner such that the opportunity for, and incidence of, tax evasion is prevented.

## 5.6 Legal Matters

A Supplier must inform JCPZ of any criminal investigations or charges, regulatory investigations, fines, penalties or citations, as well as any other claims or litigation against it or any of its affiliates or employees so that JCPZ can assess JCPZ’s interests and the potential impacts of such investigations, claims, charges or litigation.

Suppliers must report all such legal matters to JCPZ.

## 5.7 Accurate Books, Records, Disclosures and Communications

Suppliers must ensure that all records, disclosures and communications to JCPZ are full, fair, accurate, timely and understandable. The true nature of any transaction must never be hidden, altered, falsified or disguised, nor any endorsements, approvals, or authorizing signatures for any payment forged.

Records or disclosures that a Supplier knows (or should reasonably know) to be false or misleading must not be submitted, entered, processed or approved and must be reported to JCPZ immediately upon discovery.

## 5.8 Conflicts of Interest

A conflict of interest can arise if actions are taken or if there are interests that may make it difficult for a Supplier to perform JCPZ-related work objectively and effectively.

JCPZ expects Suppliers to exercise reasonable care and diligence to prevent any actions or conditions that could result in a conflict with the interests of JCPZ or a JCPZ client, the appearance of a conflict of interest, or that may compromise the exercise of independent judgment during the execution of work for, or on behalf of, JCPZ.

While engaged in JCPZ related work, a Supplier must not engage in any activity that creates a conflict of interest, or the appearance of a conflict of interest with JCPZ or in any way compromises the work that the Supplier is contracted to perform on behalf of JCPZ.

Any potential conflicts must be disclosed to JCPZ. The records relating to the declaration must be filed and preserved for a reasonable period of time by the Supplier.

If the Supplier is allowed to remain in a situation that could be perceived as a conflict, a confirmation in writing must be obtained.

Any questions relating to any conflicts of interest should be raised with JCPZ through the contacts provided.

## 5.9 Gifts and Hospitality to JCPZ Employees

It is understood that exchanging gifts and hospitality are common business practices. JCPZ is cognizant of the fact that the giving of gifts could give rise to an obligation or may create an impression of improper influence or obligation. Suppliers must therefore not provide any gift, meal or entertainment to JCPZ personnel or their family members.

Suppliers must not provide any enticement in any situation in which it might influence or appear to influence any decision in relation to the Supplier or create a sense of obligation or a perception or appearance of obligation.

Despite the above, JCPZ policies do make provision for a Supplier to provide modest gifts, meals or entertainment to JCPZ employees that do not exceed three hundred and fifty rands (R350) in any financial year / twelve (12) month period.

Any gift, meal or entertainment should comply with the following:

- ✓ It must be consistent with customary business practices and policies and should not appear extravagant or excessive or improper or frequent;
- ✓ It should not violate any law or policy;
- ✓ It can be supplier-company branded marketing or promotional items which are of minimal value; and
- ✓ It can include normal meals or refreshments in the course of a business meeting or marketing event.
- ✓ Must be disclosed by both receiving and offering parties.

## 6. Human Rights

JCPZ is committed to supporting international human rights, both as part of our commitment to the UN Global Compact and in accordance with the UN Guiding Principles on Business and Human Rights. JCPZ seeks to respect and uphold the fundamental human rights and freedoms of everyone who works for us or with us, and of the people and communities where we operate. We expect our Suppliers to share this commitment and to respect and uphold the human rights of all persons, especially in Supplier's workforces, its supply chain and the communities in which it operates.

Suppliers will identify and avoid as far as possible any adverse human rights impacts caused or contributed to by their operations or activities. JCPZ will cease doing business with a Supplier who engages in abusive labor practices or exploits vulnerable worker groups.

No worker should perform any work that is likely to be hazardous or that maybe harmful to their health, physical, mental, social, spiritual or moral developments without adequate mitigation measures being effected including but not limited to the Provision of Training, Personal Protective Clothing and Equipment.

In addition to treating all persons with dignity and respect, Suppliers will provide workers with safe and humane working conditions. JCPZ expects its Suppliers to have adequate procedures in place to ensure they are not directly or indirectly through their supply chain involved in any form of involuntary or forced labour.

## 6.1 Freedom of Association and Employment

Suppliers must not participate in the exploitation of workers and must not use forced, bonded or involuntary labor. All members of a Supplier's workforce must be free to leave the workplace and have the right to terminate their employment.

No workforce member must be required to surrender passports, official identity documents or work permits as a condition of employment (except for temporary processing or legal requirements) and the retention of such document must not be used to bind workers or restrict their rights and freedoms.

Any fees charged to the workforce must be transparent and reasonable and inappropriate or excessive fees are unacceptable. The rights of the workforce to associate freely, join or not join labor unions, seek representation and join workers' councils in accordance with local laws must be respected and upheld by a Supplier.

## 6.2 Child Labor

A Supplier must not employ any person under the minimum legal age for employment as prescribed by the relevant labour legislation. Legitimate workplace apprenticeship programs, which comply with all laws and regulations, are acceptable.

A Supplier must comply with all legal requirements for the work of authorized young workers, including those relating to working hours, wages and safe working conditions.

## 6.3 Wages, Hours and Benefits

Wage payments, working hours and benefits must comply with all applicable laws and regulations, and collective bargaining agreements. We draw your attention to the legislated minimum wage as amended from time to time. A Supplier will abide by applicable employment and residency laws, including visa and work permit requirements.

## 6.4 Diversity and Inclusion

Due to our principles of respect and collaboration, JCPZ is committed to diversity and to equal opportunities in the workplace. We seek to provide a work environment where all persons have the opportunity to reach their full potential and contribute to JCPZ's success. We strive to promote the equal treatment of all persons.

As part of our commitment to fair inclusion of all persons, as well as our commitment to diversity, JCPZ prohibits discrimination on the basis of race, color, age, religion, sex, gender or gender identity, sexual orientation, national origin, disability, pregnancy, political affiliation, medical condition, veteran status, ancestry, union membership or marital status or under any other category protected under the laws of South Africa.

We will not tolerate racist, sexist or other discriminatory behavior. We expect our suppliers to share and uphold these legal and moral standards and to promote such fair and equal treatment.

## 6.5 Harassment and Discrimination

A Supplier must not tolerate any form of harassment or discrimination. Harassment or discrimination includes without limitation, behavior, comments, jokes, slurs, email messages, pictures, photographs, or other conduct that contributes to an intimidating or offensive environment.

Prohibited behavior includes but is not limited to bullying, initiation activities, or hazing (regardless of the other person's willingness to participate). A Supplier will prohibit conduct or business entertainment that could reasonably be construed as discrimination or harassment based on race, color, age, religion, sex, gender or gender identity, sexual orientation, national origin, ethnicity, genetic information, disability, pregnancy, political affiliation, medical condition, veteran status, ancestry, union membership or marital status. These factors must not be used as grounds for discrimination in hiring and employment practices (e.g. advancement, disciplinary decisions, benefits, training or general workplace conduct).

#### 6.6 Workplace Violence

JCPZ has a "zero tolerance" policy for workplace violence. Acts or threats of physical violence are not allowed, including but not limited to physical abuse, corporal punishment, intimidation, coercion, stalking, bullying, or similar activities.

Any worker who engages in acts or threats of violence will be removed from any work assignment with JCPZ. A workplace violence incident may result in suspension or termination of a Supplier's contract with JCPZ, and also may result in civil or criminal legal proceedings.

#### 6.7 No Retaliation

A Supplier must ensure that their workforce is able to openly communicate and share grievances with their management, Unions or regulatory authorities regarding working conditions and management practices without fear of retaliation, intimidation or harassment.

#### 6.8 Combatting Modern Slavery

JCPZ supports international efforts on human rights and complies with the applicable laws, and all Suppliers are expected to do the same. A Supplier must not employ or use any form of modern slavery in the Supplier's business or in its own supply chain. Under international standards, this prohibition requirement includes forced, bonded or compulsory labor and human trafficking. JCPZ is committed to taking steps to ensure that modern slavery does not occur in our business or our supply chain; and we expect our suppliers to do the same.

We may request Suppliers from time to time to confirm to us the measures they are taking in their own operations to tackle the risk of Modern Slavery.

### **7. Confidentiality**

JCPZ requires Suppliers to protect the confidential and personal data not only of JCPZ and persons who work for JCPZ, but also of our clients and persons who work for our clients.

#### 7.1 JCPZ Confidential and Protected Information and Intellectual Property

Suppliers must maintain and protect the confidentiality, integrity and availability of information entrusted to it by JCPZ, except when disclosure is legally mandated or is authorized by JCPZ.

“Confidential and Protected Information” is JCPZ’s proprietary information or third-party information intended for use within JCPZ that, if disclosed to, or modified by, unauthorized individuals, could result in the risk of financial loss, productivity loss or damage to JCPZ’s reputation.

Confidential and Protected Information includes without limitation, client information, legal documents, contracts, proposals, information about a specific client or employee, intellectual property and trade secrets. Unauthorized disclosure of Confidential and Protected information is a violation of this Supplier Code, JCPZ contractual requirements, and, potentially, applicable law. Suppliers must report any actual or suspected data breach immediately following detection to the relevant contact person.

## 7.2 Data Privacy and Protection

JCPZ is committed to the protection and security of the personal data of our staff, clients and others in line with data protection laws of South Africa, including but not limited to the Protection of Personal Information Act and equivalent laws.

“Personal Data” refers to any information describing or relating to an identified or identifiable individual by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that individual.

Suppliers who collect, record, organize, store, access, adapt, alter, retrieve, use, disclose, or otherwise process Personal Data on behalf of JCPZ are obliged to support this commitment. In particular, all Suppliers must:

- ✓ Duly observe their obligations under Data Protection Laws;
- ✓ Process, transfer, modify, disclose, amend or alter Personal Data in accordance with the written instructions of JCPZ (unless otherwise required by Law);
- ✓ Ensure that it has appropriate technical and organizational measures to prevent unauthorized processing, accidental loss, destruction, damage, alteration and/or destruction of Personal Data, and take measures necessary to uphold data protection laws, which measures may include, but not be limited to, encryption, pseudonymisation, resilience of processing systems and backing up of Personal Data;
- ✓ Not transfer any such Personal Data without the prior written consent of JCPZ.
- ✓ Comply with all specific laws related to transfers of such Personal Data - specifically, but not limited to, transfers of Personal Data to any country outside of South Africa;
- ✓ Ensure the reliability of any staff who have access to Personal Data, ensure that they are subject to appropriate confidentiality and security undertakings, and that they treat all Personal Data as confidential;
- ✓ Not permit any third party to process JCPZ Personal Data unless that party has entered into an agreement with the Supplier that incorporates these data protection obligations;
- ✓ Promptly notify JCPZ of any communications received from any person regarding the processing of Personal Data, and take reasonable steps to assist JCPZ to respond to those communications;
- ✓ Immediately notify JCPZ on becoming aware of any breach of data protection laws, and co-operate with JCPZ in the investigation and remediation of any such breach;
- ✓ Inform JCPZ if any instruction received from JCPZ might infringe applicable data protection laws;
- ✓ Permit JCPZ representatives to inspect and audit the facilities used by a Supplier to process Personal Data;

- ✓ Provide assistance to JCPZ with Personal Data protection impact assessments, as required; and
- ✓ Immediately cease processing any JCPZ Personal Data upon the termination of a Supplier's contract with JCPZ and, at JCPZ's option, either return or securely delete the Personal Data and confirm to JCPZ that this has been done.

### 7.3 Computer and System Security

Suppliers who have access to JCPZ's computer equipment and/or JCPZ's information systems, or are responsible for the storage, processing or transmission of JCPZ information, will ensure that the security of those systems comply with the applicable JCPZ information and cyber security policies and standards. Suppliers must immediately report the loss of any JCPZ equipment or any other equipment containing JCPZ data, as well as any suspected or actual breach of JCPZ's computer system or network security.

A Supplier must contact their JCPZ business contact person to report any JCPZ related security concerns. In addition, Suppliers must ensure the following:

- ✓ Depending on scope of engagement, a valid non-disclosure/confidentiality agreement has been signed and the receipt of which has been acknowledged by the Supplier's JCPZ business contact;
- ✓ Computer accounts, passwords and other types of authorization are assigned to individual authorized users and must not be shared with or divulged to others.
- ✓ Authorized users will be held accountable for all actions taken on their system with their user identification;
- ✓ Sexually suggestive or explicit material, gaming, file sharing or other inappropriate files or websites are not downloaded or accessed;
- ✓ Inappropriate or pirated content is not stored on JCPZ equipment and is not used (directly or indirectly) in the provision of any materials or services to JCPZ;
- ✓ Only approved, authorized and properly licensed software is used on JCPZ computer systems;
- ✓ Only JCPZ owned computers and equipment are used to connect to JCPZ networks;
- ✓ Internet access from JCPZ owned computers or devices is not used to conduct personal business, play computer games, gamble, conduct political campaigns, or for personal gain;
- ✓ Personal devices are not recharged using a JCPZ computer;
- ✓ No attempts are made to circumvent or attack security controls on a computer system or network;
- ✓ JCPZ issued equipment is protected from unauthorized access and theft at all times and all equipment must be password protected and locked when left unattended; and
- ✓ For those using mobile assets, applicable requirements from JCPZ are identified and implemented.

## 8. External Communications

### 8.1 News Media

Any media inquiries relating to JCPZ must be immediately referred to you're the JCPZ Media and Communications Office, Ms Jenny Moodley by email at [jmoodley@jhbcityparks.com](mailto:jmoodley@jhbcityparks.com) or telephonically at 011 712 6615 / 082 803 0748.

No Supplier shall represent itself to the media as speaking on behalf of JCPZ.

## 8.2 Social Media

Any Supplier to JCPZ must have processes in place to ensure that the use of social media by the Supplier, their workforce, representatives or agents does not negatively affect JCPZ's reputation. A Supplier's processes should specifically ensure against the following: Representation of any content in any social media regarding JCPZ without prior written approval by JCPZ; and Posting content about JCPZ staff or personnel, shareholders, customers, vendors, affiliates or competitors that is derogatory or in contravention of any standards in this Supplier Code.

## 8.3 Use of JCPZ Brand or Name

Suppliers must not use the JCPZ name or refer to JCPZ in any of its marketing or promotional materials/websites without JCPZ's prior written approval, including:

- ✓ Making unauthorized business commitments involving JCPZ;
- ✓ Using photographs, videos or audio recordings of either JCPZ or JCPZ client projects or operations without JCPZ's prior written approval; and
- ✓ Using JCPZ's logo, trademarks or proprietary graphics in any way, without JCPZ's prior written consent.

## 9. **Raising Concerns**

The standards of conduct described in this Supplier Code are critical to the ongoing success of JCPZ. If Suppliers encounter questionable activities, JCPZ encourages them to immediately bring them to JCPZ's attention through the relevant contact persons. This line of reporting can be used to raise or report matters specifically covered in this Supplier Code, and also to report any other concerns about questionable business conduct. Messages are handled confidentially by the designated offices, to the extent permitted by applicable laws. Further, JCPZ prohibits retaliation against anyone who, in good faith, raises concerns or is involved in an investigation and will investigate any reports of retaliation and take appropriate action.

## 10. **Compliance**

Suppliers are expected to take all appropriate actions to enable them to comply with the Laws of South Africa and the requirements under this Code. Suppliers must have adequate procedures in place to monitor and ensure such compliance. Suppliers are expected to take necessary corrective actions forthwith to promptly address and remedy any identified non-compliance. If a Supplier is unable or unwilling to do so, JCPZ may exercise its rights to suspend or terminate the relationship with any such Supplier.

## 11. **Queries**

If you have a question, concern or grievance related to work undertaken for or with JCPZ with regards to this Supplier Code or wish to report any fraud or questionable practice, please contact any one of the following:

- (e) City of Johannesburg anti-fraud hotline -0800 002 587,
- (f) the Chief Internal Auditor - [fmghavule@jhbcityparks.com](mailto:fmghavule@jhbcityparks.com) / 011 646 200 ext 250/218, or
- (g) the Ethics Manager – [ethics@jhbcityparks.com](mailto:ethics@jhbcityparks.com) / 011 712 6600.