



## **SOUTH AFRICAN NATIONAL PARKS**

### **MOKALA NATIONAL PARK**

### **UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER TREATMENT WORKS**

**CONTRACT NO: CI-VB-0031**

### **TENDER DOCUMENT**

**MAY 2022**

**ISSUED BY:**

Mr Garret Kobe  
Manager: SCM – Infrastructure & Special Projects  
SOUTH AFRICAN NATIONAL PARKS  
P.O. BOX 787  
**PRETORIA**  
0001

**NAME OF TENDERER: .....**

**Contractor**

**Witness for  
Contractor**

**Employer**

**Witness for  
Employer**

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The Tenderer is required to check the numbers of pages and should any be found to be missing or duplicated, or should any of the typing be distinct, or any doubt or obscurity arise as to the meaning of any description or particular of any item, or if the Tender Document contains any obvious errors, then the Tenderer must immediately inform the Quantity Surveying Service Provider and have them rectified or explained in writing as the case may be. No liability whatsoever will be admitted by reason of the Tenderer having failure to comply with the foregoing instructions.

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer



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# 1: The Tender

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Contractor

Witness for Contractor

Employer

Witness for Employer



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# Part T1: Tendering procedures

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Contractor

Witness for Contractor

Employer

Witness for Employer

**UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER TREATMENT WORKS**  
**CONTRACT NO: CI-VB-0031**

**T1.1: Tender Notice and Invitation to Tender (SBD1)**

YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF SOUTH AFRICAN NATIONAL PARKS					
BID NUMBER:	<b>CI-VB-0031</b>	CLOSING DATE:	<b>14 July 2022</b>	CLOSING TIME:	<b>11:00</b>
DESCRIPTION	<b>UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER TREATMENT WORKS</b>				
<b>BID RESPONSE DOCUMENTS MAY BE DEPOSITED IN THE BID BOX SITUATED AT (STREET ADDRESS)</b>					
<p><b>Location of tender box:</b> VWS  <b>Physical address:</b> 97 Memorial Road, South Ridge, Kimberley, 8301  <b>Identification details:</b> Contract: CI-VB-0031: UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER TREATMENT WORKS</p>					
<p>South African National Parks invites tenders for the <b>UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER TREATMENT WORKS</b> in Mokala National Park close to Kimberley in the Northern Cape Province.</p> <p><b>The following pre-qualification criteria for preferential procurement, Preferential Procurement Regulations, 2017 applies to this tender:</b></p> <ul style="list-style-type: none"> <li>Tenderer must have a minimum <b>B-BBEE Level 2</b> status.</li> </ul> <p>Preferences are offered to tenderers for Broad-Black Based Empowerment (B-BBEE) Status Level of Contribution in terms of the Preferential Procurement Regulations, 2017.</p> <p>It is estimated that tenderers must have a CIDB grading designation of <b>5CE/4CEPE or Higher</b>. Tenderers who satisfy criteria stated in the tender data may submit tender offers.</p> <p>Only tenderers who comply with the following are eligible to submit tenders:</p> <ul style="list-style-type: none"> <li>Have a minimum B-BBEE Level 2 status as per PPPFA pre-qualification criteria.</li> <li>Have the required and valid CIDB grading stated</li> <li>Achieved the minimum score for Functionality</li> <li>Tenderer is not listed in the Register of Tender Defaulters and prohibited from doing business with the public sector.</li> <li>The tenderer has not abused the Employer's supply chain management system</li> <li>The tenderer has not failed to perform on any previous contract with the employer.</li> </ul> <p>The physical address for collection of tender documents is:          The physical address for collection of tender documents is:  <b>Lilydale Reception Boardroom</b>  <b>Mokala National Park</b>  <b>Off the N12 near Kimberley</b>  <b>Northern Cape</b></p> <p><b>Tender documents will <u>ONLY</u> be available at the compulsory clarification meeting.</b></p> <p>A non-refundable tender deposit of R 300-00 payable in cash is required on collection of the tender documents.</p>					

 Contractor

 Witness for  
Contractor

 Employer

 Witness for  
Employer

Queries relating to the issue of these documents may be addressed to:

**All Queries**

Mr Garret Kobe

Tel No: (012) 426 5132 / 076 481 8604

e-mail: [garret.kobe@sanparks.org](mailto:garret.kobe@sanparks.org)

A compulsory clarification meeting with representatives of the Employer will take place at the **Lilydale site in the Mokala National Park on 23 June 2022 starting at 11:00 hrs.** The Tenderer shall inspect and examine the site and its surroundings and shall satisfy himself before submitting his tender as to the form and nature of the Site, the quantities and nature of the work and materials necessary for the completion of the Works and the means of access of the Site, the accommodation he may require and in general shall himself obtain all necessary information as to risk, contingencies and other circumstances which may influence or affect his tender. The tenderer must be represented at the site inspection by a person who is suitably qualified and experienced to comprehend the implications of the work involved. Attendance of the site inspection is compulsory and a tender will be disqualified if the site inspection is not attended by a representative of the tenderer.

**The closing time for receipt of tenders is 14 July 2022 @ 11:00 hrs.** Telephonic, telex facsimile, e-mail and late tenders will not be accepted.

Tenders may only be submitted on the tender documentation that is issued.

Requirements for sealing, addressing, delivery, opening and assessment of tenders are stated in the Tender Data.

BIDDING PROCEDURE ENQUIRIES MAY BE DIRECTED TO:				TECHNICAL ENQUIRIES MAY BE DIRECTED TO:			
CONTACT PERSON	Garret Kobe			CONTACT PERSON	Niel Maritz		
TELEPHONE NUMBER	012-426 5132			TELEPHONE NUMBER	054 3376600 or 0827835951		
FACSIMILE NUMBER	N/A			FACSIMILE NUMBER	N/A		
E-MAIL ADDRESS	<a href="mailto:garret.kobe@sanparks.org">garret.kobe@sanparks.org</a>			E-MAIL ADDRESS	<a href="mailto:nielm@bvinc.co.za">nielm@bvinc.co.za</a>		
<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							
SUPPLIER COMPLIANCE STATUS	TAX COMPLIANCE SYSTEM PIN:		OR	CENTRAL SUPPLIER DATABASE No:	MAAA		
B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE	TICK APPLICABLE BOX]		B-BBEE STATUS LEVEL SWORN AFFIDAVIT		[TICK APPLICABLE BOX]		
	<input type="checkbox"/> Yes <input type="checkbox"/> No				<input type="checkbox"/> Yes <input type="checkbox"/> No		
<b>[A B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE/ SWORN AFFIDAVIT (FOR EMES &amp; QSEs) MUST BE SUBMITTED IN ORDER TO QUALIFY FOR PREFERENCE POINTS FOR B-BBEE]</b>							

 Contractor

 Witness for  
Contractor

 Employer

 Witness for  
Employer

ARE YOU THE ACCREDITED REPRESENTATIVE IN SOUTH AFRICA FOR THE GOODS /SERVICES /WORKS OFFERED?	<input type="checkbox"/> Yes <input type="checkbox"/> No [IF YES ENCLOSE PROOF]	ARE YOU A FOREIGN BASED SUPPLIER FOR <b>WORKS OFFERED?</b>	<input type="checkbox"/> Yes <input type="checkbox"/> No [IF YES, ANSWER PART B:3 ]
<b>QUESTIONNAIRE TO BIDDING FOREIGN SUPPLIERS</b>			
<p>IS THE ENTITY A RESIDENT OF THE REPUBLIC OF SOUTH AFRICA (RSA)? <span style="float: right;"><input type="checkbox"/> YES <input type="checkbox"/> NO</span></p> <p>DOES THE ENTITY HAVE A BRANCH IN THE RSA? <span style="float: right;"><input type="checkbox"/> YES <input type="checkbox"/> NO</span></p> <p>DOES THE ENTITY HAVE A PERMANENT ESTABLISHMENT IN THE RSA? <span style="float: right;"><input type="checkbox"/> YES <input type="checkbox"/> NO</span></p> <p>DOES THE ENTITY HAVE ANY SOURCE OF INCOME IN THE RSA? <span style="float: right;"><input type="checkbox"/> YES <input type="checkbox"/> NO</span></p> <p>IS THE ENTITY LIABLE IN THE RSA FOR ANY FORM OF TAXATION? <span style="float: right;"><input type="checkbox"/> YES <input type="checkbox"/> NO</span></p> <p><b>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 BELOW.</b></p>			

**NB: FAILURE TO PROVIDE / OR COMPLY WITH ANY OF THE ABOVE PARTICULARS MAY RENDER THE TENDER INVALID.**

SIGNATURE OF BIDDER: .....

CAPACITY UNDER WHICH THIS BID IS SIGNED:  
 (Proof of authority must be submitted e.g. company resolution) .....

DATE: .....

 Contractor

 Witness for  
Contractor

 Employer

 Witness for  
Employer

**UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER TREATMENT WORKS**  
**CONTRACT NO: CI-VB-0031**

**T1.2: Tender Data**

The conditions of tender are the Standard Conditions of Tender as contained in **Annex C of the CIDB Standard for Uniformity in Construction Procurement**. (see [www.cidb.org.za](http://www.cidb.org.za)) which are reproduced without amendment or alteration for the convenience of tenderers as an Annex to the Tender Data.)

**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 the Tender Data given below is cross-referenced to the clause in the Standard Conditions of Tender to which it mainly applies.

Clause number	Tender Data
C 1.1	The Employer is the South African National Parks.
C 1.2	<p>The following documents form part of this tender:</p> <p>VOLUME 1 : The General Conditions of Contract for Construction Works, Third Edition, 2015, prepared by the South African Institution of Civil Engineering (SAICE). This publication is available and tenderers must obtain copies at their own cost from the South African Institution of Civil Engineering (SAICE), Private Bag X200, Halfway House 1685, Tel: (011) 805 5947, Fax: (011) 805 5971, e-mail: <a href="mailto:civilinfo@saice.org.za">civilinfo@saice.org.za</a>. The tender documents issued by the employer comprises:</p> <p><b>THE TENDER</b></p> <p><b>Part T1: Tendering procedures</b>            T1.1 - Tender notice and invitation to tender            T1.2 - Tender data</p> <p><b>Part T2: Returnable documents</b>            T2.1 - List of returnable documents            T2.2 - Returnable schedules</p> <p><b>THE CONTRACT</b></p> <p><b>Part C1: Agreements and Contract data</b>            C1.1 - Form of offer and acceptance            C1.2 - Contract data            C1.3 - Performance Bond</p> <p><b>Part C2: Pricing data</b>            C2.1 - Pricing assumptions            C2.2 - Bill of Quantities</p> <p><b>Part C3: Scope of work</b>            C3 - Scope of work</p> <p><b>Part C4: Site information</b>            C4 - Site information</p> <p><b>Part C5 : Drawings</b>            C5 - Drawings, schedules and specifications</p>

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Contractor

 Employer

 Witness for  
Employer



C 1.4	<p>Should it be necessary for a bidder to obtain clarity on any matter arising from or referred to in this tender document, please refer queries, in writing, to the contact person listed below. Under no circumstances may any other employee within the SANParks be approached for any information. Any such action may result to disqualification of a response submitted in competition to the tender process.</p> <p>Enquiries should reference specific page and or paragraph numbers, where appropriate.</p> <p><b>All questions/enquiries must be forwarded in writing not later than 6 July 2022 at 12:00.</b> Questions/enquiries received after <b>12:00 on 6 July 2022</b> will not be considered.</p> <p>Name: Garret Kobe Capacity: Manager SCM : Infrastructure and Special Projects Address: PO Box 787, PRETORIA, 0001 Tel: 012 426 5132 Fax: 012 343 0351 E-mail: garret.kobe@sanparks.org</p> <p>The language for communications is English</p>
C 2.1	<p>Only those tenderers who satisfy the following eligibility criteria and who provide the required evidence in their tender submissions are eligible to submit tenders and have their tenders evaluated:</p>
C 2.1	<p>Only those tenderers who are registered with the CIDB, or are capable of being so prior to the evaluation of submissions, in a contractor grading designation equal to or higher than a contractor designation 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>5 CE/4 CEPE</b> or higher class construction work, are eligible to have their tenders evaluated.</p> <p>The following tenderers who are registered with the CIDB, or are capable of being so registered prior to the evaluation of submission, are eligible to have their tenders evaluated:</p> <p>Joint Venture are eligible to submit tenders provided that:</p> <ol style="list-style-type: none"> <li>every member of the joint venture is registered with the CIDB;</li> <li>the lead partner has a contractor grading designation in the <b>4 CE</b> class of construction work; or not lower than one level below the required grading designation in the class of construction works under consideration and possess the required recognition status.</li> <li>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>4 CE</b> class of construction work or a value determined in accordance with Regulation 25 (1B) of 25(7A) of the Construction Industry Development Regulations.</li> </ol>
C 2.1	<p>As part of the eligibility criteria, tenderers shall further be required to satisfy the following functionality criteria and be required to demonstrate their ability to undertake the works considered to be complex and to provide proof of experience, expertise, personnel, plant and equipment to undertake work of this nature.</p> <p>Tenderers are required to score a minimum of <b>14 points</b> out of a possible <b>20 points</b> (i.e. 70 %) in order to be responsive: Tender Data, of the proposed functionality criteria and point system for evaluation. <b>The following functionality criteria apply:</b></p> <ol style="list-style-type: none"> <li>Construction experience sewer pump lines and concrete works(Maximum 15 points)</li> <li>Technical Expertise (Maximum 5 points)</li> </ol> <p>Tenderers who fail to meet the minimum threshold shall be declared non-responsive and subsequently rejected.</p> <p><b>(a) Sewer related pipe lines and civil works for package type Waste Water Treatment Works (Maximum 15 points)</b></p> <p>Tenderers are required to demonstrate their ability to undertake the work and provide proof of experience in accurate Civil and concrete related construction work. Tenderers are required to score a minimum of</p>

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14 points out of a possible 20 points in order to qualify for the tender.  
Tenderer who fails to meet the minimum qualifying score is not an acceptable tender and shall be declared non-responsive and subsequently rejected. The onus rests with the tenderer to supply sufficient information to allow for the proper scoring, evaluation and award of points.

Where insufficient information is provided, zero points will be awarded for such particular criterion.

The quality criteria and maximum score in respect of each of the criteria as follows:

Quality criteria	Sub-criteria	Maximum number of points
Construction of sewerage/water plant, and/or bulk sewerage pipe lines, and/or reinforced concrete reservoirs, and/or pump stations of value between R1 million and R 4 million, inclusive of VAT – 3 points per contract, 6 point maximum	3 points per contract	6
Construction of sewerage/water plant, and/or bulk sewerage pipe lines, and/or reinforced concrete reservoirs, and/or pump stations of value exceeding R4 million, inclusive of VAT – 3 points per contract, 9 points maximum	3 points per contract	9
<b>Maximum possible score for quality</b>		<b>15</b>

Tenderer to submit list of past and current projects for functionality information – information must clearly state project information, overall value of contract. Contractor to submit “Letter of Intent” for current projects, and “Completion Certificates” for completed projects. Project details shall include telephone contact details of either the client or the engineer for the project.

**b) Technical Expertise (Maximum 5 Points)**

Points will be awarded for Technical Expertise applicable to the key personnel and individual construction staff members within the three categories listed below and who must be available for the execution and completion of the work.

Quality criteria	Sub-criteria	Maximum number of points
Contracts Manager who has a minimum of 10 years construction experience	1 point	1
Site Agent <ul style="list-style-type: none"> <li>5 years' and more experience as Site Agent in the Civil Construction Industry – 2 points maximum</li> <li>3 years but less than 5 years as Site Agent in the Civil Construction Industry - 1 point maximum</li> </ul>	2 points	2
Site Foreman <ul style="list-style-type: none"> <li>5 years' and more experience as Site Foreman in the Civil Construction Industry - 2 points maximum</li> <li>3 years but less than 5 years' experience as Site Foreman in the Civil Construction Industry - 1 point maximum</li> </ul>	2 points	2
<b>Maximum possible score for quality</b>		<b>5</b>

Curriculum Vitae's (CV's) of the Contracts Manager, Site Agent and Site Foreman that will be employed on this contract must be submitted with the tender document. The various individuals must be in the permanent or fixed term employment of the tenderer to be awarded points

During further evaluation the Employer shall evaluate the remaining responsive tenders using the tender evaluation method and associated evaluation criteria and weightings that are specified in the tender data under **C.3.11.1**

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C 2.7	<p>The arrangements details for the compulsory clarification meeting are stated under Part T1.1: Tender Notice and Invitation to Tender.</p> <p>Tenderers must complete and sign the attendance register at the clarification meeting in the name of the tendering entity.</p>				
C 2.12	No alternative tender offers will be considered				
C 2.13.2	Electronic tender offers will not be accepted.				
C 2.13.3	Parts of each tender offer communicated on paper shall be submitted as an original, plus 0 (nil) copies.				
C 2.13.7	<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: Veterinary Wildlife Services</b></p> <p><b>Physical address:</b> 97 Memorial Road, South Ridge, Kimberley, 8301</p> <p><b>Identification details:</b> Contract: CI-VB-0031: UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER TREATMENT WORKS</p>				
C 2.15.1	The closing time for submission of tender offers is as stated in the Tender Notice and Invitation to Tender.				
C 2.16	The tender offer validity period is 12 weeks.				
C 2.19	Access shall be provided for inspections, tests and analysis as may be required by the Employer.				
C 2.23	<p>The tenderer is required to submit with his tender:</p> <ol style="list-style-type: none"> <li>1) A valid Tax Compliance System PIN issued by the South African Revenue Services;</li> <li>2) Proof of Contractor Registration issued by the Construction Industry Development Board - Compulsory</li> <li>3) An original and valid B-BBEE Status Level verification Certificate or certified copy thereof</li> <li>4) Proof of registration of Closed Corporation or Company or other legal entities applicable to tender - Certified copy</li> <li>5) Letter of good standing from the Compensation Commissioner – Compulsory</li> <li>6) Letter of intent for a Construction Guarantee – Compulsory</li> <li>7) National Treasury Central Supplier Database (CSD) Registration Report - Compulsory</li> <li>8) Financial statements for the preceding financial year within 12 months of the financial year end</li> <li>9) All other certificates as listed in the List of Returnable Documents. Copy of Joint Venture Agreement if applicable.</li> <li>10) Form C1.1 – Form of Offer and Acceptance</li> <li>11) Form T2.1 A - Certificate of Authority for Signature.</li> <li>12) For Joint Ventures a JV Agreement shall be provided (if applicable).</li> <li>13) Form T2.1: B - Certificate of attendance at site inspection.</li> <li>14) Form T2.1 F - Record of addenda to tender documents</li> </ol>				
C 3.4.1	<p>The time and location for opening of the tender offers are:</p> <table border="1"> <tr> <td>Date and Time:</td><td><b>14 July 2022 at 11:00</b></td></tr> <tr> <td>Place:</td><td><b>VWS Board Room 97 Memorial Road, South Ridge, Kimberley, 8301</b></td></tr> </table>	Date and Time:	<b>14 July 2022 at 11:00</b>	Place:	<b>VWS Board Room 97 Memorial Road, South Ridge, Kimberley, 8301</b>
Date and Time:	<b>14 July 2022 at 11:00</b>				
Place:	<b>VWS Board Room 97 Memorial Road, South Ridge, Kimberley, 8301</b>				

  
 Contractor

  
 Witness for  
Contractor

  
 Employer

  
 Witness for  
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C 3.11

**Evaluation of tender offers**

The procedure for the evaluation of responsive tenders is Price, Preference and Functionality. The Functionality criteria and scoring are described under eligibility criteria C2.1. A tender that fails to obtain the minimum qualification score for functionality is not an acceptable tender.

The following price and preference point system is applicable to this tender:

The 80/20 system for requirements with a Rand value not exceeding R 50 000 000 (all applicable taxes included)

Points for this bid shall be awarded as follows:

- (a) Price; and
- (b) B-BBEE Status Level of Contribution.

The maximum points for this bid are allocated as follows:

Price	80
B-BBEE Status Level of Contribution	20

Total Points for Price and B-BBEE must not exceed 100

- Failure on the part of a bidder to fill in and/or to sign this form and submit a B-BBEE Verification Certificate from a Verification Agency accredited by the South African Accreditation System (SANAS) together with the bid, will be interpreted to mean that preference points for B-BBEE status level of contribution are not claimed. Certificates issued by

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

**Scoring financial offers: The 80/20 preference points system for acquisition of services, works or good**

The following formula will be used to calculate the points for price in respect of tenders with a Rand value not exceeding R 50,000,000 (all applicable taxes included) and a maximum of 80 points is allocated to price:

$$P_s = 80 \left( 1 - \frac{P_t - P_{\min}}{P_{\min}} \right)$$

Where

$P_s$	=	Points scored for comparative price of bid under consideration
$P_t$	=	Comparative price of bid under consideration
$P_{\min}$	=	Comparative price of lowest acceptable bid

**Scoring preferences**

Points will be awarded to a tender for attaining the B- BBEE status level of contributor in accordance with the table below: **B-BBEE status level of contributor**. A maximum of 20 points is allocated to preference.

B-BBEE Status Level of Contributor	Number of points (80/20 system)
1	20

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 Employer

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Employer

	<table> <tr> <td>2</td><td>18</td></tr> <tr> <td>3</td><td>Non-compliant</td></tr> <tr> <td>4</td><td>Non-compliant</td></tr> <tr> <td>5</td><td>Non-compliant</td></tr> <tr> <td>6</td><td>Non-compliant</td></tr> <tr> <td>7</td><td>Non-compliant</td></tr> <tr> <td>8</td><td>Non-compliant</td></tr> <tr> <td>Non-compliant contributor</td><td>Non-compliant</td></tr> </table>	2	18	3	Non-compliant	4	Non-compliant	5	Non-compliant	6	Non-compliant	7	Non-compliant	8	Non-compliant	Non-compliant contributor	Non-compliant
2	18																
3	Non-compliant																
4	Non-compliant																
5	Non-compliant																
6	Non-compliant																
7	Non-compliant																
8	Non-compliant																
Non-compliant contributor	Non-compliant																
C 3.13	<p>Tender offers will only be accepted with the following additional requirements::</p> <ul style="list-style-type: none"> <li>a) the tenderer or any of its directors is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act of 2004 as a person prohibited from doing business with the public sector;</li> <li>b) the tenderer has not:               <ul style="list-style-type: none"> <li>i) abused the employer's supply chain management system;</li> <li>or</li> <li>ii) failed to perform on any previous contract and has been given a written notice to this effect;</li> </ul> </li> <li>d) has completed the Compulsory Enterprise Questionnaire, SBD 4, 6.1, , 8, 9 and the 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</li> <li>e) Has submitted the documentation listed in C.2.23</li> </ul>																
C 3.17	The number of paper copies of the signed contract to be provided by the Employer is one.																

Contractor

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## Annexure C

### Standard Conditions of Tender

(As per Construction Industry Development Board, Government Gazette No 42622, 8 August 2019)

#### C.1 General

##### C.1.1 Actions

- C.1.1.1 The employer and each tenderer submitting a tender offer shall comply with these conditions of tender. In their dealings with each other, they shall discharge their duties and obligations as set out in C.2 and C.3, timeously and with integrity, and behave equitably, honestly and transparently, comply with all legal obligations and not engage in anticompetitive practices.
- C.1.1.2 The employer and the tenderer and all their agents and employees involved in the tender process shall avoid conflicts of interest and where a conflict of interest is perceived or known, declare any such conflict of interest, indicating the nature of such conflict. Tenderers shall declare any potential conflict of interest in their tender submissions. Employees, agents and advisors of the employer shall declare any conflict of interest to whoever is responsible for overseeing the procurement process at the start of any deliberations relating to the procurement process or as soon as they become aware of such conflict and abstain from any decisions where such conflict exists or recuse themselves from the procurement process, as appropriate.

*Note: 1) A conflict of interest may arise due to a conflict of roles which might provide an incentive for improper acts in some circumstances. A conflict of interest can create an appearance of impropriety that can undermine confidence in the ability of that person to act properly in his or her position even if no improper acts result.*

*2) Conflicts of interest in respect of those engaged in the procurement process include direct, indirect or family interests in the tender or outcome of the procurement process and any personal bias, inclination, obligation, allegiance or loyalty which would in any way affect any decisions taken.*

- C.1.1.3 The employer shall not seek and a tenderer shall not submit a tender without having a firm intention and the capacity to proceed with the contract.

##### C.1.2 Tender Documents

The documents issued by the employer for the purpose of a tender offer are listed in the tender data.

##### C.1.3 Interpretation

- C.1.3.1 The tender data and additional requirements contained in the tender schedules that are included in the returnable documents are deemed to be part of these conditions of tender.
- C.1.3.2 These conditions of tender, the tender data and tender schedules which are required for tender evaluation purposes, shall form part of any contract arising from the invitation to tender.
- C.1.3.3 For the purposes of these conditions of tender, the following definitions apply:

- a) **conflict of interest** means any situation in which:
  - i) someone in a position of trust has competing professional or personal interests which make it difficult to fulfil his or her duties impartially;
  - ii) an individual or tenderer is in a position to exploit a professional or official capacity in some way for their personal or corporate benefit; or
  - iii) incompatibility or contradictory interests exist between an employee and the tenderer who employs that employee.
- b) **comparative offer** means the price after the factors of a non-firm price and all unconditional discounts it can be utilised to have been taken into consideration;
- c) **corrupt practice** means the offering, giving, receiving or soliciting of anything of value to influence the action of the employer or his staff or agents in the tender process;
- d) **fraudulent practice** means the misrepresentation of the facts in order to influence the tender process or the award of a contract arising from a tender offer to the detriment of the employer, including collusive practices intended to establish prices at artificial levels;

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#### **C.1.4 Communication and employer's agent**

Each communication between the employer and a tenderer shall be to or from the employer's agent only, and in a form that can be readily read, copied and recorded. Communications shall be in the English language. The employer shall not take any responsibility for non-receipt of communications from or by a tenderer. The name and contact details of the employer's agent are stated in the tender data.

#### **C.1.5 Cancellation and Re-Invitation of Tenders**

C.1.5.1 An employer may, prior to the award of the tender, cancel a tender if-

- a) due to changed circumstances, there is no longer a need for the engineering and construction works specified in the invitation;
- b) funds are no longer available to cover the total envisaged expenditure; or
- c) no acceptable tenders are received.
- d) there is a material irregularity in the tender process.

C.1.5.2 The decision to cancel a tender invitation must be published in the same manner in which the original tender invitation was advertised

C.1.5.3 An employer may only with the prior approval of the relevant treasury cancel a tender invitation for the second time.

#### **C.1.6 Procurement procedures**

##### **C.1.6.1 General**

Unless otherwise stated in the tender data, a contract will, subject to C.3.13, be concluded with the tenderer who in terms of C.3.11 is the highest ranked or the tenderer scoring the highest number of tender evaluation points, as relevant, based on the tender submissions that are received at the closing time for tenders.

##### **C.1.6.2 Competitive negotiation procedure**

C.1.6.2.1 Where the tender data require that the competitive negotiation procedure is to be followed, tenderers shall submit tender offers in response to the proposed contract in the first round of submissions. Notwithstanding the requirements of C.3.4, the employer shall announce only the names of the tenderers who make a submission. The requirements of C.8 relating to the material deviations or qualifications which affect the competitive position of tenderers shall not apply.

C.1.6.2.2 All responsive tenderers or at least a minimum of not less than three responsive tenderers that are highest ranked in terms of the evaluation criteria stated in the tender data shall be invited to enter into competitive negotiations based on the principle of equal treatment, keeping confidential the proposed solutions and associated information.

Notwithstanding the provisions of C.2.17, the employer may request that tenders be clarified, specified and fine-tuned in order to improve a tenderer's competitive position provided that such clarification, specification, fine-tuning or additional information does not alter any fundamental aspects of the offers or impose substantial new requirements which restrict or distort competition or have a discriminatory effect.

C.1.6.2.3 At the conclusion of each round of negotiations, tenderers shall be invited by the employer to revise their tender offer based on the same evaluation criteria, with or without adjusted weightings. Tenderers shall be advised when they are to submit their best and final offer.

C.1.6.2.4 The contract shall be awarded in accordance with the provisions of C.3.11 and C.3.13 after tenderers have been requested to submit their best and final offer.

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### **C.1.6.3 Proposal procedure using the two stage-system**

#### **C.1.6.3.1 Option 1**

Tenderers shall in the first stage submit technical proposals and, if required, cost parameters around which a contract may be negotiated. The employer shall evaluate each responsive submission in terms of the method of evaluation stated in the tender data, and in the second stage negotiate a contract with the tenderer scoring the highest number of evaluation points and award the contract in terms of these conditions of tender.

#### **C.1.6.3.2 Option 2**

C.1.6.3.2.1 Tenderers shall submit in the first stage only technical proposals. The employer shall invite all responsive tenderers to submit tender offers in the second stage, following the issuing of procurement documents.

C.1.6.3.2.2 The employer shall evaluate tenders received during the second stage in terms of the method of evaluation stated in the tender data, and award the contract in terms of these conditions of tender.

### **C.2 Tenderer's obligations**

#### **C.2.1 Eligibility**

C.2.1.1 Submit a tender offer only if the tenderer satisfies the criteria stated in the tender data and the tenderer, or any of his principals, is not under any restriction to do business with employer.

C.2.1.2 Notify the employer of any proposed material change in the capabilities or formation of the tendering entity (or both) or any other criteria which formed part of the qualifying requirements used by the employer as the basis in a prior process to invite the tenderer to submit a tender offer and obtain the employer's written approval to do so prior to the closing time for tenders.

#### **C.2.2 Cost of tendering**

C.2.2.1 Accept that, unless otherwise stated in the tender data, the employer will not compensate the tenderer for any costs incurred in the preparation and submission of a tender offer, including the costs of any testing necessary to demonstrate that aspects of the offer complies with requirements.

C.2.2.2 The cost of the tender documents charged by the employer shall be limited to the actual cost incurred by the employer for printing the documents. Employers must attempt to make available the tender documents on its website so as not to incur any costs pertaining to the printing of the tender documents.

#### **C.2.3 Check documents**

Check the tender documents on receipt for completeness and notify the employer of any discrepancy or omission.

#### **C.2.4 Confidentiality and copyright of documents**

Treat as confidential all matters arising in connection with the tender. Use and copy the documents issued by the employer only for the purpose of preparing and submitting a tender offer in response to the invitation.

#### **C.2.5 Reference documents**

Obtain, as necessary for submitting a tender offer, copies of the latest versions of standards, specifications, conditions of contract and other publications, which are not attached but which are incorporated into the tender documents by reference.

#### **C.2.6 Acknowledge addenda**

Acknowledge receipt of addenda to the tender documents, which the employer may issue, and if necessary apply for an extension to the closing time stated in the tender data, in order to take the addenda into account.

#### **C.2.7 Clarification meeting**

Attend, where required, a clarification meeting at which tenderers may familiarize themselves with aspects of the proposed work, services or supply and raise questions. Details of the meeting(s) are stated in the tender data.

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**C.2.8 Seek clarification**

Request clarification of the tender documents, if necessary, by notifying the employer at least five (5) working days before the closing time stated in the tender data.

**C.2.9 Insurance**

Be aware that the extent of insurance to be provided by the employer (if any) might not be for the full cover required in terms of the conditions of contract identified in the contract data. The tenderer is advised to seek qualified advice regarding insurance.

**C.2.10 Pricing the tender offer**

C.2.10.1 Include in the rates, prices, and the tendered total of the prices (if any) all duties, taxes except Value Added Tax (VAT), and other levies payable by the successful tenderer, such duties, taxes and levies being those applicable fourteen (14) days before the closing time stated in the tender data.

C.2.10.2 Show VAT payable by the employer separately as an addition to the tendered total of the prices.

C.2.10.3 Provide rates and prices that are fixed for the duration of the contract and not subject to adjustment except as provided for in the conditions of contract identified in the contract data.

C.2.10.4 State the rates and prices in Rand unless instructed otherwise in the tender data. The conditions of contract identified in the contract data may provide for part payment in other currencies.

**C.2.11 Alterations to documents**

Do not make any alterations or additions to the tender documents, except to comply with instructions issued by the employer, or necessary to correct errors made by the tenderer. All signatories to the tender offer shall initial all such alterations.

**C.2.12 Alternative tender offers**

C.2.12.1 Unless otherwise stated in the tender data, submit alternative tender offers only if a main tender offer, strictly in accordance with all the requirements of the tender documents, is also submitted as well as a schedule that compares the requirements of the tender documents with the alternative requirements that are proposed.

C.2.12.2 Accept that an alternative tender offer must be based only on the criteria stated in the tender data or criteria otherwise acceptable to the employer.

C.2.12.3 An alternative tender offer must only be considered if the main tender offer is the winning tender.

**C.2.13 Submitting a tender offer**

C.2.13.1 Submit one tender offer only, either as a single tendering entity or as a member in a joint venture to provide the whole of the works identified in the contract data and described in the scope of works, unless stated otherwise in the tender data.

C.2.13.2 Return all returnable documents to the employer after completing them in their entirety, either electronically (if they were issued in electronic format) or by writing legibly in non-erasable ink.

C.2.13.3 Submit the parts of the tender offer communicated on paper as an original plus the number of copies stated in the tender data, with an English translation of any documentation in a language other than English, and the parts communicated electronically in the same format as they were issued by the employer.

C.2.13.4 Sign the original and all copies of the tender offer where required in terms of the tender data. The employer will hold all authorized signatories liable on behalf of the tenderer. Signatories for tenderers proposing to contract as joint ventures shall state which of the signatories is the lead partner whom the employer shall hold liable for the purpose of the tender offer.

C.2.13.5 Seal the original and each copy of the tender offer as separate packages marking the packages as "ORIGINAL" and "COPY". Each package shall state on the outside the employer's address and identification details stated in the tender data, as well as the tenderer's name and contact address.

C.2.13.6 Where a two-envelope system is required in terms of the tender data, place and seal the returnable documents listed in the tender data in an envelope marked "financial proposal" and place the remaining returnable documents in an

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envelope marked "technical proposal". Each envelope shall state on the outside the employer's address and identification details stated in the tender data, as well as the tenderer's name and contact address.

C.2.13.7 Seal the original tender offer and copy packages together in an outer package that states on the outside only the employer's address and identification details as stated in the tender data.

C.2.13.8 Accept that the employer will not assume any responsibility for the misplacement or premature opening of the tender offer if the outer package is not sealed and marked as stated.

C.2.13.9 Accept that tender offers submitted by facsimile or e-mail will be rejected by the employer, unless stated otherwise in the tender data.

#### **C.2.14 Information and data to be completed in all respects**

Accept that tender offers, which do not provide all the data or information requested completely and in the form required, may be regarded by the employer as non-responsive.

#### **C.2.15 Closing time**

C.2.15.1 Ensure that the employer receives the tender offer at the address specified in the tender data not later than the closing time stated in the tender data. Accept that proof of posting shall not be accepted as proof of delivery.

C.2.15.2 Accept that, if the employer extends the closing time stated in the tender data for any reason, the requirements of these conditions of tender apply equally to the extended deadline.

#### **C.2.16 Tender offer validity**

C.2.16.1 Hold the tender offer(s) valid for acceptance by the employer at any time during the validity period stated in the tender data after the closing time stated in the tender data.

C.2.16.2 If requested by the employer, consider extending the validity period stated in the tender data for an agreed additional period with or without any conditions attached to such extension.

C.2.16.3 Accept that a tender submission that has been submitted to the employer may only be withdrawn or substituted by giving the employer's agent written notice before the closing time for tenders that a tender is to be withdrawn or substituted. If the validity period stated in

C.2.16 lapses before the employer evaluating tender, the contractor reserves the right to review the price based on Consumer Price Index (CPI).

C.2.16.4 Where a tender submission is to be substituted, a tenderer must submit a substitute tender in accordance with the requirements of C.2.13 with the packages clearly marked as "SUBSTITUTE".

#### **C.2.17 Clarification of tender offer after submission**

Provide clarification of a tender offer in response to a request to do so from the employer during the evaluation of tender offers. This may include providing a breakdown of rates or prices and correction of arithmetical errors by the adjustment of certain rates or item prices (or both). No change in the competitive position of tenderers or substance of the tender offer is sought, offered, or permitted.

#### **C.2.18 Provide other material**

C.2.18.1 Provide, on request by the employer, any other material that has a bearing on the tender offer, the tenderer's commercial position (including notarized joint venture agreements), preferencing arrangements, or samples of materials, considered necessary by the employer for the purpose of a full and fair risk assessment.

Should the tenderer not provide the material, or a satisfactory reason as to why it cannot be provided, by the time for submission stated in the employer's request, the employer may regard the tender offer as non-responsive.

C.2.18.2 Dispose of samples of materials provided for evaluation by the employer, where required.

#### **C.2.19 Inspections, tests and analysis**

Provide access during working hours to premises for inspections, tests and analysis as provided for in the tender data.

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**C.2.20 Submit securities, bonds and policies**

If requested, submit for the employer's acceptance before formation of the contract, all securities, bonds, guarantees, policies and certificates of insurance required in terms of the conditions of contract identified in the contract data.

**C.2.21 Check final draft**

Check the final draft of the contract provided by the employer within the time available for the employer to issue the contract.

**C.2.22 Return of other tender documents**

If so instructed by the employer, return all retained tender documents within twenty-eight (28) days after the expiry of the validity period stated in the tender data.

**C.2.23 Certificates**

Include in the tender submission or provide the employer with any certificates as stated in the tender data.

**C.3 The employer's undertakings****C.3.1 Respond to requests from the tenderer**

C.3.1.1 Unless otherwise stated in the tender Data, respond to a request for clarification received up to five (5) working days before the tender closing time stated in the Tender Data and notify all tenderers who collected tender documents.

C.3.1.2 Consider any request to make a material change in the capabilities or formation of the tendering entity (or both) or any other criteria which formed part of the qualifying requirements used to prequalify a tenderer to submit a tender offer in terms of a previous procurement process and deny any such request if as a consequence:

- a) an individual firm, or a joint venture as a whole, or any individual member of the joint venture fails to meet any of the collective or individual qualifying requirements;
- b) the new partners to a joint venture were not prequalified in the first instance, either as individual firms or as another joint venture; or
- c) in the opinion of the Employer, acceptance of the material change would compromise the outcome of the prequalification process.

**C.3.2 Issue Addenda**

If necessary, issue addenda that may amend or amplify the tender documents to each tenderer during the period from the date that tender documents are available until three (3) working days before the tender closing time stated in the Tender Data. If, as a result a tenderer applies for an extension to the closing time stated in the Tender Data, the Employer may grant such extension and, shall then notify all tenderers who collected tender documents.

**C.3.3 Return late tender offers**

Return tender offers received after the closing time stated in the Tender Data, unopened, (unless it is necessary to open a tender submission to obtain a forwarding address), to the tenderer concerned.

**C.3.4 Opening of tender submissions**

C.3.4.1 Unless the two-envelope system is to be followed, open valid tender submissions in the presence of tenderers' agents who choose to attend at the time and place stated in the tender data. Tender submissions for which acceptable reasons for withdrawal have been submitted will not be opened.

C.3.4.2 Announce at the meeting held immediately after the opening of tender submissions, at a venue indicated in the tender data, the name of each tenderer whose tender offer is opened and, where applicable, the total of his prices, number of points claimed for its BBBEE status level and time for completion for the main tender offer only.

C.3.4.3 Make available the record outlined in C.3.4.2 to all interested persons upon request.

**C.3.5 Two-envelope system**

C.3.5.1 Where stated in the tender data that a two-envelope system is to be followed, open only the technical proposal of valid tenders in the presence of tenderers' agents who choose to attend at the time and place stated in the tender data and announce the name of each tenderer whose technical proposal is opened.

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C.3.5.2 Evaluate functionality of the technical proposals offered by tenderers, then advise tenderers who remain in contention for the award of the contract of the time and place when the financial proposals will be opened. Open only the financial proposals of tenderers, who score in the functionality evaluation more than the minimum number of points for functionality stated in the tender data, and announce the score obtained for the technical proposals and the total price and any points claimed on BBBEE status level. Return unopened financial proposals to tenderers whose technical proposals failed to achieve the minimum number of points for functionality.

### **C.3.6 Non-disclosure**

Not disclose to tenderers, or to any other person not officially concerned with such processes, information relating to the evaluation and comparison of tender offers, the final evaluation price and recommendations for the award of a contract, until after the award of the contract to the successful tenderer.

### **C.3.7 Grounds for rejection and disqualification**

Determine whether there has been any effort by a tenderer to influence the processing of tender offers and instantly disqualify a tenderer (and his tender offer) if it is established that he engaged in corrupt or fraudulent practices.

### **C.3.8 Test for responsiveness**

C.3.8.1 Determine, after opening and before detailed evaluation, whether each tender offer properly received:

- a) complies with the requirements of these Conditions of Tender,
- b) has been properly and fully completed and signed, and
- c) is responsive to the other requirements of the tender documents.

C.3.8.2 A responsive tender is one that conforms to all the terms, conditions, and specifications of the tender documents without material deviation or qualification. A material deviation or qualification is one which, in the Employer's opinion, would:

- a) detrimentally affect the scope, quality, or performance of the works, services or supply identified in the Scope of Work,
- b) significantly change the Employer's or the tenderer's risks and responsibilities under the contract, or
- c) affect the competitive position of other tenderers presenting responsive tenders, if it were to be rectified.

Reject a non-responsive tender offer, and not allow it to be subsequently made responsive by correction or withdrawal of the non-conforming deviation or reservation.

### **C.3.9 Arithmetical errors, omissions and discrepancies**

C.3.9.1 Check responsive tenders for discrepancies between amounts in words and amounts in figures. Where there is a discrepancy between the amounts in figures and the amount in words, the amount in words shall govern.

C.3.9.2 Check the highest ranked tender or tenderer with the highest number of tender evaluation points after the evaluation of tender offers in accordance with C.3.11 for:

- a) the gross misplacement of the decimal point in any unit rate;
- b) omissions made in completing the pricing schedule or bills of quantities; or
- c) arithmetic errors in:
  - i) line item totals resulting from the product of a unit rate and a quantity in bills of quantities or schedules of prices; or
  - ii) the summation of the prices.

C.3.9.3 Notify the tenderer of all errors or omissions that are identified in the tender offer and either confirm the tender offer as tendered or accept the corrected total of prices.

C.3.9.4 Where the tenderer elects to confirm the tender offer as tendered, correct the errors as follows:

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- a) If bills of quantities or pricing schedules apply and there is an error in the line item total resulting from the product of the unit rate and the quantity, the line item total shall govern and the rate shall be corrected. Where there is an obviously gross misplacement of the decimal point in the unit rate, the line item total as quoted shall govern, and the unit rate shall be corrected.
- b) Where there is an error in the total of the prices either as a result of other corrections required by this checking process or in the tenderer's addition of prices, the total of the prices shall govern and the tenderer will be asked to revise selected item prices (and their rates if bills of quantities apply) to achieve the tendered total of the prices.

### C.3.10 Clarification of a tender offer

Obtain clarification from a tenderer on any matter that could give rise to ambiguity in a contract arising from the tender offer.

### C.3.11 Evaluation of tender offers

The Standard Conditions of Tender standardize the procurement processes, methods and procedures from the time that tenders are invited to the time that a contract is awarded. They are generic in nature and are made project specific through choices that are made in developing the Tender Data associated with a specific project.

Conditions of tender are by definition the document that establishes a tenderer's obligations in submitting a tender and the employer's undertakings in soliciting and evaluating tender offers. Such conditions establish the rules from the time a tender is advertised to the time that a contract is awarded and require employers to conduct the process of offer and acceptance in terms of a set of standard procedures.

The CIDB Standard Conditions of Tender are based on a procurement system that satisfies the following system requirements:	
Requirement	Qualitative interpretation of goal
Fair	The process of offer and acceptance is conducted impartially without bias, providing simultaneous and timely access to participating parties to the same information.
Equitable	Terms and conditions for performing the work do not unfairly prejudice the interests of the parties.
Transparent	The only grounds for not awarding a contract to a tenderer who satisfies all requirements are restrictions from doing business with the employer, lack of capability or capacity, legal impediments and conflicts of interest.
Competitive	The system provides for appropriate levels of competition to ensure cost effective and best value outcomes.
Cost effective	The processes, procedures and methods are standardized with sufficient flexibility to attain best value outcomes in respect of quality, timing and price, and least resources to effectively manage and control procurement processes.

The activities associated with evaluating tender offers are as follows:

- a) Open and record tender offers received
- b) Determine whether or not tender offers are complete
- c) Determine whether or not tender offers are responsive
- d) Evaluate tender offers
- e) Determine if there are any grounds for disqualification
- f) Determine acceptability of preferred tenderer
- g) Prepare a tender evaluation report
- h) Confirm the recommendation contained in the tender evaluation report

#### C.3.11.1 General

The employer must appoint an evaluation panel of not less than three persons conversant with the proposed scope of works to evaluate each responsive tender offer using the tender evaluation methods and associated evaluation criteria and weightings that are specified in the tender data.

### C.3.12 Insurance provided by the employer

If requested by the proposed successful tenderer, submit for the tenderer's information the policies and / or certificates of insurance which the conditions of contract identified in the contract data, require the employer to provide.

### C.3.13 Acceptance of tender offer

Accept the tender offer; if in the opinion of the employer, it does not present any risk and only if the tenderer:

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- a) is not under restrictions, or has principals who are under restrictions,
- b) preventing participating in the employer's procurement;
- c) can, as necessary and in relation to the proposed contract, demonstrate that he or she possesses the professional and technical qualifications, professional and technical competence, financial resources, equipment and other physical facilities, managerial capability, reliability, experience and reputation, expertise and the personnel, to perform the contract;
- d) has the legal capacity to enter into the contract;
- e) is not; insolvent, in receivership, under Business Rescue as provided for in chapter 6 of the Companies Act No. 2008, bankrupt or being wound up, has his/her affairs administered by a court or a judicial officer, has suspended his/her business activities or is subject to legal proceedings in respect of any of the foregoing;
- f) complies with the legal requirements, if any, stated in the tender data; and
- g) is able, in the opinion of the employer, to perform the contract free of conflicts of interest.

#### **C.3.14 Prepare contract documents**

C.3.14.1 If necessary, revise documents that shall form part of the contract and that were issued by the employer as part of the tender documents to take account of:

- a) addenda issued during the tender period,
- b) inclusion of some of the returnable documents and
- c) other revisions agreed between the employer and the successful tenderer

#### **C.3.15 Complete adjudicator's contract**

Unless alternative arrangements have been agreed or otherwise provided for in the contract, arrange for both parties to complete formalities for appointing the selected adjudicator at the same time as the main contract is signed.

#### **C.3.16 Registration of the award**

An employer must, within twenty-one (21) working days from the date on which a contractor's offer to perform a construction works contract is accepted in writing by the employer, register and publish the award on the CIDB Register of Projects.

#### **C.3.17 Provide copies of the contracts**

Provide to the successful tenderer the number of copies stated in the Tender Data of the signed copy of the contract as soon as possible after completion and signing of the form of offer and acceptance.

#### **C.3.18 Provide written reasons for actions taken**

Provide upon request written reasons to tenderers for any action that is taken in applying these conditions of tender but withhold information which is not in the public interest to be divulged, which is considered to prejudice the legitimate commercial interests of tenderers or might prejudice fair competition between tenderers.

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# Part T2: Returnable Schedules

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**UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER TREATMENT WORKS**  
**CONTRACT NO: CI-VB-0031**

**T2.1: List of Returnable Documents**

**The complete tender document as received from the employer, together with all additional documentation as requested, must be submitted. No documentation must be removed from the tender document.**

The tenderer must complete the following returnable documents:

**1 Returnable Schedules required only for tender evaluation purposes**

Resolution of board of directors / members / partners

Resolution of Board of Directors / Members / Sole Proprietor/ Partners of Partnership (if applicable)

Special Resolution of Joint Venture Partners

Compulsory Enterprise Questionnaire

Record of Addenda to Tender Documents

Proposed Amendments and Qualifications

Capacity of Tenderer

Site inspection certificate

Health and Safety Specifications Acknowledgement

**2 Other documents required only for tender evaluation purposes**

Proof of Contractor Registration issued by the Construction Industry Development Board - Compulsory

An original and valid B-BBEE Status Level verification Certificate or certified copy thereof

Proof of registration of Closed Corporation/Company or other legal entities applicable to tender - Certified copy

Letter of good standing from the Compensation Commissioner – Compulsory

Letter of intent for a Construction Guarantee – Compulsory

National Treasury Central Supplier Database (CSD) Registration Report – Compulsory

Financial statements for the preceding financial year within 12 months of the financial year

Functionality information (Curriculum vitae, contract values, reinforced concrete works values, letters of intent/appointment, etc.)

**3 Returnable Schedules that will be incorporated into the contract**

Form SBD 4: Declaration of interest

Form SBD 6.1: Preference points claim form in terms of the preferential procurement regulations 2017.

Form SBD 8: Declaration of Past Supply Chain Management practice

Form SBD 9: Certificate of independent Bid Determination


**4 Other documents that will be incorporated into the contract**

Health and Safety Specifications for UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER TREATMENT WORKS, Mokala National Park.


Code of conduct for implementing a project for SANParks

Environmental Management Plan for General Construction Activities


**5 C1.1 Offer and Acceptance (the offer portion of C1.1)****6 C1.2 Contract Data (Part 2)****7 C2.2 Bills of Quantities (As per tender document, completed in black ink)**




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**T2.2 Returnable Schedules**

This returnable schedule needs to be completed if the tenderer is a company or other legal person.

**Resolution of Board of Directors / Members / Partners**

**RESOLUTION** of a meeting of the Board of \*Directors / Members / Partners of:

\_\_\_\_\_

*(legally correct full name and registration number, if applicable, of the Enterprise)*

Held at \_\_\_\_\_ *(place)*

On \_\_\_\_\_ *(date)*

**RESOLVED that:**

1. The Enterprise submits a Tender to the South African National Parks in respect of the following project:

\_\_\_\_\_

*(project description as per Tender Document)*

Tender Number: \_\_\_\_\_ *(Tender Number as per Tender Document)*

2. \*Mr/Mrs/Ms: \_\_\_\_\_

in \*his/her Capacity as : \_\_\_\_\_ *(Position in the Enterprise)*

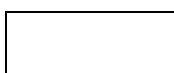
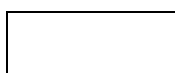
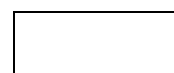
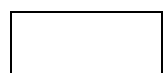
and who will sign as follows : \_\_\_\_\_

be, and is hereby, authorised to sign the Tender, and any and all other documents and/or correspondence in connection with and relating to the Tender, as well as to sign any Contract, and any and all documentation, resulting from the award of the Tender to the Enterprise mentioned above.

	Name	Capacity	Signature
1			
2			
3			
4			
5			
6			

**Note:**

- \* Delete which is not applicable
- NB.** This resolution must be signed by all the Directors / Members / Partners of the Tendering Enterprise
- Should the number of Directors / Members/Partners exceed the space available above, additional names and signatures must be supplied on a separate page

**ENTERPRISE STAMP****Contractor****Witness for  
Contractor****Employer****Witness for  
Employer**

This returnable schedule needs to be completed if the tenderer is a joint venture. This form must be completed by each partner of the joint venture. The name of the principal partner must be stated under Point 2.

## Resolution of Board of Directors / Members / Sole Proprietor/ Partners of Partnership (i.e. of each legal person to comprise the Joint Venture Partnership)

**RESOLUTION** of a meeting of the Board of \*Directors / Members / Sole Proprietor/ Partners of:

\_\_\_\_\_  
(Legally correct full name and registration number, if applicable, of the Enterprise)

Held at \_\_\_\_\_ (place)

On \_\_\_\_\_ (date)

### RESOLVED that:

3. The Enterprise submits a Tender, in Joint Venture with the following Enterprises:

\_\_\_\_\_  
(List all the legally correct full names and registration numbers, if applicable, of the Enterprises forming the Joint Venture)

to the South African National Parks in respect of the following project:

\_\_\_\_\_  
(Project description as per Tender Document)

Tender Number: \_\_\_\_\_ (Tender Number as per Tender Document)

4. The Principal Partner of the Joint Venture will be

\_\_\_\_\_  
(Legally correct full name and registration number, if applicable, of the Principal Partner of Joint Venture)

5. \*Mr/Mrs/Ms: \_\_\_\_\_

in \*his/her Capacity as: \_\_\_\_\_ (Position in the Enterprise)

and who will sign as follows: \_\_\_\_\_

be, and is hereby, authorized to sign a joint venture agreement with the parties listed under item 1 above, and any and all other documents and/or correspondence in connection with and relating to the joint venture, in respect of the project described under item 1 above.

6. The Enterprise accepts joint and several liability with the parties listed under item 1 above for the due fulfilment of the obligations of the joint venture deriving from, and in any way connected with, the Contract to be entered into with the South African National Parks in respect of the project described under item 1 above.
7. The Enterprise chooses as its *domicilium citandi et executandi* for all purposes arising from this joint venture agreement and the Contract with the South African National Parks in respect of the project under item 1 above:

\_\_\_\_\_  
Contractor

\_\_\_\_\_  
Witness for  
Contractor

\_\_\_\_\_  
Employer

\_\_\_\_\_  
Witness for  
Employer

Physical address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ (code)

Postal Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ (code)

Telephone number: \_\_\_\_\_ (code)

Fax number: \_\_\_\_\_ (code)

	Name	Capacity	Signature
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Note:**

1. \* Delete which is not applicable
2. **NB.** This resolution must be signed by all the Directors / Members / Partners of the Bidding Enterprise
3. Should the number of Directors / Members/Partners exceed the space available above, additional names and signatures must be supplied on a separate page

**ENTERPRISE STAMP**

--

--

**Contractor**

--

**Witness for  
Contractor**

--

**Employer**

--

**Witness for  
Employer**

This returnable schedule needs to be completed if the tenderer is a joint venture.

### Special Resolution of Joint Venture Partners

**RESOLUTION** of a meeting of the duly authorised representatives of the following legal entities who have entered into a joint venture to jointly tender for the project mentioned below: *(legally correct full names and registration numbers, if applicable, of the Enterprises forming a Joint venture)*

1. \_\_\_\_\_  
\_\_\_\_\_
2. \_\_\_\_\_  
\_\_\_\_\_
3. \_\_\_\_\_  
\_\_\_\_\_
4. \_\_\_\_\_  
\_\_\_\_\_
5. \_\_\_\_\_  
\_\_\_\_\_
6. \_\_\_\_\_  
\_\_\_\_\_
7. \_\_\_\_\_  
\_\_\_\_\_
8. \_\_\_\_\_  
\_\_\_\_\_

Held at \_\_\_\_\_ *(place)*

On \_\_\_\_\_ *(date)*

#### RESOLVED that:

- A. The above-mentioned Enterprises submit a tender in joint venture partnership to the South African National Parks in respect of the following project:

\_\_\_\_\_

\_\_\_\_\_ *(Project description as per Tender Document)*

Tender Number: \_\_\_\_\_ *(Tender Number as per Tender Document)*

- B. Mr/Mrs/Ms: \_\_\_\_\_

in \*his/her Capacity as: \_\_\_\_\_ *(Position in the Enterprise)*

\_\_\_\_\_

**Contractor**

\_\_\_\_\_

**Witness for  
Contractor**

\_\_\_\_\_

**Employer**

\_\_\_\_\_

**Witness for  
Employer**

and who will sign as follows: \_\_\_\_\_  
 be, and is hereby, authorised to sign the Tender, and any and all other documents and/or correspondence in connection with and relating to the Tender, as well as to sign any Contract, and any and all documentation, resulting from the award of the Tender to the Enterprises in joint venture mentioned above.

- C. The Enterprises constituting the Joint Venture, notwithstanding its composition, shall conduct all business under the name and style of: \_\_\_\_\_
- D. The Enterprises to the Joint Venture accept joint and several liability for the due fulfilment of the obligations of the Joint Venture deriving from, and in any way connected with, the contract entered into with the South African National Parks in respect of the project described under item A above.
- E. Any of the Enterprises to the Joint Venture intending to terminate the Joint Venture agreement, for whatever reason, shall give the South African National Parks 30 days written notice of such intention. Notwithstanding such decision to terminate, the Enterprises shall remain jointly and severally liable to the South African National Parks for the due fulfilment of the obligations of the Joint Venture as mentioned under item D above.
- F. No Enterprise to the Joint Venture shall, without the prior written consent of the other Enterprises to the Joint Venture and of the South African National Parks, cede any of its rights or assign any of its obligations under the Joint Venture agreement in relation to the contract with the South African National Parks referred to herein.
- G. The Enterprises choose as the *domicilium citandi et executandi* of the Joint Venture for all purposes arising from the Joint Venture agreement and the contract with the South African National Parks in respect of the project under item A above:

Physical address: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ (code)

Postal Address: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ (code)

Telephone number: \_\_\_\_\_ (code)

Fax number: \_\_\_\_\_ (code)

No	Name	Capacity	Signature
1			
2			
3			
4			
5			
6			

 Contractor

 Witness for  
Contractor

 Employer

 Witness for  
Employer

No	Name	Capacity	Signature
7			
8			
9			
10			
11			
12			
13			
14			
15			

**Note:**

1. \* Delete which is not applicable
2. **NB.** This resolution must be signed by all the Duly Authorised Representatives of the Legal Entities to the Joint Venture submitting this Tender
3. Should the number of Duly Authorised Representatives of the Legal Entities joining forces in this Tender exceed the space available above, additional names and signatures must be supplied on a separate page
4. Resolutions, duly completed and signed, from the separate Enterprises who participate in this Joint venture must be attached to the Special Resolution

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

## Compulsory Enterprise Questionnaire

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

### Section

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

1: Name of enterprise:

Section 2: VAT registration number, if any:

Section 3: CIDB registration number, if any:

Section 4: CSD Number:

### Section 5: Particulars of sole proprietors and partners in partnerships

Name*	Identity number*	Personal income tax number*

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

### Section 6: Particulars of companies and close corporations

Company registration number:

Close corporation number:

Tax reference number:

**Section 7: SBD4 issued by National Treasury must be completed for each tender and be attached as a tender requirement.**

**Section 8: SBD6 issued by National Treasury must be completed for each tender and be attached as a tender requirement.**

**Section 9: SBD8 issued by National Treasury must be completed for each tender and be attached as a tender requirement.**

**Section 10: SBD9 issued by National Treasury must be completed for each tender and be attached as a tender requirement.**

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

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

- i) Authorizes the Employer to obtain a tax clearance certificate from the South African Revenue Services that it is in order.
- ii) Confirms that the neither the name of the enterprise or the name of any partner, manager, director or other person, who wholly or partly exercises, or may exercise, control over the enterprise appears on the Register of Tender Defaulters established in terms of the Prevention and Combating of Corrupt Activities Act of 2004;
- iii) Confirms that no partner, member, director or other person, who wholly or partly exercises, or may exercise, control over the enterprise appears, has within the last five years been convicted of fraud or corruption;
- iv) Confirms that I / we are not associated, linked or involved with any other tendering entities submitting tender offers and have no other relationship with any of the tenderers or those responsible for compiling the scope of work that could cause or be interpreted as a conflict of interest; and
- iv) Confirms that the contents of this questionnaire are within my personal knowledge and are to the best of my belief both true and correct.

Name	Position	Signed

Enterprise name	Date

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer



**UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER  
TREATMENT WORKS, Mokala National Park.  
CONTRACT NO: CI-VB-0031**

**Record of Addenda to tender documents**

I / We confirm that the following communications received from the South African National Parks before the submission of this tender offer, amending the tender documents, have been taken into account in this tender offer: *(Attach additional pages if more space is required)*

	Date	Title or Details
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		

Name	Position	Signed

Name of Tenderer	Date

 Contractor

 Witness for  
Contractor

 Employer

 Witness for  
Employer

**UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER  
TREATMENT WORKS, Mokala National Park.  
CONTRACT NO: CI-VB-0031**

**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.

Page	Clause or item	Proposal

Name	Position	Signed

Name of Tenderer	Date

**Contractor****Witness for  
Contractor****Employer****Witness for  
Employer**



**UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER TREATMENT WORKS, Mokala National Park.**  
**CONTRACT NO: CI-VB-0031**

**Capacity of Tenderer**

- 1. WORK CAPACITY** *(The Tenderer is requested to furnish the following full particulars, attach additional pages if more space is required. Failure to furnish the particulars may result in the Tender being disregarded.)*

Skilled artisans employed		Unskilled employees employed	
Categories of artisans	Number	Categories of employees	Number
<b>Machinery</b>	<b>Plant</b>	<b>Workshops</b>	

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

**1. QUALIFICATIONS AND EXPERIENCE OF PROPOSED SITE SUPERVISION TEAM FOR THE PROJECT**

**Tenderer to provide name(s), key qualifications and experience of site supervision team that will supervise the project on behalf of the Contractor.**

**Contractor**

**Witness for  
Contractor**

**Employer**

**Witness for  
Employer**

**2. PARTICULARS OF COMMITMENTS WHICH THE TENDERER HAS PREVIOUSLY COMPLETED AND PRESENTLY ENGAGED WITH:**
**2.1. Current projects:**

Project	Place (town)	Reference / Contact person	Contact Tel. No.	Contract amount	Contract period	Date of commenceme nt	Scheduled date of completion
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

  
 Contractor

  
 Witness for  
Contractor

  
 Employer

  
 Witness for  
Employer

**2.2. Previous projects:**

Project	Place (town)	Reference / Contact person	Contact Tel. No.	Contract amount	Contract period	Date of commencement	Scheduled date of completion	Actual date of completion
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								

  
**Contractor**  
**Witness for Contractor**  
**Employer**  
**Witness for Employer**

**UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER  
TREATMENT WORKS, Mokala National Park.  
CONTRACT NO: CI-VB-0031**

**Site Inspection Certificate**

This is to certify that I,

Representing  
Company

Position

Visited the site on

I have made myself familiar with all local conditions likely to influence the work and the cost thereof. I further certify that I am satisfied with the description of the work and explanations given at the site inspection meeting and that I understand perfectly the work to be done, as specified and implied, in the execution of this contract.

Name Tenderer's Representative	Position	Signed

Name of Tenderer	Date

Name of Employer's Representative	Signature	Date

**Contractor**

**Witness for  
Contractor**

**Employer**

**Witness for  
Employer**

**UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER  
TREATMENT WORKS, Mokala National Park.  
CONTRACT NO: CI-VB-0031**

**HEALTH AND SAFETY SPECIFICATION ACKNOWLEDGEMENT RECEIPT**

Contractor's Acknowledgement:

I, \_\_\_\_\_ representing  
\_\_\_\_\_ (Contractors), have satisfied myself with the content of this Health and Safety Specification and Baseline Risk Assessment and have made the relevant provision under my Preliminary & General Section C6 for any and all costs involved to ensure compliance of this Specification and shall we be the successful contractor, we shall ensure that our employees and contractors on site comply with the requirements of these documents, our safety documentation and health and safety legislation

\_\_\_\_\_

\_\_\_\_\_

Signature of ContractorDate

Comments:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Contractor

Witness for Contractor

Employer

Witness for Employer



**BIDDER'S DISCLOSURE****1. PURPOSE OF THE FORM**

Any person (natural or juristic) may make an offer or offers in terms of this invitation to bid. In line with the principles of transparency, accountability, impartiality, and ethics as enshrined in the Constitution of the Republic of South Africa and further expressed in various pieces of legislation, it is required for the bidder to make this declaration in respect of the details required hereunder.

Where a person/s are listed in the Register for Tender Defaulters and / or the List of Restricted Suppliers, that person will automatically be disqualified from the bid process.

**2. BIDDER'S DECLARATION**

2.1 Is the bidder, or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest<sup>1</sup> in the enterprise, employed by the state? **YES/NO**

2.1.1 If so, furnish particulars of the names, individual identity numbers, and, if applicable, state employee numbers of sole proprietor/ directors / trustees / shareholders / members/ partners or any person having a controlling interest in the enterprise, in table below.

Full Name	Identity Number	Name of State institution

2.2 Do you, or any person connected with the bidder, have a relationship with any person who is employed by the procuring institution? **YES/NO**

2.2.1 If so, furnish particulars:

.....  
 .....

2.3 Does the bidder or any of its directors / trustees / shareholders / members / partners or any person having a controlling interest in the enterprise have any interest in any other related enterprise whether or not they are

<sup>1</sup> the power, by one person or a group of persons holding the majority of the equity of an enterprise, alternatively, the person/s having the deciding vote or power to influence or to direct the course and decisions of the enterprise.

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

bidding for this contract?

YES/NO

2.3.1 If so, furnish particulars:

.....  
.....

### 3 DECLARATION

I, the undersigned, (name) ..... in submitting the accompanying bid, do hereby make the following statements that I certify to be true and complete in every respect:

- 3.1 I have read and I understand the contents of this disclosure;
- 3.2 I understand that the accompanying bid will be disqualified if this disclosure is found not to be true and complete in every respect;
- 3.3 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>2</sup> will not be construed as collusive bidding.
- 3.4 In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications, prices, including methods, factors or formulas used to calculate prices, market allocation, the intention or decision to submit or not to submit the bid, bidding with the intention not to win the bid and conditions or delivery particulars of the products or services to which this bid invitation relates.
- 3.4 The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.
- 3.5 There have been no consultations, communications, agreements or arrangements made by the bidder with any official of the procuring institution in relation to this procurement process prior to and during the bidding process except to provide clarification on the bid submitted where so required by the institution; and the bidder was not involved in the drafting of the specifications or terms of reference for this bid.
- 3.6 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.

---

<sup>2</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.

---

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

I CERTIFY THAT THE INFORMATION FURNISHED IN PARAGRAPHS 1, 2 and 3 ABOVE IS CORRECT.

I ACCEPT THAT THE STATE MAY REJECT THE BID OR ACT AGAINST ME IN TERMS OF PARAGRAPH 6 OF PFMA  
SCM INSTRUCTION 03 OF 2021/22 ON PREVENTING AND COMBATING ABUSE IN THE SUPPLY CHAIN  
MANAGEMENT SYSTEM SHOULD THIS DECLARATION PROVE TO BE FALSE.

.....  
Signature

.....  
Date

.....  
Position

.....  
Name of bidder

---

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

**PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2017**

This preference form must form part of all bids invited. It contains general information and serves as a claim form for preference points for Broad-Based Black Economic Empowerment (B-BBEE) Status Level of Contribution

**NB: BEFORE COMPLETING THIS FORM, BIDDERS MUST STUDY THE GENERAL CONDITIONS, DEFINITIONS AND DIRECTIVES APPLICABLE IN RESPECT OF B-BBEE, AS PRESCRIBED IN THE PREFERENTIAL PROCUREMENT REGULATIONS, 2017.**

**1. GENERAL CONDITIONS**

- 1.1 The following preference point systems are applicable to all bids:
- the 80/20 system for requirements with a Rand value of up to R50 000 000 (all applicable taxes included)
- 1.2 a) The value of this bid is estimated to not exceed R 50 000 000 (all applicable taxes included) and therefore the 80/20 preference point system shall be applicable;
- 1.3 Points for this bid shall be awarded for:
- (a) Price; and
  - (b) B-BBEE Status Level of Contributor.
- 1.4 The maximum points for this bid are allocated as follows:

	POINTS
<b>PRICE</b>	80
<b>B-BBEE STATUS LEVEL OF CONTRIBUTOR</b>	20
<b>Total points for Price and B-BBEE must not exceed</b>	<b>100</b>

- 1.5 Failure on the part of a bidder to submit proof of B-BBEE Status level of contributor together with the bid, will be interpreted to mean that preference points for B-BBEE status level of contribution are not claimed.
- 1.6 The purchaser reserves the right to require of a bidder, either before a bid is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the purchaser.

**2. DEFINITIONS**

- (a) **"B-BBEE"** means broad-based black economic empowerment as defined in section 1 of the Broad-Based Black Economic Empowerment Act;
- (b) **"B-BBEE status level of contributor"** means the B-BBEE status of an entity in terms of a code of good practice on black economic empowerment, issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act;
- (c) **"bid"** means a written offer in a prescribed or stipulated form in response to an invitation by an organ of state for the provision of goods or services, through price quotations, advertised competitive bidding processes or proposals;
- (d) **"Broad-Based Black Economic Empowerment Act"** means the Broad-Based Black Economic Empowerment Act, 2003 (Act No. 53 of 2003);
- (e) **"EME"** means an Exempted Micro Enterprise in terms of a code of good practice on black economic empowerment issued in terms of section 9 (1) of the Broad-Based Black Economic Empowerment Act;
- (f) **"functionality"** means the ability of a tenderer to provide goods or services in accordance with specifications as set out in the tender documents.
- (g) **"prices"** includes all applicable taxes less all unconditional discounts;
- (h) **"proof of B-BBEE status level of contributor"** means:
  - 1) B-BBEE Status level certificate issued by an authorised body or person;
  - 2) A sworn affidavit as prescribed by the B-BBEE Codes of Good Practice;
  - 3) Any other requirement prescribed in terms of the B-BBEE Act;
- (i) **"QSE"** means a qualifying small business enterprise in terms of a code of good practice on black economic empowerment issued in terms of section 9 (1) of the Broad-Based Black Economic Empowerment Act;

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

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

### 3. POINTS AWARDED FOR PRICE

#### 3.1 THE 80/20 PREFERENCE POINT SYSTEMS

A maximum of 80 points is allocated for price on the following basis:  
**80/20**

$$P_s = 80 \left( 1 - \frac{P_t - P_{\min}}{P_{\min}} \right)$$

Where

$P_s$  = Points scored for price of bid under consideration  
 $P_t$  = Price of bid under consideration  
 $P_{\min}$  = Price of lowest acceptable bid

### 4. POINTS AWARDED FOR B-BBEE STATUS LEVEL OF CONTRIBUTOR

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

B-BBEE Status Level of Contributor	Number of points (80/20 system)
1	20
2	18
3	Non-compliant
4	Non-compliant
5	Non-compliant
6	Non-compliant
7	Non-compliant
8	Non-compliant
Non-compliant contributor	Non-compliant

### 5. BID DECLARATION

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

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

- 6.1 B-BBEE Status Level of Contributor: . = ..... (maximum of 20 points)

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

---

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

## 7. SUB-CONTRACTING

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

(Tick applicable box)

YES		NO	
-----	--	----	--

7.1.1 If yes, indicate:

- i) What percentage of the contract will be subcontracted.....%
- ii) The name of the sub-contractor.....
- iii) The B-BBEE status level of the sub-contractor.....
- iv) Whether the sub-contractor is an EME or QSE

(Tick applicable box)

YES		NO	
-----	--	----	--

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

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

## 8. DECLARATION WITH REGARD TO COMPANY/FIRM

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

8.2 VAT registration number: .....

8.3 Company registration number: .....

8.4 TYPE OF COMPANY/ FIRM

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

[Tick applicable box]

8.5 DESCRIBE PRINCIPAL BUSINESS ACTIVITIES

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.....

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.....

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Contractor

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Witness for  
Contractor

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Employer

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Witness for  
Employer

8.6 COMPANY CLASSIFICATION

- ☐ Manufacturer
- ☐ Supplier
- ☐ Professional service provider
- ☐ Other service providers, e.g. transporter, etc.

**[Tick applicable box]**

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

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

- i) The information furnished is true and correct;
- ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;
- iii) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 1.4 and 6.1, the contractor may be required to furnish documentary proof to the satisfaction of the purchaser that the claims are correct;
- iv) If the B-BBEE status level of contributor has been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the purchaser may, in addition to any other remedy it may have –
  - (a) disqualify the person from the bidding process;
  - (b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;
  - (c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;
  - (d) recommend that the bidder or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted by the National Treasury from obtaining business from any organ of state for a period not exceeding 10 years, after the *audi alteram partem* (hear the other side) rule has been applied; and
  - (e) forward the matter for criminal prosecution.

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Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

### DECLARATION OF BIDDER'S PAST SCM PRACTICES (SBD 8)

<ul style="list-style-type: none"> <li>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? If Yes, furnish particulars as an attached schedule:</li> </ul>	Yes	No
<ul style="list-style-type: none"> <li>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)? If Yes, furnish particulars as an attached schedule:</li> </ul>	Yes	No
<ul style="list-style-type: none"> <li>Was the Bidder or any of its directors convicted by a court of law (including a court outside of the Republic of South Africa) for fraud or corruption during the past five years? If Yes, furnish particulars as an attached schedule:</li> </ul>	Yes	No
<ul style="list-style-type: none"> <li>Was any contract between the Bidder and any organ of state terminated during the past five years on account of failure to perform on or comply with the contract? If Yes, furnish particulars as an attached schedule:</li> </ul>	Yes	No
<p>The Database of Restricted Suppliers and Register for Tender Defaulters 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.</p>		

### CERTIFICATE OF INDEPENDENT BID DETERMINATION (SBD 9)

<p>I, the undersigned, in submitting this Bid in response to the invitation for the Bid made by the SANParks, do hereby make the following statements that I certify to be true and complete in every respect:</p>		
<ul style="list-style-type: none"> <li>I have read and I understand the contents of this Certificate;</li> </ul>	Yes	No
<ul style="list-style-type: none"> <li>I understand that the Bid will be disqualified if this Certificate is found not to be true and complete in every respect;</li> </ul>	Yes	No
<ul style="list-style-type: none"> <li>I am authorised by the Bidder to sign this Certificate, and to submit the Bid, on behalf of the Bidder;</li> </ul>	Yes	No
<ul style="list-style-type: none"> <li>Each person whose signature appears on the Bid has been authorised by the Bidder to determine the terms of, and to sign, the Bid on behalf of the Bidder;</li> </ul>	Yes	No
<p>For the purposes of this Certificate and the accompanying Bid, I understand that the word "competitor" shall include any individual or organisation, other than the Bidder, whether or not affiliated with the Bidder, who:</p> <ul style="list-style-type: none"> <li>a) Has been requested to submit a Bid in response to this Bid invitation;</li> <li>b) Could potentially submit a Bid in response to this Bid invitation, based on their qualifications, abilities or experience; and</li> <li>c) Provides the same goods and services as the Bidder and/or is in the same line of business as the Bidder</li> </ul>		
<p>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.</p>		

**Contractor**

**Witness for  
Contractor**

**Employer**

**Witness for  
Employer**



<p>In particular, without limiting the generality of paragraphs above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:</p> <ul style="list-style-type: none"> <li>a) Prices;</li> <li>b) Geographical area where product or service will be rendered (market allocation);</li> <li>c) Methods, factors or formulas used to calculate prices;</li> <li>d) The intention or decision to submit or not to submit, a Bid;</li> <li>e) The submission of a Bid which does not meet the specifications and conditions of the Bid; or</li> <li>f) Bidding with the intention not to win the Bid.</li> </ul>
<p>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.</p>
<p>The terms of this 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.</p>
<p>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</p>
<p><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.</p>

#### STANDARD BIDDING DOCUMENTS DECLARATION

The following documents are deemed to form and be read and construed as part of this agreement even where integrated in this document:

Declaration of Interest (SBD4)
Preference points claimed (SBD6.1) – Original or certified copy of B-BBEE certificate or Sworn Affidavit
Declaration of Bidder's past SCM practices (SBD8);
Certificate of Independent Bid Determination (SBD9)

**The obligation to complete, duly sign and submit these declarations included in this SBD declaration pack cannot be transferred to an external authorized representative, auditor or any other third party acting on behalf of the legal entity.**

I declare that I have had no participation in any collusive practices with any Bidder or any other person regarding this or any other procurement. I certify that the information furnished in these declarations (SBD4, SBD6.1, SBD8, SBD9) is correct and I accept that SANParks may reject the Offer or act against me should these declarations prove to be false. I confirm that I am duly authorised to sign this SBD declaration pack nominated in writing by the Chief Executive Officer or Senior Member/Person with management responsibility (Close Corporation, Partnership or Individual).

<b>NAME (PRINT)</b>	
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**Contractor**

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**Witness for  
Contractor**

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**Employer**

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**Witness for  
Employer**

CAPACITY	
SIGNATURE	
NAME OF FIRM	
DATE	

WITNESSES:	
1	_____
2	_____
Date	_____

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## C: The Contract

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**Contractor**

**Witness for  
Contractor**

**Employer**

**Witness for  
Employer**

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# Part C1: Agreement and Contract Data

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Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

**UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER  
TREATMENT WORKS, Mokala National Park.**

**CONTRACT NO: CI-VB-0031**

**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:

**UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER TREATMENT WORKS,  
Mokala National Park.**

**CONTRACT NO: CI-VB-0031**

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 INCLUSIVE OF VALUE ADDED TAX IS:**

.....


Rand (in words);


R ..... (in figures)


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

Signature(s)		Date	
Name(s)			
Capacity			
<b>For the Tenderer</b>			
Name of tenderer (Company)			
Address of tenderer			
Name of witness			
Signature of witness		Date	

  
**Contractor**

  
**Witness for  
Contractor**

  
**Employer**

  
**Witness for  
Employer**

**ACCEPTANCE (NB: TO BE COMPLETED BY SANParks NOT THE TENDERER)**

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 securities, 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 fulfill 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 signed acceptance form, 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(s)		Date	
Name(s)			
Capacity			
<b>For the Employer</b>			
Name of Employer	South African National Parks		
Address of tenderer	643 Leyds Street Muckleneuk 0002 P O Box 787 Pretoria 0001		
Name of witness			
Signature of witness		Date	

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Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

**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.

**UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER  
TREATMENT WORKS, Mokala National Park.  
CONTRACT NO: CI-VB-0031**

**C1.2 Contract Data**

The General Conditions of Contract for Construction Works, Third Edition, 2015 published by the South African Institution of Civil Engineering, Private Bag X200, Halfway House, 1685, is applicable to this Contract and copies of these Conditions of Contract may be obtained from the South African Institution of Civil Engineering (Tel 011-805 5947) [www.saice.org.za](http://www.saice.org.za).

The General Conditions of Contract make several references to the Contract Data for specific data, which together with these conditions collectively describe the risks, liabilities and obligations of the contracting parties and the procedures for the administration of the Contract. The Contract Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the General Conditions of Contract.

Each item of data given below is cross-referenced to the clause in the General Conditions of Contract for Construction Works, Third Edition, 2015, to which it mainly applies.

**The variations to the General Conditions of Contract are:**

CLAUSE	DESCRIPTION / WORDING
1.1.1	The term "the Engineer" shall be taken to mean "the Employer's Agent" as defined in clause 1.1.1.16, where "the Engineer" is used in other documentation (for example SANS / SANS standardised specifications and particular specifications in this tender document – see also C3 Scope of Work, Construction, Specifications for further "mapping of definitions").
1.1.1.13	The Defects Liability Period is <b>12 (twelve)</b> months.
1.1.1.14	6 Months
1.1.1.15	The name of the Employer is: the <b>Chief Executive Officer, SOUTH AFRICAN NATIONAL PARKS</b> represented by <b>The General Manager: Infrastructure &amp; Special Projects</b> and/or such other person or persons duly authorised thereto by the Employer in writing.
1.1.1.16	The name of the Employer's Agent is: <b>Infrastructure &amp; Special Projects</b> or their successors duly appointed by the Employer.
1.1.1.26	The Pricing Strategy is a <b>Re-measurement Contract</b> .
1.2.1.2	The Employer's address for receipt of communications and notices is:  <b>Physical address:</b> South African National Parks The General Manager: Infrastructure & Special Projects. 643 Leyds Street Muckleneuk Pretoria 0002  <b>Postal Address:</b> Postal Address: PO Box 787 Pretoria 0001 Telephone: (012) 426 5260
1.2.1.2	The address of the Employer's Agent is: Physical address: BVi Consulting Engineers 55 Bult Street UPINGTON 8801 Postal Address: PO Box 1155 UPINGTON 8800

**Contractor**

**Witness for  
Contractor**

Page 56 of 219

**Employer**

**Witness for  
Employer**



CLAUSE	DESCRIPTION / WORDING
	E-mail: nielm@bvinc.co.za Telephone: 054 3376600 or 082 7835951
3.1.3	The Employer's Agent shall obtain the specific approval of the Employer before executing any of his functions or duties according to the following Clauses of the General Conditions of Contract: 1. Clause 3.2.1 Nomination of Employer's Agent's Representative 2. Clause 3.2.4 Employer's Agent's authority to delegate 3. Clause 5.8.1 Non-working times 4. Clause 5.11.1 Suspension of the Works 5. Clause 5.12.4 Acceleration instead of extension of time 6. Clause 6.3.2 Orders for variations to be in writing 7. Clause 10.1.1 Contractor's claim
5.2.1	Add: The Employer's Agent will issue a Site Instruction for the planned works. The Contractor must comply to the requirements as set out in clause 5.3.1 and commence the work within 14 days after the Site Instruction.
5.3.1	The documentation to be submitted by the Contractor before commencement with Works execution are: (1) Health and Safety Plan (Refer to Clause 4.3) (2) Initial programme (Refer to Clause 5.6)- a program must be submitted for each work order issued (3) Insurance (Refer to Clause 8.6) (4) Occupational Health and Safety Agreement (C1.4 of the Contract Document) (5) Letter of Good Standing from the Compensation Commissioner (if not insured with a Licensed Compensation Insurer) (6) A signed Agreement between the Employer and the Contractor for the Works to be completed by the Contractor in terms of the provisions of Section 37(2) of the Occupational Health and Safety Act (Act No.85 of 1993) and the Construction Regulations promulgated thereunder (Refer to Clause 4.3). (7) Proof to the Employer, of payment, that the Contractor has paid all contributions required in terms of the Compensation for Occupational Injuries and Diseases Act, No. 130 of 1993 (Refer to Clause 4.3).
5.3.2	(a) The time to submit the documentation required before commencement with Works execution is <b>14 days</b> .
5.4.2	The access and possession of Site shall not be exclusive to the Contractor but shall be as set out elsewhere in the Contract.
5.8	Delete the words "between sunrise and sunset" in the first line and replace with "within normal working hours".  Add the following:  "Normal working hours shall be between 07h00 and 17h00 (season dependant) on weekdays from Monday to Friday and from 07h00 until 13h00 on Saturdays. Note that the parks access gates are locked after hours and the Contractor shall make provision for transporting his staff off site in good time. The park seasonal hours are;  <div style="display: flex; justify-content: space-between;"> <span>Winter: April - September</span> <span>07:00 - 17:00</span> </div> <div style="display: flex; justify-content: space-between;"> <span>Summer: October - March</span> <span>06:00 - 18:00</span> </div>
5.8.1	The non-working days are Saturday and Sundays.  The special non-working days are: (1) All gazetted public holidays falling outside the year end break. (2) The year end-break as determined by the South African Forum of Civil Engineering Contractors ( <a href="http://www.safcec.org.za">www.safcec.org.za</a> ).  The special non-working days are: Any statutory public holiday in terms of the Public Holidays Act, and, where such statutory public holiday falls on a Sunday, and the next Monday subsequently becomes a statutory public holiday in terms of the Public Holidays Act, then both the relevant Sunday and the relevant Monday shall be special non-working days under the contract;  And any proclaimed statutory day of mourning  And any proclaimed statutory election day which is proclaimed as a statutory public holiday

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

CLAUSE	DESCRIPTION / WORDING																										
	And all annual year-end shutdown periods as recommended by the South African Bargaining Council for the Civil Engineering Industry.																										
5.12.2.2	<p>A delay caused by inclement weather conditions will be regarded as a delay only if, in the opinion of the Employer's Agent, all progress on an item or items of work on the critical path of the working programme of the contractor has been brought to a halt. Delays on working days only (based on a five-day working week) will be taken into account for the extension of time, but the Contractor shall make provision in his programme of work for an expected delay of "n" working days caused by normal rainy weather, for which he will not receive any extension of time, where "n" equals days per month.</p> <table border="1"> <thead> <tr> <th>Month</th><th>"n" Working days</th></tr> </thead> <tbody> <tr><td>January</td><td>8 days</td></tr> <tr><td>February</td><td>10 days</td></tr> <tr><td>March</td><td>7 days</td></tr> <tr><td>April</td><td>8 days</td></tr> <tr><td>May</td><td>3 days</td></tr> <tr><td>June</td><td>3 days</td></tr> <tr><td>July</td><td>1 days</td></tr> <tr><td>August</td><td>2 days</td></tr> <tr><td>September</td><td>3 days</td></tr> <tr><td>October</td><td>4 days</td></tr> <tr><td>November</td><td>5 days</td></tr> <tr><td>December</td><td>8 days</td></tr> </tbody> </table> <p>Extension of time during working days will be granted to the degree to which actual delays, as defined above, exceed the number of "n" working days.</p> <p>It shall be further noted that where the critical path is not affected, no extension of time for <u>abnormal</u> climatic conditions or for any other reason will be entertained.</p>	Month	"n" Working days	January	8 days	February	10 days	March	7 days	April	8 days	May	3 days	June	3 days	July	1 days	August	2 days	September	3 days	October	4 days	November	5 days	December	8 days
Month	"n" Working days																										
January	8 days																										
February	10 days																										
March	7 days																										
April	8 days																										
May	3 days																										
June	3 days																										
July	1 days																										
August	2 days																										
September	3 days																										
October	4 days																										
November	5 days																										
December	8 days																										
5.13.1	The penalty for failing to complete the Works is <b>R 2 000</b> per calendar day.																										
5.14.1	The requirements for achieving Practical Completion are when the works is fit for the intended purpose and occupation without danger or undue inconvenience to the employer.																										
5.16.3	The latent defects period is <b>5 Years</b> , commencing on the day after the date of certification of Practical Completion.																										
6.2.1	No performance guarantee is required.																										
6.8.2	The urban area nearest the Kimberley/Northern Cape Province. The base month and year is the month prior to the month in which tenders close: June 2022																										
6.8.3	Price adjustments for variations in the cost of special materials will not be allowed on this Contract.																										
6.8.4	<p><i>Add the following to Clause 6.8.4:</i></p> <p>Notwithstanding the above, in the event that a public holiday is proclaimed after 28 days before the closing date for Tenders, no costs other than those that can be claimed under Clause 5.12.3 shall be added to the contract price.</p>																										
6.10.1.5	The percentage advance on materials not yet built into the permanent Works is <b>80%</b> .																										
6.10.3	The limit on retention is <b>10%</b> total of the Contract Price (5% of cost payable at completion, and 5% after 12 month retention period – final completion). A guarantee in lieu of retention is not permitted.																										
6.10.4	Replace the third paragraph of Clause 6.10.4 with the following: "The Employer shall pay the amount due to the Contractor within 30 days of receipt by the Employer of the payment certificate signed by the Engineer"																										
8.6.1.1.2	The value of plant and materials supplied by the Employer to be included in the insurance sum is R0.																										
8.6.1.1.3	The amount to cover professional fees for repairing damage and loss to be included in the insurance sum is <b>R100 000 (One hundred thousand rand)</b> .																										
8.6.1.2	A Coupon Policy for Special Risks Insurance issued by the South African Special Risks Insurance Association is not required.																										
8.6.1.3	The limit of indemnity for liability insurance is <b>R10 000 000</b> for any single claim – the number of claims to be unlimited during the construction and Defects Liability Periods.																										
10.3.2	Amicable settlement in terms of Clause 10.4 shall be contemplated for all disputes prior to referring																										

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

CLAUSE	DESCRIPTION / WORDING
	any dispute to adjudication or arbitration.
10.5.3	The number of Adjudication Board Members to be appointed is <b>one</b> .
10.7.1	The determination of disputes which are unresolved in terms of Clause 10.4.2 shall be by arbitration.

The additions to the General Conditions of Contract are:

Clause	Additions
<b>A2</b>	<b>Pro forma – Form of Offer and Acceptance</b> The Form of Offer to be used shall be the Form of Offer bound in this document, which is not necessarily the same as that attached to the published version of the General Conditions of Contract.
<b>A3</b>	<b>Pro forma - Deed of Guarantee</b> The Deed of Guarantee shall be in the form bound in this document, which is not necessarily the same as that attached to the published version of the General Conditions of Contract.

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Contractor

Witness for  
Contractor

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Employer

Witness for  
Employer

**UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER  
TREATMENT WORKS, Mokala National Park.  
CONTRACT NO: CI-VB-0031**

**Part 2: Contract Data completed by the Contractor (COMPULSORY COMPLETION)**

Clause	Additions
<b>Clause 1.1.1.9:</b>	The name of the Contractor is .....
<b>Clause 1.2.1.2:</b>	<p>The address of the Contractor is</p> <p>Physical : .....Postal : .....</p> <p>Address: .....Address: .....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>Telephone : ..... Fax: .....</p> <p>Email : .....</p>

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**Contractor**

**Witness for  
Contractor**

**Employer**

**Witness for  
Employer**

### C1.3 Form of Guarantee

WHEREAS THE CHIEF EXECUTIVE, SOUTH AFRICAN NATIONAL PARKS

(hereinafter referred to as "the Employer") entered into a Contract with .....

.....  
(hereinafter called "the Contractor") on the ..... day of ..... 20 ..... for **CONTRACT NO: CI-VB-0031: for  
UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER  
TREATMENT WORKS, Mokala National Park.**

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;

WHEREAS WE, ..... (*name of Insurance Company/Bank*)  
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:

1. 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 Due Completion Date of the Works under the said Contract, and that its rights under this guarantee shall in no way be prejudiced nor our liability hereunder be affected by reason of any steps which the Employer may take under such Contract, or of any modification, variation, alterations of the Due Completion Date which the Employer may make, give, concede or agree to under the said Contract.
2. This guarantee shall be limited to the payment of a sum of money.
3. 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.
4. 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.
5. Our total liability hereunder shall not exceed the sum of .....  
.....(R .....)
6. The Guarantor reserves the right to withdraw from this guarantee by depositing the Guarantee Sum with the beneficiary, whereupon the Guarantor's liability hereunder shall cease.
7. We hereby choose our address for the serving of all notices for all purposes arising hereof as .....

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

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Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

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

As witnesses:

1. .... Signature

2. .... Duly authorised to sign on behalf of

..... Address

.....

.....

Contractor

Witness for Contractor

Employer

Witness for Employer

TO BE COMPLETED AND SIGNED BY ALL MANDATARIES

**OCCUPATIONAL HEALTH AND SAFETY ACT  
NO. 85 OF 1993**

**Note: Section 1(1)(xxviii) of the Act defines a "Mandatory" as including "an Agent, a Contractor or a Subcontractor for Work."**

The Employer and the Contractor hereby agree, in terms of the provisions of Section 37 (2) of the Occupational Health and Safety Act, Act No.85 of 1993, hereinafter referred to as "the Act", that the Contractor as an employer in its own right and in its capacity as Contractor for the execution of the works, shall have certain obligations and that the following arrangement shall apply between them to ensure compliance by the Contractor with the provisions of the Act, namely:-

- i. The Contractor undertakes to acquaint the appropriate officials and the employees of the Contractor with all relevant provisions of the Act, and the regulations promulgated in terms of the Act, and
- ii. The Contractor undertakes that all relevant duties, obligations and prohibitions imposed in terms of the Act and regulations will be fully complied with, and
- iii. The Contractor hereby accepts sole liability for such due compliance with the relevant duties, obligations and prohibitions imposed by the Act and regulations in respect of the work included in the Contract, and
- iv. The Contractor shall be obliged to report forthwith to the Employer any investigation, complaint, or criminal charge which may arise as a consequence of the provisions of the Act and regulations pursuant to work performed on behalf of the Employer, and shall, on written demand, provide full details in writing of such investigation, complaint or criminal charge.

Signed at .....on the ..... day of ..... 20.....

**WITNESS:**

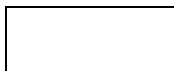
.....

for and on behalf of **Contractor**

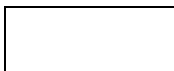
**WITNESS:**

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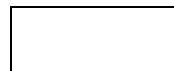
.....  
For and on behalf of  
**South African National Parks**



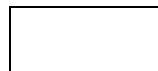
**Contractor**



**Witness for  
Contractor**



**Employer**



**Witness for  
Employer**

**C1.5: Pro-Forma – Declaration of Ownership of Unused Materials**

**DECLARATION OF OWNERSHIP OF UNUSED MATERIAL  
FOR  
CERTIFICATE OF PAYMENT NO:**

I/We, the undersigned, .....  
..... (Name of Contractor)

hereby declare that the materials for which payment is claimed in terms of Clause 6.10.1.5 of the General Conditions of Contract are:

(a) as described

\* (i) on the copy of Invoice No. .... annexed hereto

\* (ii) as set out in detail below

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

\*delete whichever is not applicable.

(b) located at

.....  
.....

(c) totally owned by me/us and that no other party has any claim or right in respect of the above materials and that I am/we are free to pass ownership upon receipt of payment for such materials

(d) intended for incorporation into the permanent works of this Contract.

Signed at .....

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

Witnesses:

1.

Signature: .....

2.

Capacity: .....

On behalf of: .....

Address: .....

.....  
.....

Contractor

Witness for Contractor

Employer

Witness for Employer





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# Part C2: Pricing data

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Contractor

Witness for Contractor

Employer

Witness for Employer

**UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER  
TREATMENT WORKS, Mokala National Park.  
CONTRACT NO: CI-VB-0031**

**C2.1 Pricing Instructions**

**PREAMBLE TO THE BILL OF QUANTITIES**

1. The General Conditions of Contract, the Special Conditions of Contract, the Specifications (including the Project Specifications) and the Drawings shall be read in conjunction with the Bill of Quantities.
2. The Schedule comprises items covering the Contractor's profit and costs of general liabilities and of the construction of temporary and permanent Works.
3. Although the Tenderer is at liberty to insert a rate of its own choosing for each item in the Schedule, it should note the fact that the Contractor is entitled, under various circumstances, to payment for additional work carried out and that the Employer's Agent is obliged to base his assessment of the rates to be paid for such additional work on the rates inserted in the Schedule by the Contractor.
4. The measurement and payment clause of each Standardized Specification, and the measurement and payment clause of each Particular Specification, read together with the relevant clauses of the Project Specifications, all set out which ancillary or associated activities are included in the rates for the specified operations.
5. Descriptions in the Bill of Quantities are abbreviated and may differ from those in the Standardized and Project Specifications. No considerations will be given to any claim by the Contractor submitted on such a basis. Should any requirement of the measurement and payment clause of the appropriate Standardized or Project Specification(s) be contrary to the terms of the Schedule or, the requirement of the appropriate Standardized, Project, or Particular Specification as the case may be, shall prevail.
6. Unless stated to the contrary, items are measured nett in accordance with the Drawings without any allowance having been made for waste.
7. The amounts and rates to be inserted in the Bill of Quantities shall be the full inclusive amounts to the Employer for the work described under the several items. Such amounts shall cover all the costs and expenses that may be required in and for the construction of the work described, and shall cover the costs of all general risks, profits, taxes (but excluding Value-added Tax), liabilities and obligations set forth or implied in the documents on which the tender is based.
8. An amount or rate shall be entered against each item in the Bill of Quantities, whether or not quantities are stated. An item against which no amount or rate is entered will be considered to be covered by the other amounts or rates in the Schedule.
9. The Tenderer shall also fill in a rate against the items where the words "rate only" appear in the amount column. Although no work is foreseen under these items and no quantities are consequently given in the quantity column, the tendered rates shall apply should work under these items actually be required.
10. Should the Tenderer group a number of items together and tender one lump sum for such group of items, the single tendered lump sum shall apply to that group of items and not to each individual item, or should he indicate against any item that full compensation for such item has been included in another item, the rate for the item included in another item shall be deemed to be nil.
11. The tendered rates, prices and lump sums shall, subject only to the provisions of the Conditions of Contract, remain valid irrespective of any change in the quantities during the execution of the Contract.
12. The quantities of work as measured and accepted and certified for payment in accordance with the Conditions of Contract, and not the quantities stated in the Bill of Quantities, will be used to determine payments to the Contractor. The validity of the Contract shall in no way be affected by differences between the quantities in the Bill of Quantities and the quantities certified for payment.
13. For the purposes of this Bill of Quantities, the following words shall have the meanings hereby assigned to them:

Unit : The unit of measurement for each item of work as defined in the Standardized, Project or Particular Specifications

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- Quantity : The number of units of work for each item
- Rate : The payment per unit of work at which the Tenderer tenders to do the work
- Amount : The product of the quantity and the rate tendered for an item
- Lump sum: An amount tendered for an item, the extent of which is described in the Bill of Quantities, the Specifications or elsewhere, but of which the quantity of work is not measured in units.

14. The units of measurement indicated in the Bill of Quantities are metric units. The following abbreviations may appear in the Bill of Quantities:

mm	=	millimetre
m	=	metre
km	=	kilometre
km-pass=		kilometre-pass
m <sup>2</sup>	=	square metre
m <sup>2</sup> -pass=		square metre-pass
ha	=	hectare
m <sup>3</sup>	=	cubic metre
m <sup>3</sup> -km	=	cubic metre-kilometre
kW	=	kilowatt
kN	=	kilo newton
kg	=	kilogram
t	=	ton (1 000 kg)
%	=	per cent
MN	=	mega newton
MN-m	=	mega newton-metre
P C Sum	=	Prime Cost Sum
Prov. Sum	=	Provisional Sum.

15. The Tenderer shall enter each rate or lump sum for each item in the Bill of Quantities in **BLACK INK**.

 Contractor

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Employer



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## C2.2 Bill of Quantities

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CLARIFICATION MEETING

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Witness for Contractor

Employer

Witness for Employer

**UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER  
TREATMENT WORKS, Mokala National Park.  
CONTRACT NO: CI-VB-0031**

**DAYWORK SCHEDULE**

**1 GENERAL**

Tenderers must complete this list which shall be used for the assessment of value of the work which the Engineer instructed in writing that must be done on a day work basis, all in agreement with Clause 6.5 of the General Conditions of Contract for Construction Works 2010. All the rates are fixed and shall be binding until and with the issuing of the final certificate.

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

**2 LABOUR COSTS**

Rates for labour as listed below shall include all the allowances as specified in the General Conditions of Contract for Construction Works 2010. The extra allowance applicable on labour costs listed below, is stated in the Contract Data and must not be included in this list.

Overtime costs attached to this contract shall be paid in the same relation as to that which the employees are actually paid.

Only the net working hours will be measured under Day work and it will be held that the Contractor has made provision in his rates for possible interruptions and standing time.

Prior to the commencement of any work by the labourers 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."

DESCRIPTION	UNIT	RATE
Unskilled labour	hour	
Semi-skilled labour	hour	
Ganger	hour	
Foreman/Section leader	hour	

**3 EQUIPMENT COSTS**

Full comprehensive hourly rates, which also include the cost of the operators and other equipment, must be listed below. Rates must also include all the costs of consumable items, maintenance, depreciation, tools and all other coincidences that shall be necessary to operate the equipment for the purpose it is designed for. The rates must also include all the overhead costs, profits, site supervision, insurance, holidays with payment, travelling costs (or travelling allowances) and residence allowances of operators and any other allowances that is applicable. No further percentage allowances shall be applicable on equipment. The Tenderer must list under each heading the fabrication and specification of the equipment available.

The Contractor will be paid the actual net cost of plant hired by him for Day work and in addition will be paid a percentage allowance on the net cost of such hire which allowance will cover the Contractors overhead costs and profit.



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DESCRIPTION	UNIT	RATE
1. Excavators ..... ..... .....	hour hour hour	
2. Front-end loaders ..... ..... .....	hour hour hour	
3. Rollers Vibratory Roller..... Tamping Roller..... Grid Roller .....	hour hour hour	
4. Motor Graders ..... ..... .....	hour hour hour	
5. Trucks (m <sup>3</sup> specified) ..... ..... .....	hour hour hour	
6. Water truck (litres specified) ..... .....	hour hour	
7. Tractor and trailer ..... .....	hour hour	

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8.	Compressor ..... .....	hour hour	
9.	Concrete mixer (litres specified) ..... .....	hour hour	
10.	"Dumper" (m <sup>3</sup> specified) ..... .....	hour hour	
11.	Compactors (Plate) Pedestrian Roller (Bomag BW90)..... Vibratory Plate ..... Rammers.....	hour hour hour	
12.	Other equipment ..... ..... ..... .....	hour hour hour hour	

Contractor

Witness for Contractor

Employer

Witness for Employer



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# Part C3: Scope of Work

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Employer

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**C3.1 Scope of Work**

[Use for The General Conditions of Contract for Construction Works, Third Edition, 2015, prepared by the South African Institution of Civil Engineering (SAICE).]

<b>1</b>	<b>DESCRIPTION OF THE WORKS</b>
<b>1.1</b>	<b>Employer's objectives</b>
	UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER TREATMENT WORKS, was identified to improve the tourism facilities at the Mokala National Park.
<b>1.2</b>	<b>Overview of the works</b>
	This tender is for the UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER TREATMENT WORKS, Mokala National Park.
<b>1.3</b>	<b>Extent of the works</b>
	<ul style="list-style-type: none"> <li>Alterations to, and conversions of existing conservancy tanks in Lilydale to operate as small pump stations</li> <li>Supplying and installation of Small pumps in the Small pump stations.</li> <li>Construction of 50mm diam. pump lines from the Small pump stations to a central package type bio-filter water treatment plant.</li> <li>Civil and concrete works for the package type bio-filter water treatment plant.</li> <li>Electricity supply to the small pump stations and the water treatment plant.</li> <li>Water Treatment Works</li> </ul>
<b>1.4</b>	<b>Location of the works</b>
	Lilydale Rest Camp in Mokala National Park
<b>1.5</b>	<b>Temporary works</b>
	Nil
<b>2</b>	<b>DRAWINGS</b>
<b>2.1</b>	See drawing List
<b>3</b>	<b>PROCUREMENT</b>
<b>3.1</b>	<b>Subcontracting</b>
<b>3.1.1</b>	<b>Scope of mandatory subcontractor work</b>
	Supply and installation of mechanical and electrical equipment for the Bio-Filter Waste Water Treatment Plant
<b>3.1.2</b>	<b>Preferred subcontracting / suppliers</b>
	Supply and installation of the Biofilter on Civil and Concrete works to be constructed by the Contractor: Becon Water Tech
<b>3.1.3</b>	<b>Subcontracting procedures</b>
	n/a
<b>4</b>	<b>CONSTRUCTION</b>
<b>4.1</b>	<b>Applicable SANS 2001 standards for construction works</b> SANS 1200 A - 1986 : GENERAL SANS 1200 AH - 1986 : GENERAL (Structural) SANS 1200 C - 1980 : SITE CLEARANCE SANS 1200 D - 1988 : EARTHWORKS SANS 1200 DA - 1988 : EARTHWORKS ( Small works ) SANS 1200 DB - 1989 : EARTHWORKS ( Pipe trenches ) SANS 1200 DK - 1996 : GABIONS AND PITCHING SANS 1200 DM - 1981 : EARTHWORKS (ROADS, SUB-GRADE) SANS 1200 L - 1983 : MEDIUM PRESSURE PIPELINES

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	<p>SANS 1200 LB - 1983 : BEDDING (PIPE)</p> <p>SANS 1200 LD - 1982 : SEWERAGE</p> <p>SANS 1215 - 1984 : CONCRETE MASONRY UNITS</p> <p>SANS 227 - 1986 : MASONRY UNITS OF BURNT CLAY</p> <p>SANS 10400 - 2010 : APPLICATION OF NATIONAL BUILDING REGULATIONS</p> <p>SANS 2001 CC1 - 2007 : Concrete works (structural)</p> <p>SANS 2001 CC2 - 2007 : Concrete works (minor works)</p> <p>SANS 2001 CM1 - 2007 : Masonry walling</p> <p>SANS 2001 EM1 - 2007 : Cement plaster</p>
4.2	<p><b>Applicable national and international standards</b></p> <p>SANS</p> <p>SANS</p>
4.3	<p><b>Certification by recognised bodies</b></p> <p>All certification must be submitted to Technical Services of SANParks for approval</p>
4.4	<p><b>Agreement certificates</b></p> <p>Alternative materials with Agreement Certificates must be submitted to Technical Services SANParks for approval prior to work commencing</p>
4.5	<p><b>Plant materials and equipment supplied by the employer</b></p> <p>Nil</p>
4.6	<p><b>Services and facilities provided by the employer</b></p> <ul style="list-style-type: none"> <li>• Water: Option A as hereinafter defined</li> <li>• Electricity: Option A as hereinafter defined</li> <li>• Telecommunication services: All communication must be provided by contractor.</li> <li>• Ablution facilities: No Ablution facilities available. Chemical toilets to be provided by contractor.</li> <li>• Medical / first aid facilities: to be provided by contractor</li> <li>• Fire protection services: to be provided by contractor for area of the works</li> </ul>
4.7	<p><b>Other facilities and services</b></p> <p>All temporary facilities to be provided by contractor</p>
5	<p><b>MANAGEMENT OF THE WORKS</b></p>
5.1	<p><b>Applicable SANS 1921 standards</b></p> <p>The following parts of SANS 1921 Construction works standards and associated specification data are applicable to the works:</p> <ol style="list-style-type: none"> <li>1) SANS 1921 – 1: General engineering and construction works</li> <li>2) SANS 1921 – 5: Earthworks activities which are to be performed by hand</li> </ol> <p>The abovementioned South African National Standards make several references to the Specification Data for data, provisions and variations that make these standards applicable to this contract. The Specification Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and these standards.</p> <p>Each item of Specification Data given below is cross-referenced to the clause in the standard to which it mainly applies.</p> <p>The associated Specification Data is as follows:</p>

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SANS 1921-1, General engineering and construction works	
Clause	Specification data
Essential data	
4.1.7	There are no requirements for drawings, information and calculations for which the contractor is responsible
4.2.1	The responsibility strategy assigned to the contractor for the works is A.
4.2.2	The structural engineer is SANParks Engineers.
4.3.1	<p>The planning, programme and method statements are to comply with the following:</p> <ol style="list-style-type: none"> <li>1. Immediately on award of the Contract and prior to commencement on site, the Contractor, in conjunction with the Principal Agent, shall agree the working Programme covering the first month of the Construction Period. During the first month of the Construction Period the Contractor shall prepare and draw up in conjunction with the Principal Agent the Programme for the balance of the Works in accordance with the conditions stated below.</li> <li>2. The Principal Agent shall have the right to modify such Programme to accommodate changes necessary in his opinion for coordinating the project as a whole. Any cost implications relating to such modification shall be dealt with in accordance with the provisions of the Agreement.</li> <li>3. This Programme shall be drawn up in accordance with the dates given herein for possession, sectional completion and Practical Completion and shall be in sufficient and approved detail to ensure control over the work.</li> <li>4. Notwithstanding the fact that the Programme has been prepared in conjunction with the Principal Agent, the Contractor shall be responsible at all times for maintaining the accuracy, validity and reasonableness of the Programme, and the implementation thereof.</li> <li>5. The Programme shall be compiled based on the Critical Path Method of programming and the critical activities are to be clearly highlighted. It shall be compiled in such a way that logic is not constrained by resource limitations unless specifically agreed otherwise by the Principal Agent. The Programme will be processed on the Principal Agents system and the Contractor shall provide all the co-operation necessary to achieve this.</li> <li>6. Documentation will not be available in complete detail at the commencement stage. However the Contractor, in conjunction with the Principal Agent, shall plan the Works on provisional information, to an agreed level of detail relating to the level of detailed information available and with sufficient scope to include future detail without disrupting the basic logic as initially agreed. The quantities contained in this document are provisional and shall be utilized as a guide only for the drawing up of the Programme. Where assumptions are made in regard to programming aspects, such assumptions shall be agreed by the Contractor and the Principal Agent, and suitably recorded in the Programme.</li> <li>7. Should circumstances change to the extent where the Contractor is of the opinion that changes to the Programme are required, then the Contractor shall make written request to the Principal Agent for such changes, clearly identifying the reasons for requiring such change. The Contractor and Principal Agent shall thereafter agree such changes, if any. Should the Principal Agent be of the opinion that the Programme requires revisions, and notwithstanding the fact that a request for such revision has not been received from the Contractor, the Principal Agent shall be entitled to instruct the Contractor to revise the Programme accordingly, unless the Contractor can submit reasonable justification for not doing so. Any acceleration and/or special measures sanctioned by the Principal Agent together with associated effects shall be incorporated in a revision to the Programme.</li> <li>8. The Contractor and the Principal Agent shall, at regular intervals not exceeding one month, agree the state of progress of the Works relative to the latest agreed revision of the Programme. Such agreement shall include the recording of actual commencement and completion dates for each activity and shall constitute the official record of the progress at such point in time.</li> <li>9. In addition to and based on the Programme systems and format dictated above, the Contractor shall devise Detailed Working Programmes. These shall be drawn up on a regular basis (at least monthly), to the satisfaction of the Principal Agent. Such Working Programmes shall at all times relate to the constraints of the current Programme.</li> </ol>

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	<p>10. Notwithstanding anything to the contrary contained herein the Principal Agent at all times reserves the right to direct the order in which the various parts of the Contract are to be executed. The Contractor shall give priority to any individual section or portion of the Works that, in the opinion of the Principal Agent, requires to be expedited.</p> <p>11. Should the Contractor and/or Principal Agent be of the opinion that such instruction warrants a revision to the Programme, then the provisions of 7 above shall apply.</p> <p>12. Should it appear, in the Principal Agent's opinion, that work in any area is not being executed in accordance with the requirements of the Programme, the Contractor shall provide additional manpower and resources and shall work additional overtime and do everything else required to bring the work back to Programme to the satisfaction of the Principal Agent.</p>
4.3.2	<p>1. The Contractor is required to identify and provide the employer with material procurement and construction lead in periods for the following aspects:</p> <p>1.1 Building Information</p> <p>1.1.1 Foundation Layouts (Setting Out)</p> <p>1.1.2 Reinforcing Schedules</p> <p>1.1.3 Concrete Layouts (including pile caps, ground beams, columns, beams, stairs, etc)</p> <p>1.1.4 Concrete Details</p> <p>1.1.5 Paint Specifications</p> <p>1.1.6 Metal Work etc.</p> <p>2. The Contractor is further required to identify and provide the employer with lead in periods required for the appointment of anticipated sub-contractors for:</p> <p>2.1 Sundry Fittings</p> <p>2.2 Sundry Metalwork</p> <p>2.3 Sundry Builder's Work</p>
4.3.3	The notice period for inspection is 14 days.
4.7.3	Blasting operations will not be required.
4.9.3	Specific requirements of the employer are described in the scope of work.
4.12.2	<p>The contractor will provide representative samples of materials, workmanship and finishes as the Principal Agent may require.</p> <p>Upon request of Principal Agent</p>
4.14.1	Contractor will not be allowed to set up accommodation on site. Contractor to provide own accommodation and transport of workers outside of the park
4.14.3	<p>The office accommodation, equipment, accommodation for site meetings and other facilities for use by the employer and his agents are:</p> <p>Nil</p>
4.14.5	The Contractor is required to provide latrine and ablution facilities.
4.14.6	A Construction sign board and necessary H&S sign/notice boards are required. All signboards need to be approved / accepted by the Employer prior to erection.
4.17.1	<p>The requirements for the termination, diversion or maintenance of existing services are:</p> <p>Nil</p>
4.17.3	Services which are known will be pointed / are to be pointed out on site by the Employer.
4.17.4	<p>The requirements for detection apparatus are:</p> <p>No as-built drawings exist</p>
4.18	<p>The following standards and specifications shall be in addition to the provisions of 4.18:</p> <p>1. The Occupational Health and Safety Act 85 of 1993 and its Construction Regulations 2014. Said act and regulations are not attached. Health and Safety Specifications for</p>

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		SANParks - UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER TREATMENT WORKS, Mokala National Park. (Said Specification is attached as Annexure A of the Scope of Work)
4.19		The following standards and specifications shall be in addition to the provisions of 4.19: 1. The <u>Environmental Management Plan (EMP) for Construction Activities in SANParks Projects</u> Said specification is attached as Annexure B of the Scope of Works.
4.22		The works to be undertaken by nominated and selected subcontractors comprise: Nil
<b>Variations</b>		
1		Replace 4.1.9 with the following:  All rights of publication of articles in the media, together with any advertising relating to, or in any way connected with this project shall vest in the Employer. The Contractor together with his Subcontractors shall not, without the written consent of the Employer, cause any statement or advertisement to be printed, screened or aired by the media.
2		Replace 4.9.3 with the following:  Trees and shrubs shall not be removed, cut back or disturbed in any way without the consent of the principal agent. Specific requirements of the employer are described in the Scope Of Works.
3		Replace the heading of 4.12 with the following: <b>"4.12 Materials, samples, fabrication drawings and overloading."</b>
4		Include the following after 4.1.2.5 <b>"4.12.6 Overloading"</b>  The Contractor shall take all necessary steps to ensure that no damage occurs due to overloading of any portion of the Works or temporary works. Any damage caused to the Works by overloading shall be made good by the Contractor at his sole expense."
<b>Additional Clauses</b>		
1		<u>Prime Cost Amounts</u>  All prime cost items are for material and goods delivered to site. The contract documents shall make provision for the contractor to separately price for overheads and profit and for taking delivery, unloading, checking against invoices and/or delivery notes, getting in, unpacking, storing, hoisting and fixing of such material and goods. The contractor shall check the quantity and condition of all materials and goods on taking delivery as any material and goods subsequently found missing or damaged shall be replaced at the contractor's expense.
2		<u>Cash flow predictions</u>  The contractor shall provide all reasonable assistance to the principal agent in the preparation of cash flow projections of claims for payment certificates. Cash flow predictions will be updated by the Contractor on monthly basis and will be submitted to Employer together with its progress claims. The projections shall be based on the programme. The cooperation of the contractor in terms of this item shall not prejudice his right to receive payment in terms of the agreement.
3		<u>Protection/isolation of existing /sectional occupied works</u>  The contractor shall provide all reasonable temporary measures to protect/isolate the existing and/or sections of the occupied works and remove such measures on completion.
4		<u>Security of the works</u>  The contractor shall take all appropriate measures for general security of the works.
5		<u>Minimum requirements for construction equipment</u>  Construction equipment must comply with all relevant legal requirements and must be adequate to execute the works.
6		<u>Deposits and fees</u>

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		The contractor shall pay all deposits and fees and charges according to law, regulations or bylaws of any local or other authorities that relate to hoardings, the use of pavements, street encroachment or crossings, permission for the suspension of parking facilities and the like.																
7	<p><u>Water and electricity</u></p> <p>The Employer does not warrant that any water supply or electricity supply that may exist is adequate for the proper execution of the works. The responsibility strategies in terms of the tabulation below that will apply to the contract are:</p> <p>a) Water : A</p> <p>b) Electricity : A</p> <table><tr><th rowspan="2">Service</th><th colspan="3">Option</th></tr><tr><th>A Contractor responsibility</th><th>B Employer responsibility</th><th>C</th></tr><tr><td>Water</td><td>The Contractor is to provide, and remove and make good upon completion, all the necessary temporary plumbing connections and purchase water from the local authority for the works at his own cost.</td><td>The Contractor shall make, and upon completion remove, all the necessary connections to the Employer's water supply at designated points and make use of water free of charge for construction purposes only.</td><td>The Contractor shall make, and upon completion remove, all the necessary connections and water meters to the Employer's water supply at designated points and be responsible for costs associated with all water consumed.</td></tr><tr><td>Electricity</td><td>The Contractor is to provide, and remove and make good upon completion, all the necessary temporary electrical connections and installations and purchase electricity from the local authority / ESKOM for the works at his own cost.</td><td>The Contractor is to provide, and remove and make good upon completion, all the necessary temporary electrical connections and installations and purchase electricity from the local authority / ESKOM for the works at his own cost.</td><td>The Contractor shall make, and upon completion remove, all the necessary connections and meters to the Employer's electrical supply and be responsible for costs associated with all electricity consumed.</td></tr></table>	Service	Option			A Contractor responsibility	B Employer responsibility	C	Water	The Contractor is to provide, and remove and make good upon completion, all the necessary temporary plumbing connections and purchase water from the local authority for the works at his own cost.	The Contractor shall make, and upon completion remove, all the necessary connections to the Employer's water supply at designated points and make use of water free of charge for construction purposes only.	The Contractor shall make, and upon completion remove, all the necessary connections and water meters to the Employer's water supply at designated points and be responsible for costs associated with all water consumed.	Electricity	The Contractor is to provide, and remove and make good upon completion, all the necessary temporary electrical connections and installations and purchase electricity from the local authority / ESKOM for the works at his own cost.	The Contractor is to provide, and remove and make good upon completion, all the necessary temporary electrical connections and installations and purchase electricity from the local authority / ESKOM for the works at his own cost.	The Contractor shall make, and upon completion remove, all the necessary connections and meters to the Employer's electrical supply and be responsible for costs associated with all electricity consumed.		
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5.2.2	<p><b>Code of Conduct for working in the SANParks</b></p> <p>The document <u>Code of Conduct for Implementing a SANParks Project</u> is applicable to this contract, and is attached as Annexure C.</p>																	
5.3	<p><b>Unauthorized Persons On Site</b></p> <p>The Contractor shall at all times strictly exclude all unauthorized persons from the Works.</p> <p>No workmen or laborers are to be allowed under any circumstances to sleep or deposit any kit on the premises. Unless a designated enclosed and secure camp site for accommodating the Contractors employees has been allocated and approved by the Park Officials.</p> <p>Furthermore, the Contractor shall take all measures necessary to ensure that no workmen are allowed into the building at any time after Practical Completion without the specific permission of the Principal Agent.</p>																	
5.4	<p><b>Quality plans and control</b></p> <p>Quality inspections will be held at regular intervals. The contractor must notify the Principal Agent of any closure of works which must be inspected to confirm quality.</p>																	
5.5	<p><b>Accommodation of traffic on public roads occupied by the contractor</b></p> <p>n/a</p>																	
5.6	<p><b>Other contractors on site</b></p> <p>n/a</p>																	

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5.7	<p><b>Testing, completion, commissioning and correction of defects</b></p> <p>All testing and certification of the works will be done in accordance with the applicable governing regulations and the procedures for the following will be clarified at the site meeting:</p> <ul style="list-style-type: none"> <li>• Use of the works before completion has been certified;</li> <li>• Handover / beneficial occupation;</li> <li>• Pre-commissioning and commissioning of the works or part thereof, before and after completion;</li> <li>• Certifying completion;</li> <li>• Start-up; operation of the works; special arrangements associated with operating plant and machinery, etc.;</li> <li>• Training and technology transfer;</li> <li>• Take over;</li> <li>• Operational maintenance (if any), after completion;</li> <li>• Work which contractors may carry out after completion has been certified (in addition to correcting defects); and</li> <li>• Arranging access for correction of defects</li> </ul>
5.7.1	<p><b>Product warranties, guarantees and maintenance instructions/manuals</b></p> <p>The Contractor shall obtain and hand over to the Principal Agent on Practical Completion all relevant product warranties and guarantees, any operating and maintenance instruction manuals, data or instructions required by the Principal Agent or provided by manufacturers, suppliers or Subcontractors.</p> <p>The Contractor shall ensure that all warranties and guarantees received are fully ceded to the Employer on Works Completion, failing which the release of Construction Guarantee/Retention will be withheld until this is satisfactorily completed.</p>
5.7.2	<p><b>Security at completion</b></p> <p>At completion, the Contractor shall leave the Works secure with all accesses locked. The Contractor shall account for and hand over to the Principal Agent all keys, properly labeled with an itemized schedule to be signed by the Principal Agent as receipt.</p>
5.8	<p><b>Recording of weather</b></p> <p>A record of rain and all other inclement weather should be kept on site.</p>
5.9	<p><b>Format of communications</b></p> <p>All site instructions should be in writing on the prescribed format and will not be an approved site instruction until the Principal Agent has signed it.</p> <p>All notifications of inspections and all requests for information should be in writing.</p>
5.9.1	<p><b>Site Instructions</b></p> <p>Contract Instructions issued on Site are to be recorded by the Principal Agent in a Site Instruction Book which will be issued by the Principal Agent and which shall be maintained on Site. Only Site Instructions issued in such book will be effected by the contractor.</p>
5.10	<p><b>Management meetings</b></p> <p>The schedule for the site meetings will be agreed upon at the site hand-over meeting.</p>
5.10.1	<p><b>Progress Meetings</b></p> <p>The Principal agent and contractor shall hold meetings related to the progress of the works at regular intervals and at such time as may be necessary. Subcontractors shall not be present at progress meetings unless specifically requested by the contractor or principal agent. The principal agent shall record and distribute the minutes of the meetings.</p>
5.10.2	<p><b>Technical meetings</b></p> <p>At the instance of the principal agent or the contractor meetings shall be held to deal with technical and subcontractor's coordination matters.</p>

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5.11	<b>Forms for contract administration</b> All contract administration procedures will be agreed upon at the site hand-over meeting.
5.12	<b>Electronic payments</b> The contractor shall complete the Central Supplier Database to register on the National Treasury Database and provide the information in order to enable SANParks to pay him or her electronically.
5.13	<b>Daily records</b> Daily records must be kept of all workers employed on the site as per the attached Attendance Register – Annexure D. The attendance register must be submitted to the project manager together with the monthly certificates. The number of workers and person days should be calculated on these registers on a progressive monthly basis.
5.14	<b>Bonds and guarantees</b> All guarantees must be delivered to the SANParks Principal Agent.
5.15	<b>Payment certificates</b> The Principal Agent shall inspect all work and certify work done on a monthly basis. No payment shall be made for material on site. Material on site must be ceded to the employer and proof of payment to the supplier given to the employer before any payment of such material on site will be made.
5.16	<b>Permits</b> n/a
5.17	<b>Proof of compliance with the law</b> SANParks could request the contractor for proof that all aspects of South African Law are complied with.
5.18	<b>Insurance provided by the employer</b> n/a
<b>ANNEXES</b>	
A	Health and Safety Specifications for SANParks - UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER TREATMENT WORKS, Mokala National Park.
B	Environmental Management Plan (EMP) for Construction Activities
C	Code of Conduct for implementing a SANParks Project

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## C3.2: Drawings

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### List of Drawings

DWG No	Description	Revision
34121.00-100-01	GENERAL LAYOUT – PUMP STATIONS, PIPELINES & ELECTRICITY SUPPLY	0
34121.00-201-02	PUMP INSTALLATION IN CONSERVANCY TANKS	0
34121.00-143-01	THRUST/ANCHOR BLOCK DETAIL	0
34121.00-143-02	WATER POINT DETAIL	0
34121.00-100-02	WWTW GENERAL LAYOUT	0
34121.00-201-01	WWTW DETAILS - CIVIL & CONCRETE WORKS	0
34121.00-204-01	WWTW REINFORCING DETAILS	0
34121.00-204-02	REINFORCEMENT DETAILS - BENDING SCHEDULE	0
34121.00-134-01	RAZOR MESH FENCE DETAIL	0
34121.00-405-01	ELECTRICAL RETICULATION SINGLE LINE DIAGRAM	0

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## C3.3: Specifications

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## C3.3.1: WASTEWATER TREATMENT PLANT

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### BECON WATERTECH (PTY) LTD

**SPECIFICATION FOR THE SUPPLY, DELIVERY AND INSTALLATION OF  
MECHANICAL AND ELECTRICAL EQUIPMENT**

**FOR A BECON BIO - FILTER MODEL 150**

**RBC WASTEWATER TREATMENT PLANT**

**Contact details:**

Postal Address:

Physical Address:

Phone Numbers:

E-mail:

P O Box 3771, Glenharvie, 1786  
11 Cooperskloof Street, Glenharvie,  
+27 11 752 1191  
[info@becon.co.za](mailto:info@becon.co.za)

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## THE DESIGN, MANUFACTURE & SUPPLY OF MECHANICAL & ELECTRICAL EQUIPMENT, FOR A BECON BIO-FILTER MODEL 150 RBC SEWAGE TREATMENT

### PREAMBLE & DESIGN CONSIDERATIONS

It is understood that a Rotating Biological Contactor (RBC) sewage purification plant is required to treat sewage at the Lilydale Rest Camp, Mokala National Park.

The application calls for an installation to accommodate the load generation as waterborne sewer connections are provided, for which the RBC process is ideally suited.

Our Becon Bio-Filter Model 150 RBC system has been selected to treat an initial load of up to 30m<sup>3</sup>/day flow having a raw sewage organic load, referred to as chemical oxygen demand (COD) in the order of 18 kg/day.

The operation of the Becon Bio-Filter RBC plant is fully described in the enclosed brochure, and it is confirmed that in excess of 2000 Becon Bio-Filter Rotating Biological Contactor (RBC) plants have been installed in Southern Africa, sub-Sahara Africa and the Indian Ocean Islands to date.

Becon Bio-Filter RBC plants comprise of reinforced concrete structures constructed on site by a nominated local civil works contractor to construction drawings and specifications supplied by Becon to accommodate the mechanical equipment for the RBC plants.

The M & E equipment is manufactured and supplied by Becon Watertech (Pty) Ltd in the form of a complete package including all mechanical & electrical components and accessories for the plant once the civil works is adequately completed. Becon Watertech will therefore manufacture, deliver, install, commission and provide training as part of the M&E portion of the project.

### BIO-FILTER OPERATING COST

It may be noted that the operating costs of the RBC plants are low due to low power consumption and maintenance requirements of the RBC system.

Due to the simplicity of the plant, no skilled operator is required and a daily check that the plant is operating, is all that is required.

### BIO-FILTER RBC PROCESS

From enclosed layout drawing it can be seen that the system would operate as follows:

The sewage flow is deposited through the inlet to the primary anaerobic reactor, where settlement of solids and anaerobic digestion takes place.

The primary reactor tank effluent subsequently flows through the Bio-Filter RBC basin where aerobic treatment is undertaken.

Treated effluent then flows through the humus tank, where settlement of the humus is undertaken, which is drawn off by means of a suitably rated humus pump, and returned to the primary tank for settlement and storage.

Finally the clarified effluent is disinfected in the disinfection contact tank, before being discharged to waste.

The final effluent may be utilised for garden irrigation, be recycled for flushing toilets or may be disposed of in a natural water course to waste.

The advantage of the Bio-Filter RBC system is that the bacteria attach themselves to the rotating discs, and cannot therefore be washed out of the system by shock loads or flash floods, which could happen with activated sludge plants.

The system will also continue to operate under overloaded conditions, readily removing the rated percentage of organic matter from the system.

The primary tank only requires desludging every 12 months and not on a daily basis as is required with an activated sludge plants.

It is to be noted that the Bio-Filter RCB plant incorporates a completely separate fully sealed primary septic tank (anaerobic digester), to eliminate any smells from the plant.

Finally it can be noted that the capacity of the primary septic tank is designed in accordance with recommendations as laid down by the South African Institute of Water Pollution Control, and the RBC disc area rating is designed in accordance with the

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recommendations of the C.S.I.R. of SA.

## BIO-FILTER RBC ROTORS

Each RBC rotor unit would comprise of the following equipment:

### Bio-Filter Discs

Discs being 2m in diameter are injection moulded from polyurethane plastic mixture and are fitted with integrally moulded spacers and reinforced bushes to ensure a high wearing resistance between the shaft and the discs while ensuring rigidity in assembly against the action of the rotation motion of the discs. The Discs are injection moulded from a plastic polyurethane mix having a density of not less than 120 kg m<sup>3</sup>, and are free of significant water absorbent properties (Less than 10 %). The life cycle of the rotor and assembly, being mostly mechanical and steel structures, is expected to be between 15 and 20 years. We have records of systems operating for over 30 years without failure. The discs themselves should not require replacement.

### Rotor Shafts

A hollow section square profile shaft is used in each rotor to ensure that no slipping takes place between shaft and discs. Shaft stubs are manufactured from high grade shaft steel and turned down to the required diameter. The rotor shaft is suitably reinforced and capable of withstanding the stresses caused by flotation and rotation forces exerted on the rotor. All shafts are finished off with two coats of high corrosion resistant epoxy paint.

### Spiders

Each rotor is fitted with two spiders, one at each end comprising of a 10mm steel compression plate fitted with steel channel spider arms. The spiders are tensioned with 24 through-bolts to compress the discs to form a unified rotor construction on the shaft.

### Bearings

The rotor is supported in the Bio-Filter basin by means of two self-aligning heavy duty bearings, mounted on steel bearing plates and bolted onto the basin walls. High tension foundation bolts cast into the walls are used to anchor the bearings. The life cycle replacement on the bearings is expected to be between 15 and 20 years.

## ROTOR DRIVES

Each RBC rotor would be powered by means of a 0,75 kW 380/400 Volt close coupled direct shaft mounted reduction gearbox driving the rotor at 4 r.p.m. See attached Data Sheet for detailed reference.

## RECIRCULATION PUMP

A Semi non-choke able submersible recirculation pump shall be installed, complete with 80 mm gate valve and 80 mm check valve, as well as fittings needed to connect it to the PVC pipe going to the Septic tank. The pipe work layout is such that the pump can be uncoupled by means of a suitable union coupling, to allow it to be conveniently withdrawn for inspection purposes.

## LIFT PUMPS

Vertical single-stage stainless steel submersible pump with vertical discharge port and integrated submersible 3-phase totally enclosed motor in insulation class F. The pump is fitted with a suction strainer. The impeller is a VORTEX impeller for 35 mm free passage suitable for pumping groundwater, surface water, rain water and similar. The pump has a double shaft seal and an intermediate oil chamber pre-filled with non-toxic special oil. The pump has a riser pipe, a cooling jacket for continuous cooling of the motor by the pumped liquid and long-life deep-groove greased-for-life ball bearings. The pump is ready for use as it is fitted with carrying handle and is supplied with a 10 m mains cable. The mains cable is of the plug type with glass sealing compound in the socket to prevent penetration of humidity into the stator windings.

### Liquid:

Liquid temperature range: 0 .. 55 °C

### Technical:

Type of impeller: VORTEX

Maximum particle size: 35 mm

Curve tolerance: ISO 9906 Annex A

### Materials:

Pump housing: Stainless steel

1.4301 DIN W.-Nr.

304 AISI

Impeller: Stainless steel

1.4301 DIN W.-Nr.

304 AISI

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**Installation:**

Pump outlet: Rp 1 1/2

Maximum installation depth: 10 m

**ELECTRICAL CONTROL PANEL**

A weather-proof electrical control panel will be supplied with the each plant. The control panel would accommodate all electrical switchgear and protection equipment, for the 4 RBC Drive Motors and the Humus Pump, as detailed below:

1 only 60 amp T.P. Circuit breaker (Main switch)

4 only 10 amp T.P. Circuit breakers (Starter protection)

1 only sets pilot lights (On & Trip)

1 only sets low voltage float controls for pumps

1 only set plant controls.

**MECHANICAL AND ELECTRICAL INSTALLATION**

The offer would include for the mechanical and electrical installation of the Bio-Filter plant at site.

Full installation instructions would be supplied with the plant to enable local installation team to install the equipment.

**GUARANTEE**

The above mechanical and electrical equipment is guaranteed against faulty materials and workmanship for a period of 12 months, fair wear and tear accept

**CIVIL WORKS**

To be completed by the successfully nominated local civil works contractor.

**OPERATING MANUALS**

Full operating and maintenance manual would be included with each sewage plant as per the requirements of the tender.

Siemens Geared Drive Data Sheets

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MOTOX parallel shaft geared motor      Tecroveer  
FDA88B-LA80M4

Order number: -  
Article number: -      Quantity: - one  
Customer Art.-No.: -      Price: -  
Product hierarchy: 08XC 058      Weight (about): -  
approximately 80 kg  
MLFB  
MLFB: 2KJ1404-6DC13-1AU1-Z  
Short description: K01+D76+L00+K06+P90+M10+M55+N48  
Free text: -

Configuration

Dimension sheet: FA012	Service factor: 1.0
Output speed: 3.9 1/min	Output torque: 1840 Nm
Ratio: 358.33	Output direction of rotation:
left	Output direction backstop: -
Backstop: -	
Paint finish standard: Q0	
Colour: - Ral 5015	
Layer thickness coating NDFT: -	
Protection: IP55	
Mounting position: H-01-A	
Name plate: Siemens	
Bevel gear standard: -	
Gearbox: FDA88B	
Output shaft: H60 x 210	Flange diameter: -
2. shaft end: -	Flange figure: -
Shaft cover: Shaft cover	Shaft material: ST60
Bearings: assigned bearings	Torque arm figure: -
Housing material: GG	Torque arm position: -
Oil level indicator: .Oil level plug	No. of seals: 1
Ventilation: with breather filter	Sealing type: -
Oil drain: Oil drain plug non magnetic	Sealing: Normal
Grease: -	oil type: CLP VG220
Regreasing system: without	Oil quantity: 6.30 l
Drywell design: without	
Motor: LA80M4	
Winding data: R226D/99	Flange type: B5
Elektrical design: CE	Insulation class: F
Poles: 4	Efficiency class: IE1

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## INSTALLATION INSTRUCTIONS

### BECON BIO-FILTER RBC PLANT: STANDARD PACKAGE

### (MODEL 600-UP) MECHANICAL & ELECTRICAL EQUIPMENT

#### 1. Preamble

The standard package for a Bio-Filter RBC plant comprises of all the mechanical and electrical equipment for the plant. The following major items are included:

- a) Bio-Filter RBC rotors complete with bearings fitted on transport frames.
- b) Glass Fibre canopies for rotors.
- c) Shaft mounted direct drive geared motors with supports and accessories.
- d) Humus tank internal equipment comprising of bridge, stilling tube, desludge pipe, overflow pipe work, sludge return pump and accessories.
- e) Electrical control panel accommodating all switchgear for the RBC plant complete with cables and accessories.

It is recommended that the civil works for the plant be completed in all respects, prior to the installation of the Bio-Filter M&E equipment. All site work and earth works around the plant should also be completed to final levels, including interconnecting pipe work between structures. All tanks should be clean and dry before installation is undertaken.

#### 2. Unloading Instructions

- a) When working with rotor take care not to damage rotor discs by pressing against them or banging them with other items.
- b) Remove all small equipment from truck including items wired to rotor carry frame.
- c) Cut all wires holding carry frame to truck floor.
- d) Remove canopy from carry frame with lifting beam and slings and place on ground.
- e) Remove Bio-Filter RBC unit with carry frame from truck with lifting beam and slings whilst still bolted to frame (as per sketch). Ensure slings do not touch rotor discs.
- f) Check all equipment and accessories to correspond with packing slips.

#### 3. Bio-Filter Basin Preparation

- a) Ensure pockets for bearing holding down bolts are in centre of each Bio-Filter Basin, in centre of wall and clean.
- b) Install Bio-Filter 260mm x 20mm bearing foundation bolts in pockets using the 300mm x 150mm bearing plates as templates. Bolts should protrude 55mm above top of bearing plate with centre of plate lined up on C/L of basin and centrally on walls.
- c) After setting up bolts use expanding grout in pockets with a thin layer under bearing plate. Ensure plate is level in length and width.
- d) Allow grout to set for 12 hrs
- e) If 3 or more rotors are installed in a bank a 3500mm x 125mm launder weir plate is to be installed on the outlet of the last rotor. The weir plate is to be installed level to ensure even overflow over the width of the basin into the outlet trough. The bottom of the lowest 'V-Notch' after setting up horizontal and level is to be at the level of the concrete outlet wall of the basin. Weir to be bolted down with 6mm rawl bolts.
- f) Place silicon cement between weir plate and wall to seal connection.
- g) Ensure concrete weir wall on inlet to chlorine contact tank is at a level 200 mm lower than the humus tank Top of Wall (TOW).
- h) Clean basins out and remove all foreign matter.

#### 4. Rotor Installation

- a) Remove canopy from above rotor and the carry frame using spreader beam and lifting cables.
- b) Unbolt rotor bearing pedestals from carry frame.
- c) Loosen grub screws securing bearing to shaft. Ensure bearing positions on shaft can be moved.
- d) Lift rotor out of carry frame using spreader beam and lifting cables.

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- e) Place rotor in basin ensuring that disc sides do not touch concrete walls. Long shaft end to be on drive side of basin. When lowering rotor into basin move bearing pedestals on shaft to get pedestal holes to coincide with holding down bolts. At this stage the position of the rotor is immaterial.
- f) Bolt down bearing pedestals onto bearing plates. Clean drive end shaft. Smear gearbox position on shaft with special white grease provided in packet or alternatively with general purpose automotive grease. Remove end cover and securing bolt and washer from gearbox hollow shaft. Fit gearbox motor to shaft up to clip stop inside the gearbox hollow shaft. Fit bolt and washer into end of shaft to tighten geared motor onto shaft end.
- g) Gearbox Support Leg (See Figure 1).
  - I. Cut 100 x 50 channel leg support to 35mm longer than wall height 'x'. This will ensure gearbox is fitted level.
  - II. Fit 150 x 20 bolt, 70 washer and 60 x 30 buffer rubbers to gearbox and leg support as per Figure No 1. Slide whole rotor and gearbox in bearings, which are still loose on the shaft, until motor support leg is flush against the wall. When sliding rotor do not press or leverage against discs.
  - III. Place 135 x 135 base plate under leg support. Ensure support leg is in vertical position and flush against wall. Ensure 20 dia. bolt can be moved freely between rubbers, gearbox hole and support leg hole. Mark base plate holes and 50 x50 side angle bracket holes in concrete. Remove leg assembly. Drill holes for 10mm rawl bolts and bolt brackets and base plate in position. Assemble leg support. Ensure bolt can still move freely. Weld base plate and side brackets to leg support channel.
- h) Bolt gearbox to support bracket as shown on Fig No. 1. Tighten grub screws on bearings to secure rotor in position.
- i) Remove highest inspection plug on gearbox with allen key and replace with breather plug provided.
- j) Bearings can now be greased. Bearings and exposed rotor stub ends to be painted with red oxide undercoat and black epoxy paint for protection.
- k) Place canopies over Bio-Filter Rotors using spreader beam and lifting cables. Bolt canopy to concrete side walls on 4 corners using 150mm x 25mm brackets, 8mm bolts through canopy frame and 6mm rawl bolts in wall.

#### 5. Humus Tank Fittings (Figure 2)

- a) Fit 100 Ø galvanised steel draw-off pipe into humus tank in position shown on Fig 2 with draw-off connection into pump sump. Connect the 260 long x 100 Ø steel 'T-off' pipe to draw-off pipe in pump sump with 50 Ø steel Tee-off piece and 63 Ø PVC adapter socket in vertical position. Connect the 100 Ø CI valve to 'T-off' pipe. Support connection in 300 x 300 hole between humus tank and pump sump to hold draw-off pipe in position ready for grouting. Ensure draw-off pipe is in vertical position and mark position of 100 x 100 (curved) holding bracket on top of wall. Drill holes and secure bracket with 6mm rawl bolts. Weld bracket to draw-off pipe.
- b) Cut 1100 long x 25 x 25 square tubing valve extension spindle to correct length above the valve in the pump sump for valve wheel to extend above the sump wall. Flatten end of square tubing for a tight fit over the valve spindle. Fit extension holding down bracket (570 x 40 with 70 Ø ring on end) and bolt to top of wall with two 8mm rawl bolts (bracket will have to be cut to correct length and drilled). Fit 63 Ø PVC riser pipe to adaptor socket on 'T off' pipe with PVC solvent cement. At this stage riser pipe to be as long as possible (just under TOW height). When plant is operational top of riser pipe to be cut at a level of 10mm below final Top Water Level in tank. Stub end on top of riser pipe not to be solvent cemented in as it is to remain adjustable.
- c) Fit humus return pump into pump sump in suitable position on floor with delivery pipe over sump wall. Bolt 200 x 40 bent securing bracket to TOW with 6mm rawl bolts and weld bracket to outside down-pipe of delivery pipe. Connect 63 Ø humus return pipe to adaptor socket on end of pump delivery pipe with HP solvent cement.
- d) Mark position of inlet pipe into humus tank on top of wall and also opposite position at 180° (on centre line of plant). From these two points mark off the two ends of the humus tank centre line at right angles to the plant centre line. From the aforementioned 4 marked points mark off the 45° positions for the 4 corners of the clear water overflow pipe.
- e) Fit 110 Ø 2-piece brackets at these 4 corners to humus tank wall with 6mm rawl bolts ensuring that centre line of bracket is 400mm below top of wall. Build up in square pattern and fit 110 Ø PVC overflow pipe (pipe with holes) to 4 corner brackets in position as shown on drawing. Holes in pipe to be in top and bottom positions. Tee off section to chlorine tank to be included.
- f) Fit 3850/4350 x 600/800 steel bridge over humus settlement tank as shown. Hang 600/800 Ø x 1800/2000 glass fibre stilling tube with four 250 x 40 brackets from centre of bridge. Measure where PVC inlet pipe will enter stilling tube at depth of approximately 1200 from top of wall. Cut 160 Ø hole in stilling tube with jig saw. Fit 160 Ø PVC inlet pipe up to centre of stilling tube and connect 90° PVC bend to PVC pipe facing upwards. Bolt bridge in position with 6mm rawl bolts to top of wall.
- g) Paint all exposed steelwork where necessary with red oxide undercoat and black epoxy paint for protection.

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**6. Chlorinator Tank Fittings**

- a) Install 25 Ø PVC chlorine dosing pipe from chlorinator room to chlorine tank. Fit 800 x 25 Ø PVC pipe with holes in chlorine contact tank on inlet weir wall at 250mm below chamfer level. Take pipe along top of wall into chlorinator room at approximately 1300 from floor.
- b) Connect end of pipe onto chlorinator dosing pump plastic delivery pipe using supplied connection adaptors. Make sure to remove small red sealing washer from white plastic pipe end connection.

**7. Electrical Cabling & Connections**

- a) Bolt electrical control kiosk to foundation block with 8mm rawl bolts.
- b) Install Emergency Stop buttons onto bracket on geared motor support legs.
- c) Concrete pump isolator switch support frame (950 x 360) in ground against sump wall and next to pump delivery pipe. Fit pump isolators in PVC housings to frame.
- d) Mount float switch cable connectors PVC housing boxes on 300 x 110 brackets on TOW of pump sump with 6mm rawl bolts in suitable position for float to hang from box into sump. Fit 200 x 20 Ø conduit pipe to bottom of PVC housing boxes. Thread float cable through conduit pipe, knot at correct height and coil remainder of cable in box.
- e) Install 15 A switch socket on wall in chlorinator room for supply to chlorinator dosing pump.
- f) Install power cables between control kiosk and the motors and accessories as per wiring diagram. Use 4 core cable to gearbox motors and pump using 4<sup>th</sup> black core for earth connection. Use 3 core cable for other connections.

**8. Testing of Bio-Filter Plant**

- a) Power supply to plant to be connected to control panel. Check that voltage values on all three phases are acceptable.
- b) Check that there are no loose items in any of the Bio-Filter basins. Start rotors and ensure that they turn counter clockwise when facing rotor drive motor (as shown on fig. 1). Check operation of emergency stop buttons and that they isolate the correct rotor.
- c) Check rotation of humus return pumps. Check start and stop of auto float controls.
- d) Measure current levels on all phases on all drives. Check that all overloads are in accordance with the motor full load currents.
- e) When all basins including the humus tank are filled with water the water level in the humus tank should be 200mm below top of wall. This level is determined by the chamfered concrete weir wall on the inlet to the chlorine contact tank. The 63 Ø PVC riser pipe in the humus return pump sump can now be cut to 10mm below the aforementioned water level. The stub end is then placed onto the 63 Ø riser pipe and can be used to adjust the overflow of this pipe to be the same as for the chlorine contact tank weir wall.

The plant may now become operational and is to be operated in accordance with the Bio-Filter Operating Manual.

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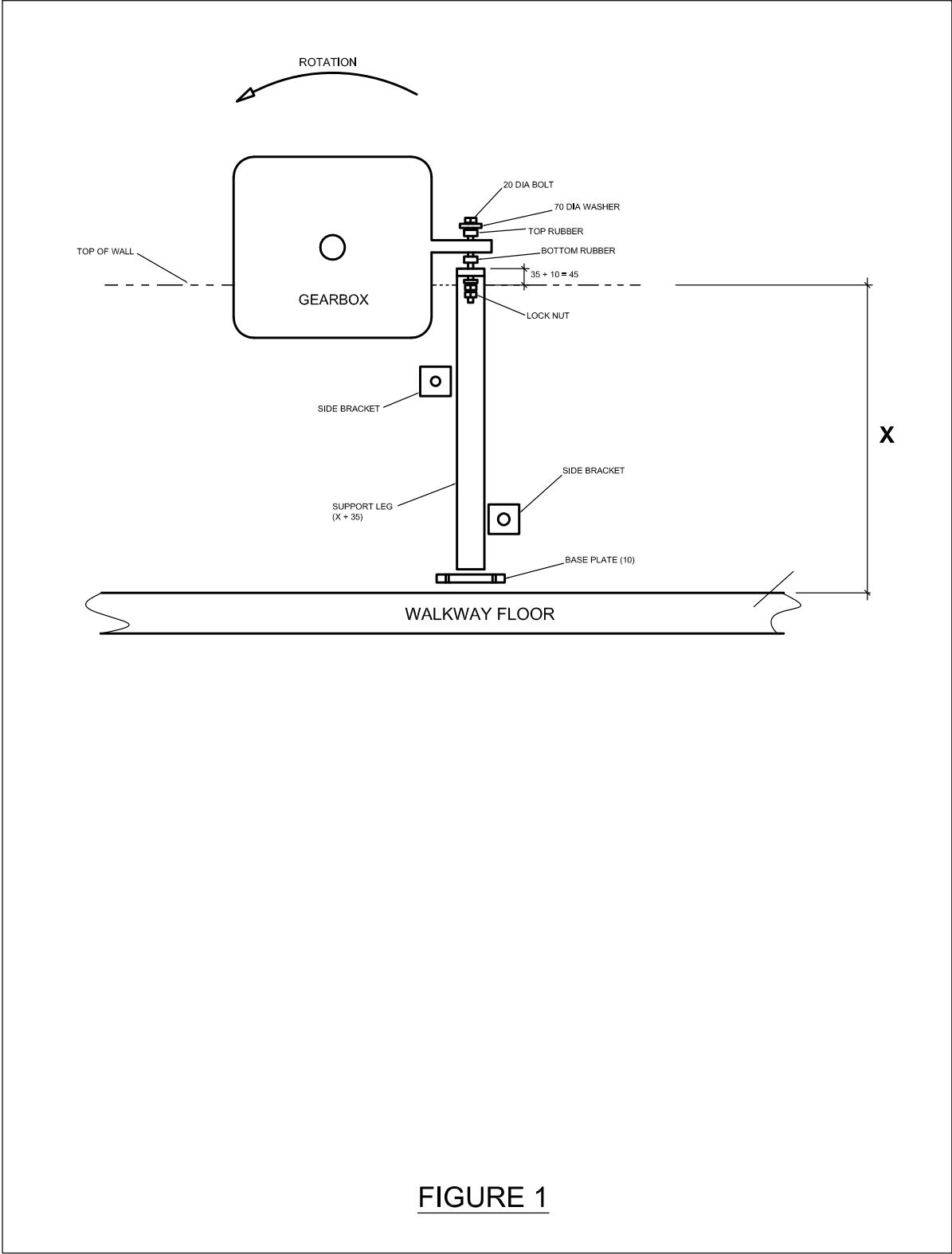
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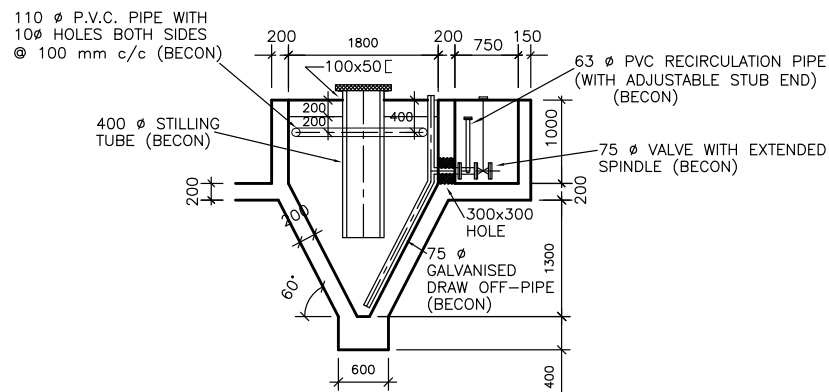
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SECTION D-D

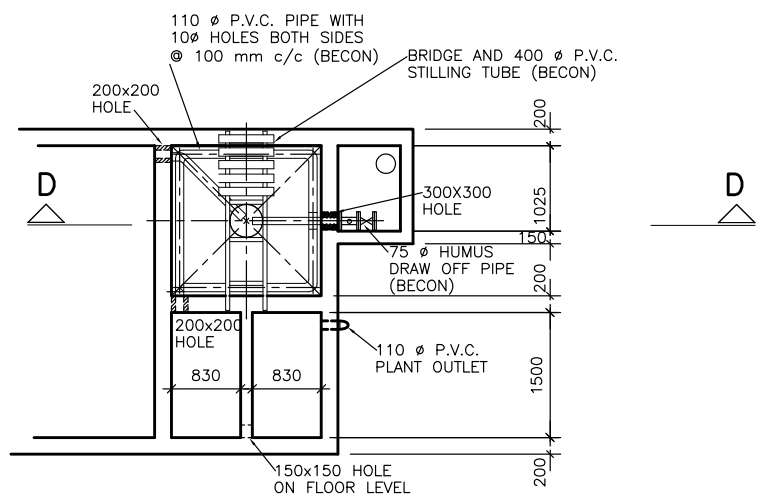


FIGURE 2B

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## 1. THE BIO-FILTER RBC PRINCIPLE

The Bio-Filter plant is comprised of a primary septic tank, Bio-Filter RBC rotor units, a humus tank and a chlorine contact tank as shown in the plant layout drawing.

The effluent from standard septic tanks or primary sedimentation tanks receiving waste and soiled water from domestic sources, passes through semi-circular troughs in which the Bio-Filter RBC disc filters at slow speed.

Biological films form on the discs, similar to those found on standard trickling filters and absorb the organic pollutants present in the effluent and convert these to readily settle-able solids that are removed by sedimentation in the humus tank.

The biological film acting aerobically as oxygen is absorbed from the atmosphere by diffusion into the wet film surface on the discs during rotation, and no offensive odours are therefore produced.

As a result of the large amount of active organisms present on the discs, the process can temporarily absorb large organic shock loads or high hydraulic overloads.

Under the above adverse conditions, the biomass cannot be washed out of the system, and the Bio-Filter unit will thus continue to remove a fixed amount of waste material from the effluent.

Bio-Filter RBC plants are simple to operate and are fitted with continuously rated motors, transmissions and bearings which will function for many years with the minimum of attention, if correctly maintained.

## 2. BIO-FILTER RBC OPERATING PROCESS

### 2.1. SEPTIC TANKS

Raw sewage flows into the first compartment of the septic tank where primary sedimentation and anaerobic digestion takes place.

From the second compartment of the septic tank, the effluent flows to the Bio-Filter RBC stage, where aerobic treatment takes place.

It should be noted that over a period of time, sludge build-up occurs in the septic tank, and needs to be drawn-off every 8 – 12 months onto sludge beds, adjacent lands, or carted away by vacuum tanker.

**THE DESLUDGING OF THE SEPTIC TANK IS A MOST IMPORTANT OPERATION AND MUST BE UNDERTAKEN ONCE A YEAR.**

### 2.1. BIO-FILTER RBC UNITS

Septic tank effluent flows through the Bio-Filter basins where aerobic treatment takes place, by the RBC units.


Primary rotors will show more intense bacterial growth on the discs than the secondary rotors due to the variety of organisms present.

Bio-Filter rotors must rotate at all times, except during the maintenance shutdown periods.


Individual rotors may be stopped by depressing the stop-lock buttons adjacent to each machine.

These buttons are unlocked by a twist motion.


**NOTE:** Rotor discs should not be cleaned under normal operating conditions, as the apparent growth on the discs is in fact the bacteria that cleans the water. Excessive growth (exceeding 3mm thickness) on discs should however, be removed periodically by water hose.




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### 2.3 HUMUS TANK

Effluent from the Bio-filter plant flows to the humus tank where the humus is settled out.

The settled humus sinks to the bottom of the cone from which it is returned to the septic tank by means of the humus return pump through the automatic re-circulation arrangement, fitted in the adjacent pump sump.

It should be noted that some humus may float on top of the humus tank, but a water- spray from a hose easily disperses this daily.

A manual sludge draw-off valve is installed in the pump sump and should be opened for 3 minutes twice daily, in the morning and afternoon, to DESLUDGE the humus tank.

### 2.4 CHLORINE TANK

Clarified effluent from the humus tank is disinfected in the chlorine contact tank by means of either:

- a) A Gas Chlorination System
- d) A Liquid Chlorine System
- e) A Pill Chlorinator
- f) An Ozonation System

Chlorine dosing should be at a rate of 4 – 6 mg/l

Ozone dosing should be at a rate of 0,5 mg/l

Residual chlorine level should periodically be tested at the outlet of the chlorine contact tank.

(A swimming pool test-kit would suffice to ensure that a suitable residual chlorine level of 0,4 – 0,5 mg/l is available at this point.)

### 2.5 ELECTRICAL CONTROL PANEL

All Bio-Filter plants are supplied with an electrical control panel that is fitted with separate starting equipment for each motor.

The motor starters are fitted with overload protection relays, which may trip out under abnormal load, or low voltage conditions.

The units may be reset by depressing the reset buttons on the relays inside this panel.

Should continuous tripping occur, an electrical fault may be suspected and must be professionally rectified.

**NOTE: SWITCH OFF MAIN CIRCUIT BREAKER ON CONTROL PANEL BEFORE RESETTING ANY RELAYS.**

### 2.6 GENERAL

It is recommended that the sewage purification plant and site be kept in a clean and neat condition. The various parts of the plant should therefore be periodically hosed down.

### 2.7. PLANT START-UP

To start-up plant:

- a) Fill plant up with clean water
- b) Switch Bio-Filter rotors ON
- c) Switch Humus Pump to AUTO
- d) Start up Disinfection System

It should now take some 4 weeks for the plant to stabilize biologically, and clean effluent cannot therefore be expected in less than 7 days.

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## 2.8 INADVERTENT SHUTDOWN

Should the plant be inadvertently shutdown for a period of some weeks, the effluent in the Bio-Filter basins, humus tank and chlorine tank would become anaerobic and a smell could develop. For long shutdown periods, Bio-Basins should be pumped dry.

On restarting the plant after this shutdown period, the following procedure should be adopted:

- a) The sludge blanket that has developed on the chlorine contact tank and the humus tank should be removed by spade and dumped on the sludge beds for drying or be buried in a suitable location.
- b) The sludge from the humus cone must be pumped onto the sludge beds or buried. This is done by un-coupling the union at the humus pump, attaching a hose and pumping the sludge by means of this extended pipe to a suitable place. When clear water becomes visible from this pipe, the excess sludge has been removed and the pump may be reconnected to the original delivery line.
- c) The Bio-Filter rotors and the plant may now be started up and become operational again.

It is to be noted that it will take approximately 2 – 3 weeks before the plant has re-stabilized and a good effluent quality obtained again.

## 3. BIO-FILTER RBC FAULT FINDING CHART

### 3.1. BIO-FILTERS

Should the Bio-Filter discs not rotate, check the following:

- a) Check that main power supply is available
- b) Emergency stop buttons may be depressed
- c) Motor overloads or control panel may be tripped
- d) Motor on gearbox may be faulty

### 3.2. HUMUS TANK

Should a sludge blanket be observed floating on the top of the humus tank, undertake the following:

- a) Spray the top of tank with a hose to break up sludge
- b) Check whether the re-circulating pump is operating

### 3.3. HUMUS PUMP

Should the humus pump not be operating satisfactorily, check the following:

- a) Check if pump is operating as electrical overload may have tripped (a vibration on the delivery pipe indicates that the pump is rotating)
- b) Check that shut-off valve on delivery main is open
- c) Check if delivery pipeline is blocked
- d) Finally, check if pump is clogged by withdrawing pump from sump, hosing down and opening impeller cage at bottom of pump, remove clogging material and re-install. (Switch pump isolator off before withdrawing pump)

### 3.4 CHLORINATOR

Should the chlorinator not operate satisfactorily, check the following:

- a) Check if chlorine is available (Gas or Liquid Types)
- b) Check if water supply is available (Gas or Liquid Types)
- c) Check if water filter is clogged (Gas units only)
- d) Check if chlorinator venturi is clogged, by unscrewing chlorine supply pipe and feeling for suction on the delivery line at this point (Gas Type only)

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### 3.5. BIO-FILTER PLANT

An excess amount of black floating sludge in the Bio-Filter tanks, may be an indication that the sludge level in the septic tank is high, and this should be checked, and if necessary remedied, by desludging the septic tank. Overloaded Bio-Filter plants can be upgraded if required (Contact Becon Watertech (Pty) Ltd.

### 3.6. OVERFLOWS

Should the Bio-Filter basins overflow, it can be assumed that interconnecting pipe-work is blocked and should be cleared.

Excessive inflow to plant can also cause overflows.

## 4. BIO-FILTER OPERATING PROCEDURES

### 4.1. TWICE DAILY

- a) Rake bar screens (if installed)
- b) Check that Bio-filter rotors are rotating
- c) Check re-circulation pump is operating and draws down sump
- d) Open sludge valves at humus tank for 3 minutes, close valve and draw down sump
- e) Spray top and walls of humus tank and stilling chamber with hose to disperse floating matter if required
- f) Check chlorine supply

### 4.2. WEEKLY

- a) Check chlorinator operation and test for residual chlorine level of 0,4 – 0,5 mg/l at the outflow
- b) Clean sides of humus tank cone with squeegee or brush
- c) Clean sides of chlorine tank with brush

### 4.3. MONTHLY

- a) Lubricate Bio-Filter bearings with lithium grease (replace bearings when faulty)
- b) Check oil level in gearboxes
- c) Check sludge level in septic tank
- d) Lubricate drive chains (chain drive models only)

### 4.4. ANNUAL SHUTDOWN

- a) Desludge septic tank
- b) Withdraw humus pump(s) for cleaning and checking
- c) Replace oil in gearboxes
- d) Clean and lubricate rotor bearings with grease
- e) Clean and repaint steel items in need of painting with epoxy tar paint

### 4.5. SEPTIC TANK DESLUDGING PROCEDURE

Desludge septic tank at least once every 12 months, using the following procedure:

- a) Stop rotor plant
- b) Open manhole covers of septic tank and stir contents well
- c) Draw off sludge from septic tank by pumping out into tanker truck or to sludge ponds
- d) Let septic tank fill up again by using full plant inflow

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**NOTE: DO NOT STIR SEPTIC TANK UNLESS DESLUDGING UNDERTAKEN**

## 5. THE BIO-FILTER RBC DETAILED OPERATING DESCRIPTION

### 5.1. INTRODUCTION

The sewage treatment plant has been designed to cater for the loading arising from domestic sewage flow from the project.

### 5.2. GENERAL PRINCIPLES OF SEWAGE TREATMENT

Sewage purifies naturally in watercourses, rivers and lakes. Organisms present in the water and sewage develop spontaneously and feed on the constituents. The population of the organisms grows to match the amount of food (sewage) available.

Certain types of organisms carry out this process in the absence of oxygen in which case they are designated as anaerobic organisms. However, a large variety of organisms require oxygen to carry out their purification reactions. These are termed aerobic organisms. Aerobic purification is necessary when high quality effluent is required since aerobic organisms oxidize and breakdown the complex organic molecules almost completely to their basic constituents of carbon dioxide and water. Pollution of lakes or rivers occurs when the amount of oxygen demanded by the purification process exceeds the natural supply of the system. Dissolved oxygen normally present in water is then used up and disappears from the river as a result of excessive sewage entering the stream. The natural life that occurs in the river, then dies off. Increasing the oxygen level in the water can prevent pollution.

Sewage purification plants are necessary to ensure that purification is carried out prior to the discharge of effluents, and the pollution of rivers and streams is prevented. Pollution also prevents the destruction of most of the naturally occurring aquatic life. The water would then remain safe of humus recreation purposes or potable use.

### 5.3. DESCRIPTION OF PURIFICATION PLANT

The Bio-Filter plant comprises of a combined anaerobic/aerobic system. Raw sewage passing through the sewer system enters the septic tank usually by either gravity flow or pumped flow.

In the septic tank, which has two compartments, solid material present in the sewage is settled out. This takes place mostly in the first compartment but also to a certain extent in the second compartment. The solids settle at the bottom of the tank, then decompose anaerobically which reduces their mass, volume and strength (oxygen demand)

The settled effluent then flows by displacement and gravity to a rotating discs unit (Becon Bio-Filter) where it is purified aerobically.

One or more banks of rotating discs are provided for aerobic purification. The Bio-Filter RBC rotor units each consist of polyurethane discs mounted on a horizontal shaft. The discs filters rotate slowly and continuously causing part of the discs to be alternatively immersed and lifted out of a trough through which the settled sewage is flowing.

Aerobic organisms develop on the rotating discs surface in the form of a biological slime. These organisms feed on the sewage as it passes down the channels. Successive discs then remove more and more of the material in the sewage, which requires purification. If an adequate number of discs are provided, the sewage is purified to an acceptable standard for discharge.

Purification, as mentioned previously, takes place by the continuous development of biological slime growths on the surfaces of the discs. These increase in size and thickness to a stage where they become too thick to adhere to the discs and slough or fall off into the liquid. The effluent from the rotating biological contactors therefore contains a significant proportion of settle-able material, which consists of waste purifying organisms. The latter must be removed before the effluent can be discharged. A settling tank or humus is provided for this purpose.

The humus tank is a circular tank with a conical bottom of 60° slopes. Effluent from the biological contactors enters at the centre of the tank and flows from a stilling chamber upwards to the discharge pipes. The settleable material or humus sludge passes downwards and rolls to the bottom of the cone where it is automatically removed by hydraulic displacement through a desludge valve, and flows to the adjacent pump sump.

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The humus sludge removed in this way is automatically pumped into the septic tank where it is broken down anaerobically in similar fashion to the raw sludge sewage solids.

The overflow from the humus tank passes to the chlorine contact tank where any remaining pathogenic (disease causing) organisms are killed off by the action of chlorine. The effectiveness of the disinfection process can be determined by measuring whether any residual chlorine remains at the point of discharge from the chlorine contact tank. The effluent, at this stage should be of good quality and comply with the General Standards set by the Department of Environmental Affairs for discharge to a water- course.

The Bio-Filter plant has been designed for minimal operating attention. All that is normally necessary to obtain satisfactory operation of this type of plant, is to ensure that all mechanical equipment operates continuously. The rotating biological contactors should operate at all times, and the re-circulation pump operates intermittently on float control. The chlorinator should operate at all times and to ensure that this occurs, it is necessary to have adequate water pressure at the ejector and sufficient chlorine in the gas bottle. Should the float tube read zero, both the pressure of the water to the ejector and the quantity of chlorine in the cylinder should be checked (gas units).

In the longer term, it will also be necessary to remove accumulated sludge or solids from the septic tank. It is difficult to predict the frequency required for this operation as it depends largely on the nature of the sewage, the number of contributors and the effectiveness of the anaerobic reactions taking place in the units. Generally, sludge removal may be required between every eight months possibly to once a year. Sludge level should be checked periodically by lifting the manhole cover over the first compartment in the septic tank and testing the depth of the sludge by means of a dipstick. When the depth of sludge is approximately half of the total depth of the tank to top water level, the tank requires to be desludged and arrangements should be made for this to be undertaken. Sludge removed from the septic tank, should be taken to a suitable site for disposal or buried. Alternatively, arrangements can be made with desludging contractors.

#### 5.4. DETAILED DESCRIPTION OF UNITS AND PLANT LAY-OUT

From the enclosed flow sheet, it will be seen that the plant operates as follows:

##### 5.4.1. Septic tank

Raw sewage is deposited in the septic tank. The tank is provided with two compartments, the first compartment being two thirds of the volume and the second, one third the total volume of the plant. The bulk of settle-able material will therefore collect in the first compartment where the anaerobic digestion process will take place. Effluent from a septic tank which is performing well, should contain little suspended matter and although somewhat hazy should fairly clear in appearance. It should also not smell of raw sewage. It is possible in the operation of septic tanks for the process to be upset by intermittent deliberate or accidental discharge of substances, which are harmful to the anaerobic process, which takes place in a septic tank.

Strong disinfectants, solvents, paint, oil, fats and various other petrochemical or organic compounds may upset the process.

Should it be noted that the plant appears to perform satisfactorily for a number of days or weeks, followed by a sudden deterioration, and should this cycle occur fairly frequently, an investigation should be carried out in order to determine whether foreign substances have been dumped into the sewers or whether the ablution blocks are being periodically cleaned with strong disinfectants. Disinfectants are available which do not cause damage to the septic tank process. Apart from periodic removal of sludge, the septic tank should require little attention. However, should the quality of the final effluent from the plant deteriorate, a sample should be taken of the septic tank effluent.

- If this effluent is fairly clear, and not offensive, the problem will lie with the operation of the rotating biological contactors.

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- If however, the effluent from the septic tank contains relatively large amounts of solids and / or is darkly coloured and smells offensive, then it can be concluded that the septic tank is not performing satisfactorily. This may be due to the compartments having been filled completely with sludge or to discharges of substances that are harmful to the process. Excessive volumes of sludge reduce the volume of tank available for settlement and self-flocculation of solids in the liquid.

#### 5.4.2. Rotating Biological Contactors

The rotating biological contactors usually comprise of one or more sets of rotor banks each with discs mounted on a common shaft driven by a motor and gearbox, at a speed of 5 rpm.

Effluent from the septic tank enters a channel through which the discs of the first bank are rotated. Passing along the channel, the sewage contacts with the surfaces of each disc in turn.

Organisms developing on the discs feed on material present in the effluent and purify it aerobically. The organisms on each disc obtain oxygen from the air during the period between immersions when they are exposed to the atmosphere through the rotating action of the discs.

Purification taking place in the early stages of the process consists largely of reduction in oxygen demand. The organisms present feed upon the carbonaceous material converting it to end products of carbon dioxide and water. In successive stages towards

the end of the treatment sequence, organisms that oxidize ammonia to nitrates are present. In monitoring and assessing the performance of such a process, the presence of nitrates is therefore always an indication that purification has gone to virtual completion. Should no nitrates be present and more than 10mg/l ammonia be detected, it would indicate that the process is being overloaded or the purification is being impaired by the presence of toxic substances. This may occur even though carbonaceous purification as measured by chemical oxygen demand, is essentially complete. As mentioned previously, the overall loading on the plant should always be considered when assessing the performance.

No attention is required to this stage of the process apart from ensuring that all banks of discs rotate continuously. However, the purification performance should be monitored on a routine monthly basis by taking a sample either of the effluent from the discs, or the effluent overflowing the humus tank, for inspection.

If the effluent from the humus tank is not clear with low color, and if this effluent displays an odour, it indicates a deterioration in the purification process. In such a case, a sample of effluent from the rotating biological contactors themselves, should be taken and allowed to settle for about an hour. If this effluent is clear and does not display any odour, then the problem lies in the humus tank.

If however, this effluent is also coloured and displays an unpleasant odour, then the problem lies with the discs themselves. One, or more banks may not be rotating or other mechanical problems may have occurred. Alternatively, the problem could arise from a deterioration in performance of the septic tank, due to excessive sludge build-up.

#### 5.4.3. Humus tank

The sedimentation, settling or humus tank, is provided to settle out solids, which are discharged from the discs of the rotating biological contacting units.

The solids present in the effluent from the biological contactors consist of purifying organisms that have been sloughed off the discs after a continuous process of build-up of film to excessive thickness, with resultant separation from the disc surface, and discharge.

If allowed to remain in the effluent, these solids would contaminate it and lead to non-compliance with quality standards set out by the Department of Environmental Affairs. They would also lead to secondary pollution as the settled material will purify and decompose causing nuisance and odour. Removal of solids by sedimentation is therefore essential.

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The humus tank consists of a settlement tank with a conical bottom. Effluent from the biological contactors enters the tank at the center inside a stilling chamber. It is discharged from under the stilling chamber into the center of the tank and then flows upwards to the off-take tubes. Settle-able solids entering the tank move downwards and settle on the cone from where they roll to the bottom of the cone and are removed by hydraulic displacement.

The effluent from a humus tank should be clear and free from solids at all times. If solids are present, this may be due to either (or both) of two causes.

- If the solids are in finely divided form and are carrying over sporadically, it tends to indicate that the tank is hydraulically overloaded. This means that the flow of the water or effluent passing through the tank considerably exceeds the design rate and therefore the upward flow rate in the tank is greater than the downward settlement rate of the particles concerned.
- A second reason for carry-over of sludge solids (and in our experience more likely) is blockage of the underflow system. Should the sludge removal pipe block solids, they will accumulate in the tank until: either they have filled the cone and built up to near the off-take level and/or will remain long enough in the tank to reach a stage where they begin to ferment and decompose. In such a situation, the solids tend to rise due to the presence of gas bubbles, which are produced in the decomposition process. The gas bubbles then lift the sludge to the surface where the solids pass through the draw-off tubes and into the effluent.

In order to ensure satisfactory operation of the settlement tank, it is necessary to check that the sludge removal system operates continuously. The sand pipe in the sump adjacent to the tank should therefore be checked at least twice a day to see that effluent containing the solid particles is flowing on a continuous basis. Also twice a day, the scour valve should be opened and the underflow stream allowed to flow strongly for 3 minutes. The high flow will assist on dislodging particles which have become attached to the walls of the cone and which are not settling to the bottom and being removed through the continuous under-flow system. It is also our experience that compaction and build-up on the walls and cone occur in the long term in tanks that are not mechanically desludged. We therefore recommend that a small scraper, brush or squeegee device with a long handle be provided so that the sides of the cone and the walls of the tank can be manually cleared on a weekly basis.

The waste from the humus tank is automatically pumped back to the septic tank by means of the humus return pump situated in the pump sump adjacent to the humus tank.

Apart from this, the only attention required at the humus tank, is to ensure that the surface of the tank and stilling chamber be kept clean by hosing down on a daily basis. The walls of the tank should also be hosed and brushed down periodically to prevent slime growths from accumulating.

5.4.4. Disinfection

The disinfection installation usually consists a Gas Type, Liquid Type or a Pill Type chlorinator system, or an Ozonation system.

a) The gas chlorinator unit consists of a bottle mounted vacuum regulator with a float tube and an ejector assembly mounted on a water supply.

Fresh water passes through the ejector and into the chlorine contact tank. In passing through the ejector, it creates a vacuum in the throat of the ejector that sucks chlorine from the cylinder into the stream where it goes into solution. The vacuum regulator and float tube with needle valve on the cylinder regulates the amount of chlorine gas, which is allowed to pass under vacuum from the bottle into the liquid stream.

The solution of chlorine in water is added to the effluent from the humus tank at the entrance point to the chlorine contact tank. The purpose of the contact tank is to provide sufficient time for disinfection to take place and go to completion (a 15 minute contact time is required).

The purpose of chlorine addition to treated sewage effluent is to kill off any pathogenic (disease causing) organisms. The efficiency of this process can be guaranteed under normal circumstances if an adequate residual concentration of chlorine

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is measurable at the discharge of the contact tank. It is recommended that a chlorine residual concentration of approximately 0,4 – 0,5 mg/l be aimed at.

### CAUTION

Chlorine is a dangerous and poisonous gas. Care should be taken when changing cylinders. Always ensure that the valve on the chlorine cylinder is properly closed. A key is normally provided for this purpose. If this has been lost, the valve can be closed using a shifting or set spanner. However, care is required in this case as damage to the cylinders may lead to an excess charge being levied by the suppliers.

Chlorine is an extremely strong oxidizing agent and reacts vigorously and even explosively with any organic substances. Normal gasket compound such as rubber and cork cannot be used, and normal lubricants and greases will ignite spontaneously in chlorine atmosphere. Only special sealing washers and gaskets provided by the suppliers should be used, and the agents of the equipment, manufacturers or the suppliers of the chlorine should normally carry out lubrication using special lubricants.

- b) Where liquid chlorine is use, the dosing tank should be replenished on a daily basis. Use two cups of HTH on 100 litres of water in the tank. Dosing pump rate can be adjusted to suit flow conditions.
- c) Where a pill chlorinator is used, one swimming pool pill is deposited into the pill holder every second day, or as required.
- d) Where an Ozonation system is used, the booster pump, Venturi Ejector and electrical Ozonator should be checked on a daily basis.

### 6. ROUTINE EFFLUENT TESTS

In accordance with the recommendations of the Department of Water Affairs, monthly tests of plant-effluent should be undertaken, and the test results be available for inspection (contact Becon Watertech (012 804 2226 for assistance).

### 7. SEWAGE INFLOW QUALITY

It is to be noted that your BECON Bio-Filter plant has been designed and rated to handle domestic sewage only. The operation of the plant could be seriously impaired should this plant receive foreign matter in the form of industrial waste including oils, paints or strong disinfectants.

It is therefore extremely important to ensure that foreign matters not enter the sewage system.

All kitchens should be fitted with screens and grease traps at the outlet sewers from these kitchens where oils, fats and food residues are intercepted and not be allowed to enter the sewer systems.

Under no circumstances must any motorcar oils or large volumes of cooking oils be decanted into the system.

For cleaning purposes, use should only be made of biodegradable soaps and cleaning materials. Use only environmental friendly disinfectants.

### 8. SPARES SUPPLIERS

#### BIO-FILTERS ROTORS

Becon Watertech (Pty) Ltd  
Tel. +27 11 752 1191

#### DRIVE UNITS

Becon Watertech (Pty) Ltd  
Tel. +27 11 752 1191

#### CHLORINATION EQUIPMENT

Grundfos(Pty) Ltd  
Tel. +27 11 752 1191

#### CONTROL PANEL SPARES

Becon Watertech (Pty) Ltd  
Tel. +27 11 752 1191

#### PUMPS

Becon Watertech (Pty) Ltd  
Tel. +27 11 752 1191

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WATER TESTS

Becon Watertech (Pty) Ltd  
Tel. +27 11 752 1191

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Employer

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## **BECON WATERTECH (PTY) LTD.**

### **BIO-FILTER RBC SEWAGE TREATMENT PLANT OPERATING INSTRUCTIONS**

#### **DAILY**

1. RAKE THE BAR SCREEN AT INLET WORKS (IF INSTALLED)
2. CHECK THAT ALL ROTORS ARE OPERATING
3. SPRAY TOP OF HUMUS TANK WITH WATERHOSE TO BREAK UP FLOATING HUMUS
4. DESLUDGE HUMUS TANK BY OPENING SLUDGE VALVE AT PUMP SUMP
5. CHECK THAT RE-CIRCULATION PUMP AT HUMUS TANK IS OPERATING CORRECTLY
6. CHECK THAT CHLORINATION SYSTEM IS OPERATING AND CHLORINE IS AVAILABLE

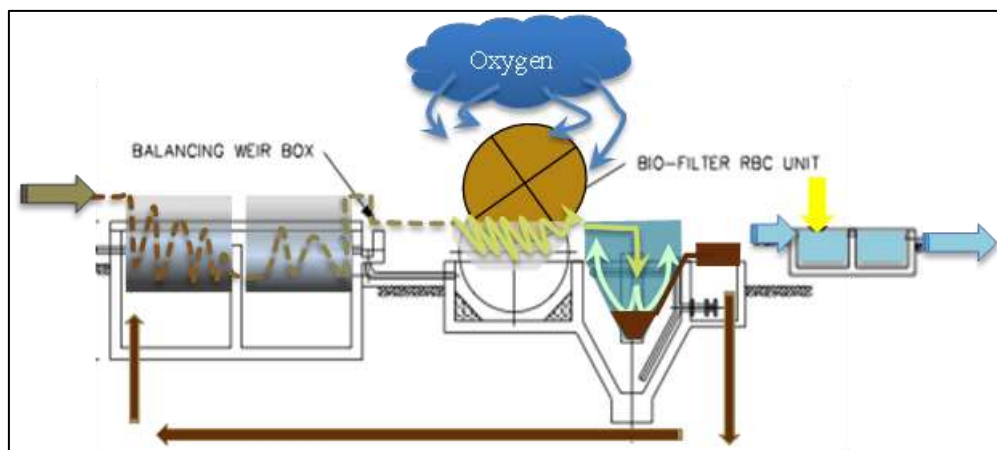
#### **MONTHLY**

1. CHECK DRIVE UNITS (REPLACE OIL EVERY 12 MONTHS)
2. GREASE ROTOR BEARINGS (REPLACE BEARINGS WHEN REQUIRED)
3. CHECK SEPTIC TANK SLUDGE LEVEL AND DESLUDGE IF REQUIRED
4. GREASE CHAINS (CHAIN DRIVE MODELS ONLY)

#### **ANNUALLY**

1. DESLUDGE SEPTIC TANK
2. OPEN MANHOLE COVERS OF SEPTIC TANK AND STIR CONTENTS WELL
3. DRAW SLUDGE FROM SEPTIC TANK BY PUMPING OUT ON TO SLUDGE BEDS OR REMOVE BY TANKER OR OTHERWISE
4. CLEAN PLANT & REPAINT ALL EXPOSED STEELWORK
5. SERVICE PUMP

**BIO-FILTER FLOW DIAGRAM**



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# C3.3.2: ELECTRICAL SPECIFICATIONS

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- PART 1: GENERAL
- PART 2: INSTALLATION DETAILS
- PART 3: QUALITY SPECIFICATION FOR MATERIALS AND EQUIPMENT OF ELECTRICAL INSTALLATIONS
- PART4: PARTICULARS OF ELECTRICAL CONTRACTOR

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## PART 1 - GENERAL

### CONTENTS

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- 2 MAINTENANCE OF INSTALLATIONS
- 3 REGULATIONS
- 4 NOTICES AND FEES
- 5 SCHEDULE OF FITTINGS
- 6 QUALITY OF MATERIALS
- 7 CONDUIT AND ACCESSORIES
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# PART 1 - GENERAL

## 1 TESTS

After completion of the works and before practical completion is achieved, a full test will be carried out on the installation for a period of sufficient duration to determine the satisfactory working thereof. During this period the installations will be inspected and the Contractor shall make good, to the satisfaction of the Principle Agent/Electrical Engineer or the employer, any defects which may arise.

The Contractor shall provide all instruments and equipment required for testing and any water, power and fuel required for the commissioning and testing of the installations at completion.

## 2 MAINTENANCE OF INSTALLATIONS

With effect from the date of the Practical completion Certificate the Contractor shall at his own expense undertake the regular servicing of the installation during the maintenance period and shall make all adjustments necessary for the correct operation thereof.

If during the said period the installations is not in working order for any reason for which the Contractor is responsible, or if the installations develops defects, he shall immediately upon being notified thereof take steps to remedy the defects and make any necessary adjustments.

Should such stoppages however be so frequent as to become troublesome, or should the installations otherwise prove unsatisfactory during the said period the Contractor shall, if called upon by the Principle Agent/Electrical Engineer or the Employer, at his own expense replace the whole of the installations or such parts thereof as the Principal Agent/Electrical Engineer or the Employer may deem necessary with apparatus specified by the Principal Agent/Electrical Engineer or the Employer.

## 3 REGULATIONS

The installation shall be erected and tested in accordance with the Acts and Regulations as indicated in the scope of works

## 4 NOTICES AND FEES

The Contractor shall give all notices required by and pay all necessary fees, including any inspection fees, which may be due to the local Supply Authority.

On production of the official account, only the net amount of the fee charged by the Supply Authority for connection of the installation to the supply mains, will be refunded to the Contractor by the Employer.

## 5 SCHEDULE OF FITTINGS

In all instances where schedule of light, socket outlet and power points are attached to or included on the drawings, these schedules are to be regarded as forming part of the specification.

## 6 QUALITY OF MATERIALS

**Only materials of first class quality shall be used and all materials shall be subject to the approval of the Employer. Departmental specifications for various materials to be used on this Contract are attached to and form part of this specification.**

**Wherever applicable the material is to comply with the relevant South African Bureau of Standards, specifications, or to IEC Specifications, where no SANS Specifications exist.**

Materials wherever possible, must be of South African manufacture.

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## 7 CONDUIT AND ACCESSORIES

The type of conduit and accessories required for the service, i.e. whether the conduit and accessories shall be of the screwed type, plain-end type or of the non-metallic type and whether metallic conduit shall be black enamelled or galvanised, is specified in Part 2 of this specification.

Unless other methods of installation are specified for certain circuits, the installation shall be in conduit throughout. No open wiring in roof spaces or elsewhere will be permitted.

The conduit and conduit accessories shall comply fully with the applicable SANS specifications as set out below and the conduit shall bear the mark of approval of the South African Bureau of Standards.

- a) Screwed metallic conduit and accessories: SANS 61386-1 and 21.
- b) Plain-end metallic conduit and accessories: SANS 61386-1 and 21.
- c) Non-metallic conduit and accessories: SANS 61386-1 and 21.

All conduit fittings except couplings, shall be of the inspection type. Where cast metal conduit accessories are used, these shall be of malleable iron. Zinc base fittings will not be allowed.

Bushes used for metallic conduit shall be brass and shall be provided in addition to locknuts at all points where the conduit terminates at switchboards, switch-boxes, draw-boxes, etc.

Draw-boxes are to be provided in accordance with the "Wiring Code" and wherever necessary to facilitate easy wiring.

For light and socket outlet circuits, the conduit used shall have an external diameter of 20mm. In all other instances the sizes of conduit shall be in accordance with the "Wiring Code" for the specified number and size of conductors, unless otherwise directed in part 2 of this specification or indicated on the drawings.

Only one manufactured type of conduit and conduit accessories will be permitted throughout the installation.

Running joints in screwed conduit are to be avoided as far as possible and all conduit systems shall be set or bent to the required angles. The use of normal bends must be kept to a minimum with exception of larger diameter conduits where the use of such bends is essential.

All metallic conduit shall be manufactured of mild steel with a minimum thickness of 1,2mm for plain-end conduit and 1,6mm in respect of screwed conduit.

Under no circumstances will conduit having a wall thickness of less than 1,6mm be allowed in screed laid on top of concrete slabs.

Bending and setting of conduit must be done with special bending apparatus manufactured for the purpose and which are obtainable from the manufacturers of the conduit systems. Damage to conduit resulting from the use of incorrect bending apparatus or methods applied must on indication by the Department's inspectorate staff, be completely removed and rectified and any wiring already drawn into such damaged conduits must be completely renewed at the Contractor's expense.

Conduit and conduit accessories used for flame-proof or explosion proof installations and for the suspension of luminaires as well as all load bearing conduit shall in all instances be of the metallic screwed type.

All conduit and accessories used in areas within 50 km of the coast shall be galvanised to SANS 32 and SANS 121.

Tenderers must ensure that general approval of the proposed conduit system to be used is obtained from the local electricity supply authority prior to the submission of their tender. Under no circumstances will consideration be given by the Department to any claim submitted by the Contractor, which may result from a lack of knowledge in regard to the supply authority's requirements.

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## 8 SURFACE MOUNTED CONDUIT

Wherever possible, the conduit installation is to be concealed in the building work; however, where unavoidable or otherwise specified under Part 2 of the specification, conduit installed on the surface must be plumbed or levelled and only straight lengths shall be used.

The use of inspection bends is to be avoided and instead the conduit shall be set uniformly and inspection coupling used where necessary.

No threads will be permitted to show when the conduit installation is complete, except where running couplings have been employed.

Running couplings are only to be used where unavoidable, and shall be fitted with a sliced couplings as a lock nut.

Conduit is to be run on approved spaced saddles rigidly secured to the walls.

Alternatively, fittings, tees, boxes, couplings etc., are to be cut into the surface to allow the conduit to fit flush against the surface. Conduit is to be bedded into any wall irregularities to avoid gaps between the surface and the conduit.

Crossing of conduits is to be avoided, however, should it be necessary purpose-made metal boxes are to be provided at the junction. The finish of the boxes and positioning shall be in keeping with the general layout.

Where several conduits are installed side by side, they shall be evenly spaced and grouped under one purpose-made saddle.

Distribution boards, draw-boxes, industrial switches and socket outlets etc., shall be neatly recessed into the surface to avoid double sets.

In situations where there are no ceilings the conduits are to be run along the wall plates and the beams.

Painting of surface conduit shall match the colour of the adjacent wall finishes.

Only approved plugging materials such as aluminium inserts, fibre plugs, plastic plugs, etc., and round-head screws shall be used for fixing saddles, switches, socket outlets, etc., to walls, wood plugs and the plugging in joints in brick walls are not acceptable.

## 9 CONDUIT IN CONCRETE SLABS

In order not to delay building operations the Contractor must ensure that all conduits and other electrical equipment which are to be cast in the concrete columns and slabs are installed in good time.

The Contractor shall have a representative in attendance at all times when the casting of concrete takes place.

Draw-boxes, expansion joint boxes and round conduit boxes are to be provided where necessary. Sharp bends of any nature will not be allowed in concrete slabs.

Draw and/or inspection boxes shall be grouped under one common cover plate, and must preferable be installed in passages or male toilets.

All boxes, etc., are to be securely fixed to the shuttering to prevent displacement when concrete is cast. The conduit shall be supported and secured at regular intervals and installed as close as possible to the neutral axis of concrete slabs and/or beams.

Before any concrete slabs are cast, all conduit droppers to switchboards shall be neatly spaced and rigidly fixed.

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## 10 FLEXIBLE CONNECTIONS FOR CONNECTING UP OF STOVES, MACHINES, ETC.

Flexible tubing connections shall be of galvanised steel construction, and in damp situations of the plastic sheathed galvanised steel type. Other types may only be used subject to the prior approval of the Department's site electrical representative.

Connectors for coupling onto the flexible tubing shall be of the gland or screw-in types, manufactured of either brass or cadmium or zinc plated mild steel, and the connectors after having been fixed onto the tubing, shall be durable and mechanically sound.

Aluminum and zinc alloy connectors will not be acceptable.

## 11 WIRING:

Except where otherwise specified in Part 2 of this specification, wiring shall be carried out in conduit throughout. Only one circuit per conduit will be permitted.

No wiring shall be drawn into conduit until the conduit installation has been completed and all conduit ends provided with bushes. All conduits to be clear of moisture and debris before wiring is commenced.

Unless otherwise specified in Part 2 of this specification or indicated on the service drawings, the wiring of the installation shall be carried out in accordance with the "Wiring Code". Further to the requirements concerning the installation of earth conductors to certain light points as set out in the "Wiring Code", it is a specific requirement of this document that where plain-end metallic conduit or non-metallic conduit has been used, earth conductors must be provided and drawn into the conduit with the main conductors to all points, including all luminaires and switches throughout the installation.

Wiring for lighting circuits is to be carried out with 1,5mm<sup>2</sup> conductors and a 1,5mm<sup>2</sup>-earth conductor. For socket outlet circuits the wiring shall comprise 4mm<sup>2</sup> conductors and a 2,5mm<sup>2</sup>-earth conductor. In certain instances, as will be directed in Part 2 of this specification, the sizes of the aforementioned conductors may be increased for specified circuits. Sizes of conductors to be drawn into conduit in all other instances, such as feeders to distribution boards, power points etc., shall be as specified elsewhere in this specification or indicated on the drawings. Sizes of conductors not specified must be determined in accordance with the "Wiring Code".

The loop-in system shall be followed throughout, and no joints of any description will be permitted.

The wiring shall be done in PVC insulated 600/1000 V grade cable to SANS 1507.

Where cable ends connect onto switches, luminaires etc., the end strands must be neatly and tightly twisted together and firmly secured. Cutting away of wire strands of any cable will not be allowed.

## 12 SWITCHES AND SOCKET OUTLETS

All switches and switch-socket outlet combination units shall conform to the Department Quality Specifications, which form part of this specification.

No other than 16 A 3 pin sockets are to be used, unless other special purpose types are distinctly specified or shown on the drawings.

All light switches shall be installed at 1,4m above finished floor level and all socket outlets as directed in the Schedule of Fittings which forms part of this specification or alternatively the height of socket outlets may be indicated on the drawings.

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### 13 SWITCHGEAR

Switchgear, which includes circuit breakers, iron-clad switches, interlocked switch-socket outlet units, contactors, time switches, etc., is to be in accordance with the Departmental Quality Specifications which form part of this specification and shall be equal and similar in quality to such brands as may be specified.

For uniform appearance of switchboards, only one approved make of each of the different classes of switchgear mentioned in the Quality Specifications shall be used throughout the installations.

### 14 SWITCHBOARDS

All boards shall be in accordance with the types as specified, be constructed according to the detail or type drawings and must be approved by the Employer before installation.

In all instances where provision is to be made on boards for the supply authority's main switch and/or metering equipment the contractor must ensure that all requirements of the authorities concerned in this respect are met.

Any construction or standard type aboard proposed, as an alternative to that specified must have the prior approval of the Employer.

All busbars, wiring, terminals, etc., are to be adequately insulated and all wiring is to enter the switchgear from the back of the board. The switchgear shall be mounted within the boards to give a flush front panel. Cable and boxes and other ancillary equipment must be provided where required.

Clearly engraved labels are to be mounted on or below every switch. The working of the labels in English, is to be according to the lay-out drawings or as directed by the Electrical Engineer and must be confirmed on site. Flush mounted boards to be installed with the top of the board 2,0m above the finished floor level.

### 15 WORKMANSHIP AND STAFF

Except in the case of electrical installations supplied by a single-phase electricity supply at the point of supply, an accredited person shall exercise general control over all electrical installation work being carried out.

The workmanship shall be of the highest grade and to the satisfaction of the Employer.

All inferior work shall, on indication by the Employer's inspecting officers, immediately be removed and rectified by and at the expense of the Contractor.

### 16 VERIFICATION AND CERTIFICATION OF ELECTRICAL INSTALLATION (CERTIFICATE OF COMPLIANCE AND TEST REPORT

On completion of the service, a certificate of compliance must be issued to the Principal Agent/Electrical Engineer or Employer in terms of the Occupational Health and Safety Act, 1993 (Act 85 of 1993) in the format as set out in SANS 10142-1 & 2.17 **EARTHING OF INSTALLATION**

#### Main earthing

The type of main earthing must be as required by the supply authority if other than the Employer, and in any event as directed by the Principal Agent/Electrical Engineer, who may require additional earthing to meet test standards.

Where required an earth mat shall be provided, the minimum size, unless otherwise specified, being 1,0m x 1,0m and consisting of 4mm diameter hard-drawn bare copper wires at 250mm centres, brazed at all intersections.

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Alternatively or additionally earth rods or trench earths may be required as specified or directed by the Electrical Engineer.

Installations shall be effectively earthed in accordance with the “Wiring Code” and to the requirements of the supply authority. All earth conductors shall be stranded copper with or without green PVC installation.

Connection from the main earth bar on the main board must be made to the cold water main, the incoming service earth conductor, if any and the earth mat or other local electrode by means of 12mm x 1,60 mm solid copper strapping or 16 mm<sup>2</sup> stranded (not solid) bare copper wire or such conductor as the Department’s representative may direct. Main earth copper strapping where installed below 3m from ground level, must be run in 20 mm diameter conduit securely fixed to the walls.

All other hot and cold water pipes shall be connected with 12mm x 0,8mm perforated for solid copper strapping (not conductors) to the nearest switchboard. The strapping shall be fixed to the pipework with brass nuts and bolts and against walls with brass screws at 150-mm centres. In all cases where metal water pipes, down pipes, flues, etc., are positioned within 1,6m of switchboards an earth connection consisting of copper strapping shall be installed between the pipework and the board. In vertical building ducts accommodating both metal water pipes and electrical cables, all the pipes shall be earthed at each distribution board.

Sub-distribution boards

A separate earth connection shall be supplied between the earth busbar in each sub-distribution board and the earth busbar in the Main Switchboard. These connections shall consist of a bare or insulated stranded copper conductors installed along the same routes as the supply cables or in the same conduit as the supply conductors. Alternatively armoured cables with earth continuity conductors included in the armouring may be utilised where specified or approved.

Sub-circuits

The earth conductors of fall sub-circuits shall be connected to the earth busbar in the supply board in accordance with SANS 10142.

Ring Mains

Common earth conductors may be used where various circuits are installed in the same wire way in accordance with SANS 10142. In such instances the sizes of earth conductors shall **be equivalent** to that of the largest current carrying conductor installed in the wire way, alternatively the size of the conductor shall be as directed by the Engineer. Earth conductors for individual circuits branching from the ring main shall by connected to the common earth conductor with T-ferrules or soldered. The common earth shall not be broken.

Non-metallic Conduit

Where non-metallic conduit is specified or allowed, the installation shall comply with the Department’s standard quality specification for “conduit and conduit accessories”.

Standard copper earth conductors shall be installed in the conduits and fixed securely to all metal appliances and equipment, including metal switch boxes, socket-outlet boxes, draw-boxes, switchboards, luminaires, etc. The securing of earth conductors by means of self-threading screws will not be permitted.

Flexible Conduit

An earth conductor shall be installed in all non-metal flexible conduit. This earth conductor shall not be installed externally to the flexible conduit but within the conduit with the other conductors. The earth conductor shall be connected to the earth terminals at both ends of the circuit.

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Connection

Under no circumstances shall any connection points, bolts, screws, etc., used for earthing be utilised for any other purpose. It will be the responsibility of the Contractor to supply and fit earth terminals or clamps on equipment and materials that must be earthed where these are not provided.

Unless earth conductors are connected to proper terminals, the end shall be tinned and lugged.

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## PART 2: INSTALLATION DETAILS

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1. CABLE SLEEVE PIPES
2. NOTICES
3. ELECTRICAL EQUIPMENT
4. DRAWINGS
5. BALANCING OF LOAD
6. SERVICE CONDITIONS
7. SWITCHES AND SOCKET OUTLETS
8. EARTHING AND BONDING
9. MAINTENANCE OF ELECTRICAL SUPPLY
10. EXTENT OF WORK
11. SUPPLY AND CONNECTION
12. CONDUIT AND WIRING
13. POWER POINTS
14. CABLES
15. DISTRIBUTION BOARDS / FIELD KIOSKS
16. SCHEDULE OF CABLES

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**PART 2: INSTALLATION DETAILS****1 CABLE SLEEVE PIPES**

Where cables cross under roadways, other services and where cables enter buildings, the cables shall be installed in earthenware or high-density polyethylene pipes.

The ends of all sleeves shall be sealed with a non-hardening watertight compound after the installation of cables. All sleeves intended for future use shall likewise be sealed.

**2 NOTICES**

The Contractor shall issue all notices and make the necessary arrangements with Supply Authorities, the Postmaster-General, and S.A. Transport Services, Provincial or National Road Authorities and other authorities as may be required with respect to the installation.

**3 ELECTRICAL EQUIPMENT**

All equipment and fittings supplied must be in accordance with the attached quality specification (Part 3 of this document), suitable for the relevant supply voltage, and frequency and must be approved by the Employers Electrical Engineer.

**4 DRAWINGS**

The drawings generally show the scope and extent of the proposed work and shall not be held as showing every minute detail of the work to be executed.

The position of power points, switches and light points that may be influenced by built-in furniture must be established on site, prior to these items being built in.

**5 BALANCING OF LOAD**

The Contractor is required to balance the load as equally as possible over the multiphase supply.

**6 SERVICE CONDITIONS**

All plant shall be designed for the climatic conditions appertaining to the service.

**7 SWITCHES AND SOCKET OUTLETS**

The installation of switches and socket outlets must conform to clause 13 of Part 1 of this specification.

**8 EARTHING AND BONDING**

The Contractor will be responsible for all earthing and bonding of the building and installation. The earthing and bonding is to be carried out strictly as described in clause 18 of Part 1 of this specification and to the satisfaction of the Employer/s Electrical Engineer.

**9 MAINTENANCE OF ELECTRICAL SUPPLY**

All interruptions of the electrical supply that may be necessary for the execution of the work, will be subject to prior arrangement between the Contractor and the Client and the Employer's Electrical Engineer.

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## 10 EXTENT OF WORK

The work covered by this contract comprises the complete electrical installation, in working order, as shown on the drawings and as per this specification, including the supply and installation of all fittings and also the installation of such equipment supplied by the Employer.

## 11 SUPPLY AND CONNECTION

**The supply will be at 400/230 Volt 50Hz**

The Contractor must arrange in good time with the local Municipality or Eskom for the connection to the existing internal network.

The size and length of the cable is listed in the Schedule of Cables and measured in the Bills of Quantities.

## 12 CONDUIT AND WIRING

**Conduit and conduit accessories shall be black enameled/galvanized screwed conduit or black enamelled/galvanized plain end conduit in accordance with SANS 61386.**

All conduits, regardless of the system employed, shall be installed strictly as described in the applicable paragraphs of clauses 4 to 8 of Part 1 of the specification. Wiring of the installation shall be carried out as directed in clause 9 part 1 of this specification.

Where plain end conduit is offered all switches and light fittings must be supplied with a permanent earth terminal for the connection of the earth wire.

Lugs held by switch fixing screws or self-tapping screws will not be acceptable.

## 13 POWER POINTS

Allow for the installation of power points and equipment as listed in the indicated on the sub-distribution board & layout drawings.

## 14 CABLES

The Contractor shall supply and completely install all distribution cables armoured PVC SWA as indicated listed in the Schedule of Cables.

The storage, transportation, handling and laying of the cables shall be according to first class practice, and the contractor shall have adequate and suitable equipment and labour to ensure that no damage is done to cables during such operations.

The cable-trenches shall be excavated to a depth of 0,9m deep below ground level and shall be 450mm wide for one to three cables, and the width shall be increased where more than three cables are laid together so that the cables may be placed at least two cable diameters apart throughout the run. The bottom of the trench shall be level and clean and the bottom and sites free from rocks or stones liable to cause damage to the cable.

The Contractor must take all necessary precautions to prevent the trenching work being in any way a hazard to the personnel and public and to safeguard all structures, roads, sewage works or other property on the site from any risk of subsidence and damage.

In the trenches the cables shall be laid on a 75mm thick bed of earth and be covered with a 150-mm layer of earth before the trench is filled in.

All joints in underground cables and terminations shall be made either by means of compound filled boxes according to the best established practice by competent cable jointers using first class materials or by means of

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approved epoxy-resin pressure type jointing kits. Epoxy-resin joints must be made entirely in accordance with the manufacturer's instructions and with materials stipulated in such instructions. Low tension PVCA cables are to be made off with sealing glands and materials designed for this purpose which must be of an approved make. Where cables are cut and not immediately made off, the ends are to be sealed without delay.

The laying of cables shall not be commenced until the trenches have been inspected and approved. The cable shall be removed from the drum in such a way that no twisting, tension or mechanical damage is caused and must be adequately supported at intervals during the whole operation. Particular care must be exercised where it is necessary to draw cables through pipes and ducts to avoid abrasion, elongation or distortion of any kind. The ends of such pipes and ducts shall be sealed to approval after drawing in of the cables.

Backfilling (after bedding) of the trenches is to be carried out with a proper grading of the material to ensure settling without voids, and the material is to be tamped down after the addition of every 150mm. The surface is to be made good as required.

On each completed section of the laid and jointed cable, the insulation resistance shall be tested to approval with an approved "Megger" type instrument of not less than 500 V for low tension cables.

Earth continuity conductors are to be run with all underground cables constituting part of a low tension distribution system. Such continuity conductors are to be stranded bare copper of a cross-sectional area equal to at least half that of one live conductor of the cable, but shall not be less than 4mm<sup>2</sup> or more than 70mm<sup>2</sup>. A single earth wire may be used as earth continuity conductor for two or more cables run together, branch earth wires being brazed on where required.

#### LAYING, JOINTING AND MAKING OFF OF ELECTRICAL CABLES

1. The use of the term "Inspector", includes the engineer or inspector of the Department or an empowered person of the concerned supervising consulting engineer's firm.
2. No cable is to be laid before the cable trench is approved and the soil qualification of the excavation is agreed upon by the Contractor and inspector.
3. After the cable has been laid and before the cable trench is back-filled the inspector must ensure that the cable is properly bedded and that there is no undesirable material included in the bedding layer.
4. All cable jointing and the making off of the cables must only be carried out by qualified experienced cable jointers. Helpers of the jointers may not saw, strip, cut, solder, etc. The cable and other work undertaken by them must be carried out under the strict and constant supervision of the jointer.
5. Before the Contractor allows the jointer to commence with the jointing work or making off of the cable (making off is recognized as half a joint) he must take care and ensure:
  - 5.1 That he has adequate and suitable material available to complete the joint properly and efficiently. Special attention must be given to ensure the cable ferrules and cable lugs are of tinned copper and of sufficient size. The length of the jointing lugs must be at least six times the diameter of the conductor,
  - 5.2 That the joint pit is dry and that all loose stones and material are removed,
  - 5.3 That the walls and banks of the joint pit are reasonable firm and free from loose material which can fall into the pit,
  - 5.4 That the necessary coffer-dams or retaining walls are made to stop the flow of water into the joint pit,
  - 5.5 That the joint pit is provided with suitable groundsheets so that the jointing work is carried out in clean conditions,
  - 5.6 That the necessary tents or sails are installed over the joint pit to effectively avert unexpected rainfall and that sufficient light or lighting is provided,
  - 5.7 That the necessary means are available to efficiently seal the jointing or cable end when an unexpected storm or cloudburst occurs, regardless of how far the work has progressed,
  - 5.8 That the cables and other materials are dry, undamaged and in all respects are suitable for the joint work or making off,

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- 5.9 That the heating of cable oil, cable compound, plumbers metal and solder is arranged that they are at the correct temperature when required so that the cable is not unnecessary exposed to the atmosphere and consequently the ingress of moisture (care must be taken of overheating)

Flow temperatures of cable oil and compound must be determined with suitable thermometers. Cable oil and compound must not be heated to exceed the temperatures given on the containers and precaution must be taken to ensure that the tin is not overheated in one position. The whole mass must be evenly and proportionally heated.

(Temperatures of solder and plumbers metal may be tested with brown paper (testing time: 3 seconds). The paper must colour slightly - not black or burnt).

6. Before the paper-insulated cables are joined, they must be tested for the presence of moisture by the cable jointers test. This consists of the insertion of a piece of unhandled insulated impregnated paper tape in warm cable oil heated to a temperature of  $130 \pm 5^{\circ}\text{C}$ .

Froth on the surface of the oil is an indication that moisture is present in the impregnated insulation and the amount of the froth gives an indication of the moisture present.

7. If the cable contains moisture or is found to be otherwise unsuitable for jointing or making of the inspector is to be notified immediately and he will issue the necessary instruction to cope with the situation.

8. The joint or making off of paper insulated cables must not be commenced during rainy weather.

9. Once a joint is in progress the jointer must proceed with the joint until it is complete and before he leaves the site.

10. The jointer must ensure that the material and his tools are dry at all times, reasonably clean and absolutely free from soil.

11. Relating to the jointing of the cable the following requirements apply:

- 11.1 All jointing must be carried out in accordance with recognized and tried techniques and comply strictly with the instructions given by the supplier of the jointing kit.

- 11.2 The cables must be twisted by hand so that the cores can be joined according to the core numbers. If necessary the cable is to be exposed for a short distance to accomplish this. Under no circumstances may the cores in a joint be crossed so as to enable cores to be joined according to the core numbers. If it is not possible to twist the cables so that the preceding requirements can be met, then cores are to be joined in the normal way without any consideration of the core numbers.

- 11.3 Normally the cables will have profile conductors. The conductors shall be pinched with gas pliers to form a circular section, bound with binding wire so that they do not spread, and then tinned before jointing.

- 11.4 Jointing ferrules, the length of which are at least 6 times the diameter of the conductors, must be slid over the conductor ends to be joined and pinched tightly. Then they are soldered by means of the ladle process whilst being pinched further closed.

Use resin only as a flux. The slot opening in the ferrule must be completely filled, including all depressions.

Remove all superfluous metal with a cloth dipped in tallow. Work during the soldering process must be from top to bottom. Rub the ferrule smooth and clean with aluminium oxide tape after it has cooled down to ensure that there are not any sharp points or edges.

- NB:** The spaces between the conductor strands must be completely filled by soldering process and must be carried out quick enough to prevent the paper insulation from burning or drying out unnecessarily.

- 11.5 After the ferrules have been rubbed smooth and clean, they and the exposed cores must be treated with hot cable oil ( $110^{\circ}\text{C}$ ) to remove all dust and moisture. These parts are to be thoroughly basted with the oil.

- 11.6 The jointer must take care that his hands are dry and clean before the joint is insulated. Also the insulating tape which is to be used must first be immersed in warm cable oil ( $110^{\circ}\text{C}$ ) for a sufficient period to ensure that no moisture is present.

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- 11.7 After the individual cores have been installed they must be well basted with hot cable oil and again after the applicable separator and/or belt insulation tape is applied before the lead joint sleeve is placed in position.
- 11.8 The lead joint sleeve must be thoroughly cleaned and prepared before it is placed on the cable and must be kept clean during the whole jointing process. Seal the filling apertures of the sleeve with tape until the sleeve is ready for compound filling.
- 11.9 The plumbing joints employed to solder the joint sleeve to the cable sheath, must be cooled off with tallow and the joint sleeve is to be filled with compound while it is still warm. Top up continuously until the joint is completely filled to compensate for the compound shrinkage.
- 11.10 The outer joint box must be clean and free from corrosion. After it has been placed in position it must be slightly heated before being filled with compound. Top up until completely full.
12. As far as cable end boxes are concerned the requirements as set out above are valid where applicable.

## 15. DISTRIBUTION BOARDS / FIELD KIOSKS

In addition to clause 14 and clause 15 of Part 1 of this specification the following shall also be applicable to switchboards required for this service.

The Contractor shall design, supply and install the distribution boards to house electrical switch gear used for the the pump control. A reputable electrical panel builder will be utilised to build distribution boards to house electrical switch gear used for the the pump control. A reputable electrical panel builder will be utilised to build distribution boards. All distribution boards shall comply with the quality specification in Part 3 of this specification, and be approved by the Employer's Electrical Engineer.

The front panels of normal supply, shall be painted in distinctive colour as follows:

Normal supply : Light Orange, colour B26 of SANS 1091.

The outer frame and panels shall be painted "AVO GREEN"

The equipment shall be housed in totally enclosed, free standing, floor mounted cubicles, designed top provide adequate ventilation for the equipment.

All cubicles shall be rigid with suitably braced doors providing front and rear access.

All cubicles shall be vermin proof.

All equipment shall be mounted on the metal framework suitably arranged to provide safe operation and ease of access. Fuses and switchgear in particular should be safely accessible even under load conditions.

All input and output power cables shall be terminated using approved cable glands, onto a cable gland support bracket. The cable conductors shall terminate at the connecting busbars or shall be connected directly to the appropriate switchgear. All power cables shall be properly numbered with wrap around cable markers with punched figures to identify cables at each termination point.

## 16. SCHEDULE OF CABLES

Supply, install and connect the following PVC SWA armoured cables from existing main distribution boards as per single line diagram.

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CABLE FEEDERS			
ID	CABLE SIZE	TYPE	LENGTH
(A)	6mm <sup>2</sup> + 4mm <sup>2</sup> BCEC	PVC SWA	130m
(B)	4mm <sup>2</sup> + 2.5mm <sup>2</sup> BCEC	PVC SWA	51m
(C)	4mm <sup>2</sup> + 2.5mm <sup>2</sup> BCEC	PVC SWA	20m
(D)	4mm <sup>2</sup> + 2.5mm <sup>2</sup> BCEC	PVC SWA	40m
(E)	16mm <sup>2</sup> + 10mm <sup>2</sup> BCEC	PVC SWA	160m
(F)	6mm <sup>2</sup> + 4mm <sup>2</sup> BCEC	PVC SWA	20m
(G)	6mm <sup>2</sup> + 4mm <sup>2</sup> BCEC	PVC SWA	145m
(H)	4mm <sup>2</sup> + 2.5mm <sup>2</sup> BCEC	PVC SWA	25m
(I)	6mm <sup>2</sup> + 4mm <sup>2</sup> BCEC	PVC SWA	140m
(J)	4mm <sup>2</sup> + 2.5mm <sup>2</sup> BCEC	PVC SWA	55m
(K)	4mm <sup>2</sup> + 2.5mm <sup>2</sup> BCEC	PVC SWA	35m
(L)	4mm <sup>2</sup> + 2.5mm <sup>2</sup> BCEC	PVC SWA	69m

## 17. QUALITY ASSURANCE

The manufacturer shall be responsible for the performance as specified herein and to prove such performances to the satisfaction of the engineer. Except as otherwise specified, the supplier must utilise facilities acceptable to the engineer.

## 18. DRAWINGS

As soon as possible after the awarding of the contract, the successful tenderer shall at his expense submit to the engineer for approval, three prints of:

- (1) All general arrangement drawings.
- (2) Detailed dimensioned drawings of all plant and equipment.
- (3) Complete wiring diagrams and block schematic diagrams.

At the same time a list of all equipment designations, labels, etc. in both official languages shall be submitted for approval.

The approval of drawings shall not relieve the successful tenderer of his liability to carry out work in accordance with the terms of the contract.

On completion of the contract, a complete set of transparencies of all drawings of a quality acceptable to the engineer shall be handed to the engineer at the expense of the successful tenderer. These final drawings shall include:

- (1) A proper and accurate as-made wiring diagram of the complete installation showing circuit numbers, terminal strip numbers and conductor colours.
- (2) A schematic diagram clearly showing functions and component values. A material list showing make, model and characteristics of all components of the control equipment and switchgear is to be included.
- (3) Fully dimensioned as-made physical layout drawing of the equipment, batteries and ventilation equipment.
- (4) A detailed schedule of all wiring.

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The contract shall be deemed incomplete until all drawings have been received by the client.

## **19. INSTRUCTION OF OPERATOR AND MANUALS**

After completion of the installation, and when the plant is in running order, the successful tenderer will be required to instruct an attendant in the operation of the plant, until he is fully conversant with the equipment and handling thereof.

Three (3) copies of maintenance, fault-localising and operating manuals together with the drawings required shall be handed over to the engineer.

## **20. TESTS**

The complete testing including the provision of test facilities, instruments, dummy loads and switchgear at the manufacturer's premises in the Republic of South Africa shall form part of this contract. If the factory tests cannot be performed in the RSA, the client may, at his discretion and own cost, decide to attend tests at the supplier's overseas factory. Tenderers shall not allow for this.

For the test in the manufacture's premises the client shall be notified four weeks in advance in order that a representative can be sent to witness these tests.

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## PART 3: QUALITY SPECIFICATION FOR MATERIALS AND EQUIPMENT OF ELECTRICAL INSTALLATIONS

*“Part 3: Quality specification for materials and equipment” manual of the Department of Public Works is applicable for this Contract and the manual can be obtained from the Department of Public Works website.*

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## PART4: PARTICULARS OF ELECTRICAL CONTRACTOR

PARTICULARS OF ELECTRICAL CONTRACTOR
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NAME OF SUB-CONTRACTOR: ELECTRICAL

.....

ADDRESS:

.....

.....

.....

.....

TELEPHONE NO:

.....

EMAIL:

.....

CELL PHONE:

.....

CONTRACTOR REGISTRATION NUMBER:

.....

.....  
SIGNATURE OF ELECTRICAL SUB-CONTRACTOR

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## Part C4: Site Information



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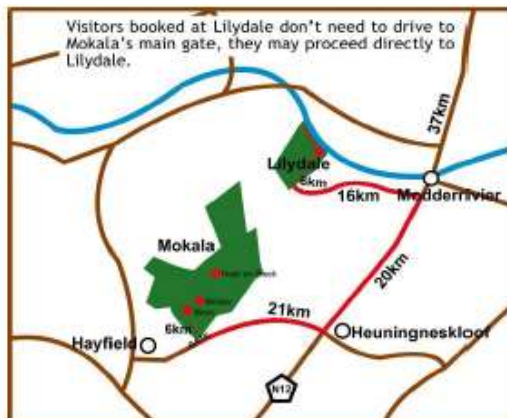
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## Mokala NATIONAL PARK



### How to get there from Kimberley

- Take the N12 route to Cape Town from Kimberley.
- 57km from Kimberley, just past Wintershoek entrance.
- Turn right on Hayfield / Heuningneskloof Crossing, a gravel road.
- Travel 21km until you get to the gate of Mokala National Park on your right hand side.
- The main Administration and Reception Building is a further 6km inside the park.
- Allow about 90 minutes' drive from Kimberley to the main lodge.

Distance from Kimberley to Mokala Mosu main lodge is 84km.

For Lilydale Rest camp you would need to turn off just past Modderivier

### How to get there from Hopetown

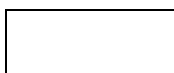
- From Cape Town, follow the N12 north, past Hopetown.
- 65km north of Hopetown.
- Turn left on the Hayfield / Heuningneskloof Crossing, a gravel road.
- Travel 21km until you reach the gate of Mokala National Park.
- The main Administration and Reception Building is a further 6km inside the park.

Distance from Hopetown to Mokala is 92km.

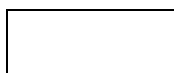
For Lilydale you would need to continue for 20km towards Kimberley and turn off just before Modderivier.

### Mokala National Park GPS Coordinates

MAIN GATE	S 29 12.775	E 24 19.579
MOSU OFFICE	S 29 10.334	E 24 21.001
MOFELE	S 29 10.081	E 24 22.137
LILYDALE GATE	S 29 04 23.6	E24 27 59.3



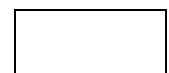
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## Annexure A

# Health and Safety Specifications for South African National Parks

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## HEALTH & SAFETY SPECIFICATIONS FOR

### UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER TREATMENT WORKS MOKALA NATIONAL PARK

CONTRACT NO: CI-VB-0031

Date: May 2022

Contact person: Zamakhosi Mkhonza

Address: PO Box 787  
Pretoria, 0001

Tel No: (012) 426 5199

Email Fax: 086 695 9139

Email: [zamakhosi.mkhonza@sanparks.org](mailto:zamakhosi.mkhonza@sanparks.org)

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## 1. PURPOSE OF THE HEALTH AND SAFETY SPECIFICATION

This Health and Safety Specification has been prepared to comply with the requirements of the Construction Regulations 2014.

The purpose of this site specific Health and Safety Specification is to comply with legal requirements and to provide health and safety information about specific project risks known by the Client, Designer and Client Agent to be applicable to this project. This document also provides minimum health and safety requirements, standards and expectations that the principal contractor and contractors must adhere to.

The Contractor must take into account all information in this specification and ensure that their tenders include adequate resource and competence to deal with the matters detailed herein so that all relevant contents are dealt with in a way which is in compliance with legislation and the ethical concerns for the safeguarding of employees, contractors and other persons affected by the construction activities.

The Health and Safety Specification will be implemented during construction of the works and any construction activity that the Client has control over.

This will also assist in ensuring that all the costs related to the compliance with Occupational Health Act 85 of 1993 and the Construction Regulations 2014, as well as this Health and Safety Specification, are taken into consideration at Tender stage.

No advice, approval of any document required by the Health and Safety Specification such as hazard identification and risk assessment action plans or any other form shall be construed as an acceptance by the Client of any obligation that absolves the Contractor from achieving the required level of performance and compliance with legal requirements.

Further, there is no acceptance of liability by the Client which may result from the Contractor failing to comply with the Health and Safety Specification unless the Client has issued an instruction to any requirement, i.e. the Contractor remains responsible for achieving the required performance levels.

## 2. IMPLEMENTATION OF THE HEALTH AND SAFETY SPECIFICATION

This Health and Safety Specification forms an integral part of the Contract, and Contractors shall make it an integral part of their Contracts with Sub Contractors and Suppliers. Contractors employed by the Client are to ensure that the provisions of the Health and Safety Specification are applied both on the site and in respect of all off site activities relating to the project, in particular in transport activities and project dedicated off site fabrication works.

The Contractor shall enforce the provisions of the Health and Safety Specification amongst all sub-contractors and suppliers for the project.

The Contractor shall sign the acknowledgment on the last page of this safety specification that he/she has familiarized him/herself with the content of the Health and Safety Specification and shall comply with all obligations in respect thereof.

**The successful Contractor will be required to compile a Health and Safety Plan based on the requirements of the Occupational Health Act 85 of 1993 and these Specifications, which will need to be approved by Client prior to commencement with construction work.**

## 3. APPLICATION AND INTERPRETATION

This document is to be read and understood in Conjunction with the following inter alia:

- Occupational Health and Safety Act (Act 85 of 1993)
- SABS codes and standards referred to by the Occupational Health and Safety Act
- Regulations as per the Occupational Health and Safety Act (Act 85 of 1993) with specific reference but not limited to:
  - General Safety Regulations (GN 928, 25 June 2003)
  - General Machinery Regulations (GN R1521, 5 August 1988)
  - Electrical Machinery Regulations (GN R250, 25 March 2011)
  - Electrical Installation Regulations (GN R242, 6 March 2009)
  - Driven Machinery Regulations (GN R1010, 18 July 2003)
  - Hazardous Chemical Substance Regulations (GN R930, 25 June 2003)
  - Hazardous Biological Agents Regulations( GN R 1390, 27 December 2001)
- Basic Conditions of Employment Act (Act 75 of 1997)
- SANParks Environmental Management Plan
- SANParks Code of Conduct of working in a National Park

## 4. DEFINITIONS

**ALL REFERENCES TO CLIENT IN THIS HEALTH AND SAFETY SPECIFICATION ALSO REFER TO CLIENT AGENT, WHERE SO APPOINTED.**

**Definitions (as per the Construction Regulations 2014) applicable to this Health and Safety Specification:**

"agent" means a competent person who acts as a representative for a client;

"angle of repose" means the steepest angle of a surface at which a mass of loose or fragmented material will remain stationary in a pile on the surface, rather than sliding or crumbling away;

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"bulk mixing plant" means machinery, appliances or other similar devices that are assembled in such a manner so as to be able to mix materials in bulk for the purposes of using the mixed product for construction work;

"client" means any person for whom construction work is being performed;

"competent person" means a person who has, in respect of the work or task to be performed, the required knowledge, training and experience and, where applicable, qualifications, specific to that work or task: Provided that where appropriate qualifications and training are registered in terms of the provisions of the National Qualification Framework Act, 2000 (Act No.67 of 2000), those qualifications and that training must be regarded as the required qualifications and training; and is familiar with the Act and with the applicable regulations made under the Act;

"construction manager" means a competent person responsible for the management of the physical construction processes and the coordination, administration and management of resources on a construction site;

"construction site" means a work place where construction work is being performed;

"construction supervisor" means a competent person responsible for supervising construction activities on a construction site;

"construction vehicle" means a vehicle used as a means of conveyance for transporting persons or material, or persons and material, on and off the construction site for the purposes of performing construction work;

"construction work" means any work in connection with-

- the construction, erection, alteration, renovation, repair, demolition or dismantling of or addition to a building or any similar structure; or
- the construction, erection, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runway, sewer or water reticulation system; or the moving of earth, clearing of land, the making of excavation, piling, or any similar civil engineering structure or type of work ;

"construction work permit" means a document issued in terms of regulation 3;

"contractor" means an employer who performs construction work;

"demolition work" means a method to dismantle, wreck, break, pull down or knock down of a structure or part thereof by way of manual labour, machinery, or the use of explosives;

"design" in relation to any structure, includes drawings, calculations, design details and specifications ;

"designer" means a competent person who-

- prepares a design;
- checks and approves a design;
- arranges for a person at work under his or her control to prepare a design, including an employee of that person where he or she is the employer; or
- designs temporary work, including its components;
- an architect or engineer contributing to, or having overall responsibility for a design;
- a building services engineer designing details for fixed plant;
- a surveyor specifying articles or drawing up specifications;
- a contractor carrying out design work as part of a design and building project; or
- an interior designer, shop-fitter or landscape architect;

"excavation work" means the making of any man-made cavity, trench, pit or depression formed by cutting, digging or scooping;

"explosive actuated fastening device" means a tool that is activated by an explosive charge and that is used for driving bolts, nails and similar objects for the purpose of providing fixing;

"fall arrest equipment" means equipment used to arrest a person in a fall, including personal equipment, a body harness, lanyards, deceleration devices, lifelines or similar equipment;

"fall prevention equipment" means equipment used to prevent persons from falling from a fall risk position, including personal equipment, a body harness, lanyards, lifelines or physical equipment such as guard-rails, screens, barricades, anchorages or similar equipment;

"fall protection plan" means a documented plan, which includes and provides for -

- all risks relating to working from a fall risk position, considering the nature of work undertaken;
- the procedures and methods to be applied in order to eliminate the risk of falling; and
- a rescue plan and procedures;

"fall risk" means any potential exposure to falling either from, off or into;

"health and safety file " means a file, or other record containing the information in writing required by these Regulations;

"health and safety plan" means a site, activity or project specific documented plan in accordance with the client's health and safety specification;

"health and safety specification" means a site, activity or project specific document prepared by the client pertaining to all health and safety requirements related to construction work;

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"material hoist" means a hoist used to lower or raise material and equipment, excluding passengers;

"medical certificate of fitness" means a certificate contemplated in regulation 7(8);

"mobile plant" means any machinery, appliance or other similar device that is able to move independently, and is used for the purpose of performing construction work on a construction site;

"National Building Regulations" means the National Building Regulations made under the National Building Regulations and Building Standards Act, 1977 (Act No. 103 of 1977), and promulgated by Government Notice No. R. 2378 of 30 July 1990, as amended by Government Notices No's R. 432 of 8 March 1991, R. 919 of 30 July 1999 and R. 547 of 30 May 2008;

"person day" means one normal working shift of carrying out construction work by a person on a construction site;

"principal contractor" means an employer appointed by the client to perform construction work;

"Professional Engineer or Professional Certificated Engineer" means a person holding registration as either a Professional Engineer or Professional Certificated Engineer in terms of the Engineering Profession Act, 2000 (Act No. 46 of 2000);

"Professional Technologist" means a person holding registration as a Professional Engineering Technologist in terms of the Engineering Profession Act, 2000;

"provincial director" means the provincial director as defined in regulation 1 of the General Administrative Regulations, 2003;

"scaffold" means a temporary elevated platform and supporting structure used for providing access to and supporting workmen or materials or both;

"shoring" means a system used to support the sides of an excavation and which is intended to prevent the cave-in or the collapse of the sides of an excavation;

"structure" means-

- any building, steel or reinforced concrete structure (not being a building), railway line or siding, bridge, waterworks, reservoir, pipe or pipeline, cable, sewer, sewage works, fixed vessels, road, drainage works, earthworks, dam, wall, mast, tower, tower crane, bulk mixing plant, pylon, surface and underground tanks, earth retaining structure or any structure designed to preserve or alter any natural feature, and any other similar structure;

- any falsework, scaffold or other structure designed or used to provide support or means of access during construction work; or
- any fixed plant in respect of construction work which includes installation, commissioning, decommissioning or dismantling and where any construction work involves a risk of a person falling;

"suspended platform" means a working platform suspended from supports by means of one or more separate ropes from each support ;

"temporary works" means any falsework, formwork, support work, scaffold, shoring or other temporary structure designed to provide support or means of access during construction work;

"the Act" means the Occupational Health and Safety Act , 1993 (Act No. 85 of 1993);

"tunneling" means the construction of any tunnel beneath the natural surface of the earth for a purpose other than the searching for or winning of a mineral.

## 5. GENERAL REQUIREMENTS

### 5.1 Duties of Principal Contractor / Contractor in terms of Construction Regulations 2014

A Principal Contractor must:

- provide and demonstrate to the client a suitable, sufficiently documented and coherent site specific health and safety plan, based on the client's documented health and safety specifications, which plan must be applied from the date of commencement of and for the duration of the construction work and which must be reviewed and updated by the principal contractor as work progresses;
- open and keep on site a health and safety file, which must include all documentation required in terms of the Act and these Regulations, which must be made available on request to an inspector, the client, the client's agent or a contractor; and
- on appointing any other contractor, in order to ensure compliance with the provisions of the Act –
  - provide contractors who are tendering to perform construction work for the principal contractor, with the relevant sections of the health and safety specifications pertaining to the construction work which has to be performed;
  - ensure that potential contractors submitting tenders have made sufficient provision for health and safety measures during the construction process;
  - ensure that no contractor is appointed to perform construction

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work unless the principal contractor is reasonably satisfied that the contractor that he or she intends to appoint, has the necessary competencies and resources to perform the construction work safely;

- ensure prior to work commencing on the site that every contractor is registered and in good standing with the compensation fund or with a licensed compensation insurer as contemplated in the Compensation for Occupational Injuries and Diseases Act, 1993;
- appoint each contractor in writing for the part of the project on the construction site
- take reasonable steps to ensure that each contractor's health and safety plan is implemented and maintained on the construction site;
- ensure that the periodic site audits and document verification are conducted at intervals mutually agreed upon between the principal contractor and any contractor, but at least once every 30 days;
- stop any contractor from executing construction work which is not in accordance with the client's health and safety specifications and the principal contractor's health and safety plan for the site or which poses a threat to the health and safety of persons;
- where changes are brought about to the design and construction, make available sufficient health and safety information and appropriate resources to the contractor to execute the work safely;
- discuss and negotiate with the contractor the contents of their health and safety plan and finally approve that plan for implementation;
- ensure that a copy of both the principal contractor and contractor's health and safety plan is available on request to an employee, an inspector, a contractor, the client or the client's agent;
- hand over a consolidated health and safety file to the client upon completion of the construction work, to include a record of all drawings, designs, materials used and other similar information concerning the completed structure;
- in addition to the documentation required in the health and safety file include and make available a comprehensive and updated list of all the contractors on site accountable to the principal contractor, the agreements between the parties and the type of work being done;
- ensure that all his or her employees have a valid medical certificate of fitness specific to the construction work to be performed and issued by an occupational health practitioner in the form of Annexure 3.

A contractor must prior to performing any construction work -

- provide and demonstrate to the principal contractor a suitable and sufficiently documented health and safety plan, based on the relevant sections of the client's health and safety specification and provided by the principal contractor, which plan must be applied from the date of commencement of and for the duration of the construction work and which must be reviewed and updated by the contractor as work progresses;
- open and keep on site a health and safety file, which must include all

documentation required in terms of the Act and these Regulations, and which must be made available on request to an inspector, the client, the client's agent or the principal contractor;

- before appointing another contractor to perform construction work be reasonably satisfied that the contractor that he or she intends to appoint has the necessary competencies and resources to perform the construction work safely;
- co-operate with the principal contractor as far as is necessary to enable each of them to comply with the provisions of the Act;
- as far as is reasonably practicable, promptly provide the principal contractor with any information which might affect the health and safety of any person at work carrying out construction work on the site, any person who might be affected by the work of such a person at work, or which might justify a review of the health and safety plan.

Where a contractor appoints another contractor to perform construction work, the duties that apply to the principal contractor will apply to the contractor as if he or she were the principal contractor.

A principal contractor must take reasonable steps to ensure co-operation between all contractors appointed by the principal contractor to enable each of those contractors to comply with these Regulations.

No contractor may allow or permit any employee or person to enter any site, unless that employee or person has undergone health and safety induction training pertaining to the hazards prevalent on the site at the time of entry.

A contractor must ensure that all visitors to a construction site undergo health and safety induction pertaining to the hazards prevalent on the site and must ensure that such visitors have the necessary personal protective equipment.

A contractor must at all times keep on his or her construction site records of the health and safety induction training and such records must be made available on request to an inspector, the client, the client's agent or the principal contractor.

A contractor must ensure that all his or her employees have a valid medical certificate of fitness specific to the construction work to be performed and issued by an occupational health practitioner in the form of Annexure 3 (a template of which can be found in the Construction Regulations, 2014).

## 5.2 Management and Supervision of Construction Work

A principal contractor must, in writing, appoint one full-time competent person as the construction manager with the duty of managing all the construction work on a single site,

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including the duty of ensuring occupational health and safety compliance, and in the absence of the construction manager an alternate must be appointed by the principal contractor.

A principal contractor must upon having considered the size of the project, in writing appoint one or more assistant construction managers for different sections thereof: Provided that the designation of any such person does not relieve the construction manager of any personal accountability for failing in his or her management duties in terms of this regulation.

Where the construction manager has not appointed assistant construction managers, or, in the opinion of an inspector, a sufficient number of such assistant construction managers have not been appointed, that inspector must direct the construction manager in writing to appoint the number of assistant construction managers indicated by the inspector, and those assistant construction managers must be regarded as having been appointed.

No construction manager appointed in terms of the Regulations may manage any construction work on or in any construction site other than the site in respect of which he or she has been appointed.

A contractor must, after consultation with the client and having considered the size of the project, the degree of danger likely to be encountered or the accumulation of hazards or risks on the site, appoint a full-time or part-time construction health and safety officer in writing to assist in the control of all health and safety related aspects on the site: Provided that, where the question arises as to whether a construction health and safety officer is necessary, the decision of an inspector is decisive.

No contractor may appoint a construction health and safety officer to assist in the control of health and safety related aspects on the site unless he or she is reasonably satisfied that the construction health and safety officer that he or she intends to appoint is registered with a statutory body approved by the Chief Inspector and has necessary competencies and resources to assist the contractor

A construction manager must in writing appoint construction supervisors responsible for construction activities and ensuring occupational health and safety compliance on the construction site.

A contractor must, upon having considered the size of the project, in writing appoint one or more competent employees for different sections thereof to assist the construction supervisor, and every such employee has, to the extent clearly defined by the contractor in the letter of appointment, the same duties as the construction supervisor: Provided that the designation of such employee does not relieve the construction supervisor of any personal accountability for failing in his or her supervisory duties.

Where the contractor has not appointed such an employee, or, in the opinion of an inspector, a sufficient number of such employees have not been appointed, that inspector must instruct the employer to appoint the number of employees indicated by the inspector.

No construction supervisor appointed may supervise any construction work on or in any construction site other than the site in respect of which he or she has been appointed: Provided that if a sufficient number of competent employees have been appropriately designated on all the relevant construction sites, the appointed construction supervisor may supervise more than one site.

### 5.3 Notification of Intention to Commence Construction Work

The Contractor shall notify the Provincial Director of the Department of Labour of the intention to commence construction work at least 7 days prior to the works commencing if the intended construction work will:

- include excavation work
- Include work at height where there is a risk of falling
- Include the demolition of a structure, or
- Include the use of explosives to perform construction work.

If the construction work involves construction of a single storey dwelling for a client, and such client will be residing in such dwelling upon completion, the contractor must also notify the Provincial Director of the Department of Labour at least 7 days before the works commence.

This must be done on a form similar to an Annexure 2 (template of which can be found in the Construction Regulations, 2014). A copy of the notification letter to the Provincial Director shall be forwarded to the Client for record purposes.

### 5.4 Construction Work Permit

It must be noted that from August 2015 all projects that meet the following criteria will require a construction work permit to be applied for at least 30 days prior to the work being carried out:

- Exceeds 180 days
- Will involve more than 1800 person days of construction work
- Works contract is of a value equal to or exceeding thirteen million rand, or Construction Industry Grading Board (CIDB) grading level 6

It is the client's responsibility to apply for this permit from the Provincial Director and construction work may not commence until the permit has been issued by the Provincial Director.

A copy of this permit will be required to be kept in the principal contractors safety file, and the site specific number issued by the Provincial Director must be displayed at the site entrance.

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### 5.5 Assignment of Contractor's Responsible Persons to Manage Health and Safety on Site

The Contractor shall submit management and supervisory appointments as well as any relevant appointments in writing (as stipulated by the Construction Regulations 2014 and the Occupational Safety and Health Act 1993), prior to commencement of work (refer to **Annexure B** at the end of this Health and Safety Specification).

### 5.6 Competency for Contractor's Responsible Persons

The Contractor's responsible persons shall be competent in health and safety and be familiar with the Occupational Health and Safety Act 1993, and applicable regulations. Valid proof of pertinent health and safety courses attended by such persons will be required to be presented to the Client.

### 5.7 Compensation of Occupational Injuries and Diseases Act 130 of 1993 (COIDA)

The successful Contractor shall submit to the Client a valid letter of good standing with the Compensation Insurer prior to appointment.

### 5.8 Occupational Health and Safety Policy

The Contractor shall submit their Health and Safety Policy, prior to construction commencement, signed by the Chief Executive Officer. The Policy must outline objectives and how they will be achieved and implemented within the operations.

### 5.9 Health and Safety Organogram

The Contractor shall submit an organogram, prior to construction commencement, outlining the Health and Safety Site Team that will be assigned to the project, if successful with the tender. In cases where appointments have not been made, the organogram shall reflect the position. The organogram shall be updated, when there is a change in the site team.

### 5.10 Risk Assessments

#### Baseline Risk Assessment

The Client shall cause a baseline risk assessment to be conducted by a competent person before the design process and tender process commence, and the assessed risks shall form part of the health and safety specifications.

The Contractor must, before commencement of any construction work, and during construction work, have risk assessments performed by a competent person appointed in

writing, which risk assessments form part of the health and safety plan to be applied on the site and must include:

- The identification of the risks and hazards to which persons may be exposed to;
- An analysis and evaluation of the risks and hazards identified; based on a documented method
- A documented plan and applicable safe work procedures to mitigate, reduce or control the risks and hazards that have been identified;
- A monitoring plan; and
- A review plan

The Contractor must ensure that, as far as is reasonably practicable, ergonomic related hazards are analysed, evaluated and addressed in a risk assessment.

The Contractor must ensure that all employees under his control are informed, instructed and trained by a competent person regarding any hazard and the related work procedures and/or control measures **before any work commences** and thereafter **at the times determined in the risk assessment monitoring and review plan of the relevant site.**

The Principal Contractor must ensure that all contractors are informed regarding any hazard that is stipulated in the risk assessment **before any work commences** and thereafter **at the times determined in the risk assessment monitoring and review plan of the relevant site.**

The Contractor must consult with the health and safety committee or with a representative trade union or representative group of employees if no health and safety committee exists, on the monitoring and review of the risk assessments for the site.

The Contractor must ensure that copies of risk assessment for this site are available on site for inspection purposes by interested parties (inspector, the client, client's agent, any contractor, any employee, a representative trade union, a health and safety representative or safety committee member.

A Contractor must review the relevant risk assessment where changes are effected to the design and/or construction that result in a change to the risk profile, or when an incident has occurred.

**Preventative measures must first address the elimination of the hazard or risk. Should PPE be required to reduce risk, the equipment or clothing to be used must be SABS approved**

In general the Contractor must ensure that the Risk Assessment involves identifying the hazards present in a work activity on site. This is followed by an evaluation of the extent of the risk involved taking into account those precautions already being taken.

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The following general principle should be followed when conducting a risk assessment:

- All relevant risks and/or hazards should be systematically addressed;
- The risk assessment should address what actually happens in the workplace during the work activity;
- All employees and those who may be affected must be considered, including maintenance staff, security guards, visitors and subcontractors;
- The risk assessment should highlight those groups and individuals who may be required to work alone or who have disabilities;
- The risk assessment process should take into account the existing safety measures and controls.
- The level of detail on a risk assessment should be appropriate to the level of risk.

### 5.11 Safe Work Procedures

Safe Work Procedures are to form part of the H&S Plan and **must be compiled for all the identified activities.**

The safe work procedures must address the following elements:

- The work method to be followed to conduct work safely
- Mitigation of identified risks
- Reducing and controlling risks and hazards that have been identified
- Responsibilities of competent persons
- Required personal protective equipment
- Correct equipment/tools/machinery to be used
- Reference to relevant registers to be completed
- Reference to applicable risk assessment

### 5.12 Health and Safety Representative(s)

The Contractor shall ensure that Health and Safety Representative(s) is/are elected and trained to carry out his / her functions. The appointment must be in writing. The Health and Safety Representative shall carry out regular inspections, keep records and report to the supervisor to take appropriate action. He / she shall attend Health and Safety Committee Meetings. The Health and Safety Representative shall be part of the team that will investigate incidents, accidents and non-conformances.

### 5.13 Health and Safety Committee

Where two or more health and safety representatives have been appointed on site, the Contractor shall ensure that monthly health and safety meetings are held with such representatives and minutes are kept on record. Meetings must be organized and chaired by the Contractor's Health and Safety Committee Chairperson. Minutes of these meetings must be available for the employees of the contractor to refer to.

### 5.14 Medical Certificate of Fitness

The contractor must ensure that their employees on site have a valid medical certificate of fitness, specific to the construction work being performed, issued by an occupational health practitioner in the form of an Annexure 3 template (refer to the Construction Regulations 2014 on the Department of Labour website for a sample of this form).

### 5.15 Health and Safety Training

The Contractor shall quarterly conduct a training needs analysis to ascertain what health and safety training is required. A plan of action should be devised and forwarded to the Client for records. Once the identified people have attended the training, the Contractor must provide the Client with copies of certificates obtained.

#### 5.15.1 Induction

No Contractor may allow or permit any employee or person to enter site unless they have undergone health and safety induction training pertaining to the hazards prevalent on site at the time of entry. This includes visitors to site. The Contractor must ensure that visitors to site have the necessary protective equipment (PPE). A copy of attendance registers of all employees who attend inductions shall be kept.

#### 5.15.2 Awareness

The Contractor shall conduct periodic toolbox talks on site, preferably weekly or before any hazardous work takes place. The talks shall cover the relevant activity and an attendance register must be signed by all attendees. This record of who attended and the content of the topic will be kept on the site health a safety file as evidence of training

### 5.16 Competency

After the Contractor has identified the training to be conducted as part of the competency requirement, and based on Risk Assessment, he shall send the relevant persons on appropriate courses and keep certificates of training for reference. Familiarity with the Health and Safety Act and Regulations is an integral part of the definition of competence.

### 5.17 General Record Keeping

The Contractor shall keep and maintain Health and Safety records to demonstrate compliance with the Health and Safety Specification and the Occupational Health and Safety Act. The contractor shall ensure that all records of incidents, spot fines, training etc. are kept

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on site. All documents shall be available for inspection by the Client, or the Department of Labour's Inspectors.

### 5.18 General Inspection, Monitoring and Reporting

The Contractor shall carry out inspections as required by **Annexure C** in this Health and Safety Specification, as well as by health and safety legislation.

### 5.19 Emergency Procedures

The Contractor shall submit a detailed Emergency Procedure for approval by the Client prior to commencement on site. The procedure shall detail the response plan including the following:

- List of key personnel;
- Details of emergency services;
- Actions or steps to be taken in the event of the emergency; and
- Information on hazardous materials / situations, including each material's hazardous potential impact or risk on the environment or human and measures to be taken in the event of an accident.

Emergency procedure(s) shall include, but shall not be limited to, fire, spills, accidents to employees, use of hazardous substances, dangers as a result of riot / service deliver protests / intimidation, etc. The Contractor shall advise the Client in writing of any on-site emergencies, together with a record of action taken, within 24 hours of the emergency occurring. A contact list of all service providers (Fire Department, Ambulance, Police, Medical and Hospital, etc.) must be maintained and available to site personnel.

### 5.20 First Aid Box and First Aid Equipment

The Contractor shall provide first aid box/es and appoint, in writing, First Aider(s) for this project in line with the results of the Contractor's risk assessment for the project, this health and safety specification as well as the provisions of the General Safety Regulations. The appointed First Aider(s) are to be sent for accredited first aid training before starting on site. Valid certificates are to be kept on site.

First Aid box/es must be adequately stocked at all time, accessible and be controlled by a qualified First Aider. If required by the Client, the Contractor shall have a stretcher on site to be used in case of a serious incident.

### 5.21 Accident / Incident Reporting and Investigation

The Contractor shall, in addition to the prescribed requirements of the Occupational Health and Safety Act and General Safety Regulations, investigate, record and report all Section 24 reportable incidents to the Client within 24 hours of the incident occurring. Incident

investigations shall be conducted by the Contractor's appointed Accident Investigator – this Investigator must be a competent person or persons who have sufficient knowledge to carry out an investigation.

In the event of a fatality or a permanent disabling injury the Contractor must submit proof of reporting of incident to Department of Labour as well as proof of preventative measures to the Client. The Client reserves the right to conduct investigations into any incidents that they deem fit and the Contractor is required to provide full co-operation in this regard.

### 5.22 Hazards and Potential Situations

The Contractor shall immediately notify other Contractors of any hazardous or potentially hazardous situations, which may arise during performance of the activities.

### 5.23 Occupational Health and Safety Signage

The Contractor shall ascertain and provide adequate on site health and safety signage. This signage shall include, but shall not be limited to, Hard Hat / Helmet Area; Safety Shoes to be worn on site; Dust Masks to be worn in areas where there might be exposure to excessive dust; Ear Plugs / Muffs to be worn where there might be noise exposure over 85; Gloves; Safety Goggles; Safety Harness, Workers in Excavation, traffic management, etc. The Contractor shall be responsible to maintain the quality and replacement of signage.

### 5.24 Management of Contractors by Principal Contractor

The Principal Contractor shall ensure that all contractors under his control are complying with the respective Health and Safety Plans, as well as Health and Safety Legislation.

### 5.25 Stacking of Materials

In addition to the provisions for the stacking of articles in the General Safety Regulations, 2003, the contractor must ensure that –

- a competent person is appointed in writing with the duty of supervising all stacking and storage on a construction site;
- adequate storage areas are provided;
- there are demarcated storage areas; and
- storage areas are kept neat and under control.

### 5.26 Housekeeping and General Safeguarding on Construction Sites

A contractor must, in addition to compliance with the Environmental Regulations for Workplaces, 1987, promulgated by Government Notice No. R. 2281 of 16 October 1987, ensure that suitable housekeeping is continuously implemented on each construction site, including-

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- the proper storage of materials and equipment;
- the removal of scrap, waste and debris at appropriate intervals;
- ensuring that materials required for use, are not placed on the site so as to obstruct means of access to and egress from workplaces and passageways;
- ensuring that materials which are no longer required for use, do not accumulate on and are removed from the site at appropriate intervals;
- ensuring that waste and debris are not disposed of from a high place with a chute, unless the chute complies with the requirements set out in the regulations;
- ensuring that construction sites in built-up areas adjacent to a public way are suitably and sufficiently fenced off and provided with controlled access points to prevent the entry of unauthorized persons; and
- ensuring that a catch platform or net is erected above an entrance or passageway or above a place where persons work or pass under, or fencing off the danger area if work is being performed above such entrance, passageway, or place so as to ensure that all persons are kept safe in the case of danger of possibility of persons being struck by falling objects.

### 5.27 Construction Vehicles and Mobile Plant

A contractor must ensure that all construction vehicles and mobile plant-

- are of an acceptable design and construction;
- are maintained in a good working order;
- are used in accordance with their design and the intention for which they were designed, having due regard to safety and health;
- are operated by a person who-
- has received appropriate training, is certified competent and in possession of proof of competency and is authorised in writing to operate those construction vehicles and mobile plant;
- has a medical certificate of fitness to operate those construction vehicles and mobile plant, issued by an occupational health practitioner in the form of Annexure 3.
- have safe and suitable means of access and egress;
- are properly organized and controlled in any work situation by providing adequate signalling or other control arrangements to guard against the dangers relating to the movement of vehicles and plant, in order to ensure their continued safe operation;
- are prevented from falling into excavations, water or any other area lower than the working surface by installing adequate edge protection, which may include guard-rails and crash barriers;
- are fitted with structures designed to protect the operator from falling material or from being crushed should the vehicle or mobile plant overturn;
- are equipped with an acoustic warning device which can be activated by the operator;
- are equipped with an automatic acoustic reversing alarm; and

- are inspected by the authorised operator or driver on a daily basis using a relevant checklist prior to use and that the findings of such inspection are recorded in a register kept in the construction vehicle or mobile plant.

A contractor must ensure that-

- no person rides or is required or permitted to ride on a construction vehicle or mobile plant otherwise than in a safe place provided thereon for that purpose;
- every construction site is organized in such a way that, as far as is reasonably practicable, pedestrians and vehicles can move safely and without risks to health;
- the traffic routes are suitable for the persons, construction vehicles or mobile plant using them, are sufficient in number, in suitable positions and of sufficient size;
- every traffic route is, where necessary, indicated by suitable signs;
- all construction vehicles and mobile plant left unattended at night, adjacent to a public road in normal use or adjacent to construction areas where work is in progress, have appropriate lights or reflectors, or barricades equipped with appropriate lights or reflectors, in order to identify the location of the vehicles or plant;
- all construction vehicles or mobile plant when not in use, have buckets, booms or similar appendages, fully lowered or blocked, controls in a neutral position, motors stopped, wheels chocked, brakes set and ignition secured;
- whenever visibility conditions warrant additional lighting, all mobile plant are equipped with at least two headlights and two taillights when in operation;
- tools, material and equipment are secured and separated by means of a physical barrier in order to prevent movement when transported in the same compartment with employees;
- vehicles used to transport employees have seats firmly secured and adequate for the number of employees to be carried; and
- all construction vehicles or mobile plant travelling, working or operating on public roads comply with the requirements of the National Road Traffic Act, 1996.

### 5.28 Electrical Installations and Machinery on Construction Sites

A contractor must, in addition to compliance with the Electrical Installation Regulations and the Electrical Machinery Regulations, ensure that –

- before construction commences and during the progress thereof, adequate steps are taken to ascertain the presence of and guard against danger to workers from any electrical cable or apparatus which is under, over or on the site;
- all parts of electrical installations and machinery are of adequate strength to withstand the working conditions on construction sites;
- the control of all temporary electrical installations on the construction site is designated to a competent person who has been appointed in writing for that purpose;

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- all temporary electrical installations used by the contractor are inspected at least once a week by a competent person and the inspection findings are recorded in a register kept on the construction site; and
- all electrical machinery is inspected by the authorized operator or user on a daily basis using a relevant checklist prior to use and the inspection findings are recorded in a register kept on the construction site.

### 5.29 Use and Temporary Storage of Flammable Liquids on Construction Sites

A contractor must, in addition to compliance with the provisions for the use and storage of flammable liquids in the General Safety Regulations, 2003, ensure that –

- where flammable liquids are being used, applied or stored at the workplace concerned, it is done in a manner that does not cause a fire or explosion hazard, and that the workplace is effectively ventilated;
- no person smokes in any place in which flammable liquid is used or stored, and the contractor must affix a suitable and conspicuous notice at all entrances to any such areas prohibiting such smoking;
- an adequate amount of efficient fire-fighting equipment is installed in suitable locations around the flammable liquids store with the recognized symbolic signs;
- only the quantity of flammable liquid needed for work on one day is taken out of the store for use;
- all containers holding flammable liquids are kept tightly closed when not in actual use and, after their contents have been used up, are removed from the construction site and safely disposed of;
- where flammable liquids are decanted, the metal containers are bonded and earthed; and
- no flammable material, including cotton waste, paper, cleaning rags or similar material is stored together with flammable liquids

### 5.30 Water environments

Not applicable on this project..

### 5.31 Fire precautions on Construction Sites

A contractor must, in addition to compliance with the Environmental Regulations for Workplaces, 1987, ensure that –

- all appropriate measures are taken to avoid the risk of fire;
- sufficient and suitable storage is provided for flammable liquids, solids and gases;
- smoking is prohibited and notices in this regard are prominently displayed in all places containing readily combustible or flammable materials;
- in confined spaces and other places in which flammable gases, vapours or dust can cause danger-

- only suitably protected electrical installations and equipment, including portable lights, are used;
- there are no flames or similar means of ignition;
- there are conspicuous notices prohibiting smoking;
- oily rags, waste and other substances liable to ignite are without delay removed to a safe place; and
- adequate ventilation is provided;

- combustible materials do not accumulate on the construction site;
- welding, flame cutting and other hot work are done only after appropriate precautions have been taken to reduce the risk of fire;
- suitable and sufficient fire-extinguishing equipment is placed at strategic locations or as may be recommended by the Fire Chief or local authority concerned, and that such equipment is maintained in a good working order;
- the fire equipment contemplated above is inspected by a competent person, who has been appointed in writing for that purpose, in the manner indicated by the manufacturer thereof;
- a sufficient number of workers are trained in the use of fire- extinguishing equipment;
- where appropriate, suitable visual signs are provided to clearly indicate the escape routes in the case of a fire;
- the means of escape is kept clear at all times;
- there is an effective evacuation plan providing for all -
  - persons to be evacuated speedily without panic;
  - persons to be accounted for; and
  - plant and processes to be shut down; and
  - a siren is installed and sounded in the event of a fire.

### 5.32 Construction Employees' Facilities

A contractor must, in terms of the Construction Regulations 2014, provide:

- Shower facilities after consultation with the employees or employees representatives, or at least one shower facility for every 15 persons;
- at least one sanitary facility for each sex and for every 30 workers;
- changing facilities for each sex;
- and sheltered eating area.

A contractor must provide reasonable and suitable living accommodation for the workers at construction sites who are far removed from their homes and where adequate transportation between the site and their homes, or other suitable living accommodation, is not available.

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### 5.33 Fall protection

The Contractor must:

- designate a competent person to be responsible for the preparation of a fall protection plan
- ensure that the fall protection plan contemplated above is implemented, amended where and when necessary and maintained as required; and
- take steps to ensure continued adherence to the fall protection plan.

A fall protection plan contemplated above must include-

- a risk assessment of all work carried out from a fall risk position and the procedures and methods used to address all the risks identified per location;
- the processes for the evaluation of the employees' medical fitness necessary to work at a fall risk position and the records thereof;
- a programme for the training of employees working from a fall risk position and the records thereof;
- the procedure addressing the inspection, testing and maintenance of all fall protection equipment; and
- a rescue plan detailing the necessary procedure, personnel and suitable equipment required to affect a rescue of a person in the event of a fall incident to ensure that the rescue procedure is implemented immediately following the incident.

A contractor must ensure that a construction manager appointed under regulation 8(1) is in possession of the most recently updated version of the fall protection plan.

A contractor must ensure that all unprotected openings in floors, edges, slabs, hatchways and stairways are adequately guarded, fenced or barricaded or that similar means are used to safeguard any person from falling through such openings;

Also that no person is required to work in a fall risk position, unless such work is performed safely as contemplated in above and fall prevention and fall arrest equipment are approved as suitable and of sufficient strength for the purpose for which they are being used, having regard to the work being carried out and the load, including any person, they are intended to bear; and securely attached to a structure or plant, and the structure of plant and the means of attachment thereto are suitable and of sufficient strength and stability for the purpose of safely supporting the equipment and person who could fall, and fall arrest equipment is used only where it is not reasonably practicable to use fall prevention equipment.

### 5.34 Temporary works

A contractor must appoint a temporary works designer in writing to design, inspect and approve the erected temporary works on site before use.

A contractor must ensure that all temporary works operations are carried out under the supervision of a competent person who has been appointed in writing for that purpose.

A contractor must ensure that-

- all temporary works structures are adequately erected, supported, braced and maintained by a competent person so that they are capable of supporting all anticipated vertical and lateral loads that may be applied to them, and that no loads are imposed onto the structure that the structure is not designed to withstand;
- all temporary works structures are done with close reference to the structural design drawings, and where any uncertainty exists the structural designer should be consulted;
- detailed activity specific drawings pertaining to the design of temporary works structures are kept on the site and are available on request to an inspector, other contractors, the client, the client's agent or any employee;
- all persons required to erect, move or dismantle temporary works structures are provided with adequate training and instruction to perform those operations safely;
- all equipment used in temporary works structure are carefully examined and checked for suitability by a competent person, before being used;
- all temporary works structures are inspected by a competent person immediately before, during and after the placement of concrete, after inclement weather or any other imposed load and at least on a daily basis until the temporary works structure has been removed and the results have been recorded in a register and made available on site;
- no person may cast concrete, until authorization in writing has been given by the competent person contemplated above;
- if, after erection, any temporary works structure is found to be damaged or weakened to such a degree that its integrity is affected, it is safely removed or reinforced immediately;
- adequate precautionary measures are taken in order to-
- secure any deck panels against displacement; and
- prevent any person from slipping on temporary works due to the application of release agents;
- as far as is reasonably practicable, the health of any person is not affected through the use of solvents or oils or any other similar substances;
- upon casting concrete, the temporary works structure is left in place until the concrete has acquired sufficient strength to safely support its own weight and any imposed load, and is not removed until authorization in writing has been given by the competent person
- the foundation conditions are suitable to withstand the loads caused by the temporary works structure and any imposed load in accordance with the temporary works design.
- provision is made for safe access by means of secured ladders or staircases for all work to be carried out above the foundation bearing level;

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- a temporary works drawing or any other relevant document includes construction sequences and methods statement;
- the temporary works designer has been issued with the latest revision of any relevant structural design drawing;
- a temporary works design and drawing is used only for its intended purpose and for a specific portion of a construction site; and
- the temporary works drawings are approved by the temporary works designer before the erection of any temporary works.

No contractor may use a temporary works design and drawing for any work other than its intended purpose.

### 5.35 Excavation

A contractor must-

- ensure that all excavation work is carried out under the supervision of a competent person who has been appointed in writing for that purpose; and
- Evaluate, as far as is reasonably practicable, the stability of the ground before excavation work begins.

A contractor who performs excavation work-

- must take reasonable and sufficient steps in order to prevent, as far as is reasonably practicable, any person from being buried or trapped by a fall or dislodgement of material in an excavation;
- may not require or permit any person to work in an excavation which has not been adequately shored or braced: Provided that shoring and bracing may not be necessary where-
- the sides of the excavation are sloped to at least the maximum angle of repose measured relative to the horizontal plane; or
- such an excavation is in stable material: Provided that-
- permission has been given in writing by the appointed competent person contemplated above upon evaluation by him or her of the site conditions; and
- where any uncertainty pertaining to the stability of the soil still exists, the decision from a professional engineer or a professional technologist competent in excavations is decisive and such a decision must be noted in writing and signed by both the competent person and the professional engineer or technologist, as the case may be;
- must take steps to ensure that the shoring or bracing contemplated above is designed and constructed in a manner that renders it strong enough to support the sides of the excavation in question;

- must ensure that no load, material, plant or equipment is placed or moved near the edge of any excavation where it may cause its collapse and consequently endangers the safety of any person, unless precautions such as the provision of sufficient and suitable shoring or bracing are taken to prevent the sides from collapsing;
- must ensure that where the stability of an adjoining building, structure or road is likely to be affected by the making of an excavation, steps are taken to ensure the stability of such building, structure or road and the safety of persons;
- must cause convenient and safe means of access to be provided to every excavation in which persons are required to work, and such access may not be further than six meters from the point where any worker within the excavation is working;
- must ascertain, as far as is reasonably practicable, the location and nature of electricity, water, gas or other similar services which may in any way be affected by the work to be performed, and must before the commencement of excavation work that may affect any such service, take the steps that are necessary to render the circumstances safe for all persons involved;
  - must ensure that every excavation, including all bracing and shoring, is inspected-
  - daily, prior to the commencement of each shift;
  - after every blasting operation;
  - after an unexpected fall of ground;
  - after damage to supports; and
  - after rain,

by the competent person, in order to ensure the safety of the excavation and of persons, and those results must be recorded in a register kept on site and made available on request to an inspector, the client, the client's agent, any other contractor or any employee;

- must cause every excavation which is accessible to the public or which is adjacent to public roads or thoroughfares, or whereby the safety of persons may be endangered, to be –
  - adequately protected by a barrier or fence of at least one metre in height and as close to the excavation as is practicable; and
  - provided with warning illuminates or any other clearly visible boundary indicators at night or when visibility is poor, or have resort to any other suitable and sufficient precautionary measure where this is not practicable;
- must ensure that all precautionary measures stipulated for confined spaces as determined in the General Safety Regulations, 2003, are complied with by any person entering any excavation;
- must, where the excavation work involves the use of explosives, appoint a competent person in the use of explosives for excavation, and must ensure that a method statement is developed by that person in accordance with the applicable explosives legislation; and

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- must cause warning signs to be positioned next to an excavation within which or where persons are working or carrying out inspections or tests.

### 5.36 Demolition Work

Not applicable on this project.

### 5.37 Tunnelling

Not applicable on this project.

### 5.38 Scaffolding

A contractor must appoint a competent person in writing who must ensure that all scaffolding work operations are carried out under his or her supervision and that all scaffold erectors, team leaders and inspectors are competent to carry out their work.

A contractor using access scaffolding must ensure that such scaffolding, when in use, complies with the safety standards incorporated for this purpose into these Regulations under section 44 of the Act.

### 5.39 Bulk mixing plant

A contractor must ensure that the operation of a bulk mixing plant is supervised by a competent person who has been appointed in writing and is –

- aware of all the dangers involved in the operation thereof; and
- conversant with the precautionary measures to be taken in the interest of health and safety.

No person supervising or operating a bulk mixing plant may authorize any other person to operate the plant, unless that person is competent to operate a bulk mixing plant.

A contractor must ensure that the placement and erection of a bulk mixing plant complies with the requirements set out by the manufacturer and that such plant is erected as designed.

A contractor must ensure that all devices to start and stop a bulk mixing plant are provided and that those devices are placed in an easily accessible position and constructed in a manner to prevent accidental starting.

A contractor must ensure that the machinery and plant selected is suitable for the mixing task and that all dangerous moving parts of a mixer are placed beyond the reach of persons by means of doors, covers or other similar means.

No person may remove or modify any guard or safety equipment relating to a bulk mixing plant, unless authorized to do so by the appointed person.

A contractor must ensure that all precautionary measures stipulated for confined spaces as determined in the General Safety Regulations, 2003, are complied with when entering any silo.

A contractor must ensure that a record is kept of all repairs or maintenance to a bulk mixing plant and that the record is available on site to an inspector, the client, the client's agent or any employee.

### 5.40 Rope Access Work

Not applicable on this project.

### 5.41 Hazardous Chemical Substances (HCS)

In addition to the requirements in the HCS Regulations, the principal contractor must provide proof in the Health and Safety Plan that:

- Material Safety Data Sheets (MSDS's) of the relevant materials / hazardous chemical substances are available prior to use by the contractor. All MSDS's shall be available for inspection by the agent at all times.
- Risk assessments are done at least once every 6 months.
- Exposure monitoring is done according to OESSM and by an Approved Inspection Authority (AIA) and that the medical surveillance programme is based on the outcomes of the exposure monitoring.
- How the relevant HCS's are being/going to be controlled by referring to:
  - Limiting the amount of HCS
  - Limiting the number of employees
  - Limiting the period of exposure
  - Substituting the HCS
  - Using engineering controls
  - Using appropriate written work procedures
- The correct PPE is being used.
- HCS are stored and transported according to SABS 072 and 0228.
- Training with regards to these regulations was given.

The Health and Safety plan should make reference to the disposal of hazardous waste on classified sites and the location thereof (where applicable).

The First Aider must be made aware of the MSDS and trained in how to treat HCS incidents appropriately.

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#### 5.42 Hazardous Biological Substances (HBS)

Because of the possible exposure of workers to raw sewage the H&S Plan shall include details of the following:

- The conducting of Risk Assessment specifically aimed at exposure to HBA which shall include the following
  - Nature and dose of HBA
  - Where HBA may be present and in what physical form
  - The nature of work or process
  - Steps in the event of failure of control measures
  - The effect of the HBA
  - The period of exposure
  - Control measures to be implemented
- Monitoring of exposure of workers shall be conducted to establish whether any worker is infected with an HBA associated with working or being exposed to raw sewage, in terms of the following:
  - By an occupational medical practitioner
  - Before entering the site to establish the workers baseline
  - During the period of the contract the risk assessment indicate possible exposure
  - After completion of the contract
- Medical surveillance should such be required after the above-mentioned by an occupational health practitioner.
- Indication on how all records of assessment, monitoring, etc. will be kept, taking into account that records have to be kept for a period of 40 years.
- How exposure to HBA is to be controlled
- The provision of personal protective equipment
- What information and training is to be provided to employees regarding the following:
  - The contents of these regulations
  - Potential risks to health
  - Control measures to be implemented
  - The correct use and maintenance of personal protective equipment
  - The results of the risk assessment.

#### 5.43 Noise Induced Hearing Loss

Where noise is identified as a hazard the requirements of the NIHL regulations must be complied with and the following must be included / referred to in the Health and Safety Plan:

- Proof of training with regards to these regulations.
- Risk assessment done within 1 month of commencement of work.

- That monitoring carried out by an AIA and done according to SABS 083.
- Medical surveillance programme established and maintained for the necessary employees.
- Control of noise by referring to:
  - Engineering methods considered
  - Admin control (number of employees exposed) considered
  - Personal protective equipment considered/decided on
  - Describe how records are going to be kept for 40 years.

#### 5.44 Explosives and Blasting

Not applicable on this project.

#### 5.45 Personal Protective Equipment (PPE)

The Contractor shall carry out PPE or clothing needs analysis in accordance with his risk assessment, to determine the necessary PPE or clothing to be used during construction. The Contractor shall make provision and keep adequate quantities of SABS approved PPE or clothing on site at all times.

The Contractor must ensure that personnel are trained in the correct use of PPE to be used.

The Contractor must ensure that lost, stolen, worn out or damaged PPE is replaced as required and receipt signed for by employees on site.

#### 5.46 Asbestos

Not applicable on this project.

Should asbestos be identified as a hazard whilst work is carried out, the following must be included in the health and safety plan:

- Notification to the Provincial Director in writing, prior to commencement of asbestos work.
- Proof of a structured medical surveillance programme, drawn up by an occupational medicine practitioner.
- Proof that an occupational health practitioner carried out an initial health evaluation within 14 days after commencement of work.
- Copies of the results of all assessments, exposure monitoring and the written inventory of the location of the asbestos at the workplace.
- Only proof that medical surveillance has been conducted and not the actual records itself since these areas of a confidential nature.
- How records are going to be kept safe for the stipulated period of 40 years.

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- Proof that asbestos demolition (if applicable) is going to be done by a registered asbestos contractor and provide proof that a plan of work for such demolition is submitted to an Approved Asbestos Inspection Authority 30 days prior to commencement of the demolition.
- Provide proof that the plan of work was approved by the asbestos AIA and submitted to the provincial director 14 days prior to commencement of demolition work together with the approved standardised procedures for demolition work

#### 5.47 Lead

Not applicable on this project.

Should lead be identified as a hazard whilst work is carried out, the following must be included in the health and safety plan:

- Proof that an occupational health practitioner carried out an initial health evaluation within 14 days after commencement of work.
- Copies of the results of all assessments, exposure monitoring and the written inventory of the location of the lead at the workplace.
- Only proof that medical surveillance has been conducted and not the actual records since these are of a confidential nature.
- How records are going to be kept safe for the stipulated period of 40 years.

#### 5.48 Pressure Vessels (Including Gas Bottles)

Not applicable on this project.

#### 5.49 Fire Extinguishers and Fire Fighting Equipment

The Contractor shall provide adequate, regularly serviced fire extinguishers located at strategic points on site. The Contractor shall keep spare serviced portable fire extinguishers. The Contractor shall have adequate persons trained or competent to use the Fire Fighting Equipment.

Safety signage shall be posted up in all areas where fire extinguishers are located.

#### 5.50 Lifting Machinery and Tackle

Not applicable on this project.

#### 5.51 Ladders and Ladder work

The Contractor shall ensure that all ladders are numbered and inspected regularly keeping record of inspections. It should be noted that Aluminium ladders are preferred to wooden ladders.

#### 5.52 General Machinery

The Contractor shall comply with the Driven Machinery Regulations, which include inspecting machinery regularly, appointing a competent person to inspect and ensure maintenance, issuing PPE or clothing and training those that use machinery and enforce compliance.

#### 5.53 Portable Electrical Tools

The Contractor shall ensure that use and storage of all explosive actuating fastening devices and portable electrical tools are in compliance with relevant legislation.

The Contractor shall consider that:

- A competent person undertakes routine inspections;
- Only authorised persons use the tools;
- There are safe working procedures applied;
- Awareness training is carried out and compliance is enforced at all times; and
- PPE and clothing is provided and maintained.

#### 5.54 High Voltage Electrical Equipment

The Contractor shall ensure that, where the work is under, on or near high-voltage electrical equipment the Electrical Installation Regulations, together with safety instructions (Regulations of the Owner of the Equipment) are complied with. Such equipment includes:

- Eskom and the Local Authority equipment
- The Contractor's own power supply; and
- Electrical equipment being installed but not yet taken over from a Contractor by The Client.

#### 5.55 Public Health and Safety

The Contractor shall ensure that each person working on or visiting a site, and the surrounding community, shall be made aware of the dangers likely to arise from on-site activities and the precautions to be observed to avoid or minimize those dangers. Appropriate health and safety signage shall be posted at all times.

#### 5.56 Night Work

Not applicable on this project.

#### 5.57 Lighting

Where poor or lack of illumination is identified as a hazard the lighting regulations must be complied with and the following must be included in the H&S Plan:

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- How lighting will be ensured/ provided where daylight is not sufficient and /or after hours are worked.
- Planned maintenance programme for replacing luminaries.
- Proof of illumination levels of artificial illumination equipment.

#### 5.58 Environmental Conditions and Flora and Fauna

The Contractor must be mindful of adverse weather conditions upon the health and safety of the workforce. This includes inclement weather, strong wind, heat stress, extreme cold, etc. The Contractor's risk assessment process must take into account the risks associated with such weather conditions. The same is true when working in an environment where there is a risk to employees' health and safety from presence of poisonous flora, or wildlife (including bees, snakes, etc.). The Contractor's risk assessment process must take these risks into account.

#### 5.59 Occupational Health

Exposure of workers to occupational health hazards and risks are very common in any work environment, especially in construction. Occupational health hazards and risks exposure is a major problem and all Contractors are to ensure that proper health and hygiene measures are put in place to prevent exposure to these hazards and risks.

The occupational hazards and risks may enter the body in three ways:

- Inhalation through breathing e.g. cement dust;
- Ingestion through swallowing maybe through food intake;

- Absorption through the skin (pores) e.g. painting or use of thinners.

The contractor is required to ensure that all his personnel are medically fit prior to being allowed onto the work site.

All Contractors should ensure that Occupational Hygiene surveys are conducted as per the Occupational Health and Safety Act to ensure employees are not exposed to hazards. Risk Assessments should identify areas where surveys are to be conducted.

#### 5.60 Suspended Platforms

Not applicable on this project.

#### 5.61 Material Hoists

Not applicable on this project.

#### 5.62 Explosive Actuated Fastening Device

Not applicable on this project

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**6. TRAINING, INSPECTIONS AND RECORDS**

The Contractor must be aware of the following additional requirements:

What	When	Output
Awareness training (Toolbox Talks)	At least fortnightly and before hazardous work is carried out	Attendance Register
Health and Safety Committee Meetings	Monthly	Minutes signed by employer
Health and Safety Reports	Monthly	Report covering:  a) Incidents / Accidents and investigation b) Non conformance c) Health and Safety Training d) HIRA Updates e) Internal & External Audits
General Inspections	As per Health and Safety Specifications & OHSA	Report of Health and Safety Specifications and OHSA compliance: a) Scaffolding b) Lifting Machinery c) Excavations d) Construction vehicle
General Inspections	Monthly	Covering: a) Fire Fighting Equipment b) Portable Electrical Equipment c) Hand Tools d) Ladders
Record Keeping	On-going	Covering: a) General Complaints b) Fines c) General Incidents d) MSDS e) Surveillance Medicals f) Inspection Registers g) Department of Labour Notices

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**ANNEXURE A**

The contractor shall submit the info below in an Annexure 2 prior to construction commencement.

Item No.	Health and Safety Specification Requirement	OHSA Requirement	Submission date
1	Notification of Intention to Commence Construction	Construction Regulation 2014	At least 7 days before commencement on site
2	Construction Work Permit	Construction Regulation 2014	At least 30 days prior to project commencement
3	Assignment of Responsible Person to Manage Building Work Via Health and Safety Organogram	Construction Regulation 2014	Before commencement on site
4	Competency for Health and Safety Positions	Client / Client Agent requirement	Before commencement on site
5	Letter of Good Standing	Compensation of Occupational Injuries & Disease Act (COIDA) 130 of 1993	Before commencement on site
6	Occupational Health and Safety Policy	Client / Client Agent requirement	Before commencement on site
7	Risk Assessment, Safety Plan, Demolition Method Statement	Client / Client Agent requirement	Before commencement on site

**ANNEXURE B: APPOINTMENTS**

The Contractor shall make the following appointments:

No	Description	No	Description
1	Chief Executive Officer (OSHACT 16(1))	17	Material Hoist Inspector (CR19(8)(a))
2	Contract Director/Manager (OSHACT 16(2))	18	Material Hoist Operator (CR19(6))
3	Construction Manager (CR 8(1))	19	Bulk Mixing Plant Supervisor (CR20(1))
4	Construction Supervisor (CR 8(7))	20	Bulk Mixing Plant Operator (CR20(2))
5	Assistant Construction Supervisor (CR 8(8))	21	Controller of Explosive Actuated Fastening Devices (CR21(2)(g)(1))
6	Construction Safety Officer (CR 8(5))	22	Construction Vehicle and Mobile Plant Operator (CR23(1)(d)(i))
7	Construction risk assessor (CR 9(1))	23	Controller of Temporary Electrical Installations (CR24('c))
8	Fall Protection Competent Person (CR 10(1))	24	Stacking Supervisor (CR28(a))
9	Traffic Safety Officer	25	Fire Extinguishing Equipment Inspector (CR29(h))
10	Safety Representative (where > 20 employees on site)	26	Fire Fighters (CR29(i))
11	Temporary work Designer (CR 12(1))	27	First Aider (GSR 3)
12	Temporary work Supervisor (CR12(2))	28	Fall Protection Plan Developer (CR 10(1)(a))
13	Excavation Supervisor (CR13(1)(a))	29	Incident Investigator (OSHACT 9(2))
14	Demolition Supervisor (CR14(1))	30	Competent Person – Confined Spaces (GAR 5(1))
15	Scaffold Supervisor (CR16(1))	31	Health and Safety technical Committee (CR 31)
16	Suspended Platform Supervisor (CR17(1))	32	General Machinery Competent Person (GMR 2)

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**7. PROJECT DETAILS**

PROJECT DIRECTORY:		
Client	34 Neilersdrift, KEIMOES, 8860	Contact: Mr Marius Reinhardt
	Contact: Mr Marius Reinhardt	email: <a href="mailto:marius.reinhardt@sanparks.org">marius.reinhardt@sanparks.org</a>
Client Agent	Contact: Mr Niel Maritz	Tel: 054 3376600 od 082 7835951
	<b>BVI Consulting Engineers</b> 55 Bult Street, UPINGTON	email: <a href="mailto:nielm@bvinc.co.za">nielm@bvinc.co.za</a>

PROJECT DETAILS:
<b>Description of Works</b>
<b>UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND WASTE WATER TREATMENT WORKS, Mokala National Park, CONTRACT NO: CI-VB-0031</b>
<b>Anticipated Construction Duration</b>
8 Months

EXISTING ENVIRONMENT:
<b>Hazards particular to this project by virtue of location:</b>
<b>Wild Animals:</b> The site is located in the Arid Region. A lookout for snakes is going to be required to protect the workers.
<b>Members of public and children:</b> All necessary steps to be taken to protect them from any dangers associated with the construction works being undertaken.
<b>Public Roads:</b> Use of roads network to be carefully planned to accommodate public, tenants and traffic
<b>Overhead, Above Ground and Underground Services crossing the site:</b>
Overhead: Applicable
Underground: Not Applicable
Ground Level: Not Applicable
Services Drawings available: Not Applicable
Way leaves required: Not Applicable
Permits required: Applicable
Isolation required: Not Applicable
<b>Existing structures and surrounding land use (with a significant impact on Health and Safety):</b>
A portion of the site is adjacent and on to a very busy roads
<b>Existing ground conditions and ground survey report:</b>
There is no Geo Tech report available.

<b>Existing Traffic Systems:</b>
Conditions: Gravel/Tar Roads
Restrictions to access: Applicable
Speed restrictions: Normal road restrictions: 40km/h

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**PROJECT HEALTH AND SAFETY REQUIREMENTS:****Significant health and safety hazards identified by Designer and Client Agent:**

**Accommodation of Traffic (Management Plan):** The Principal Contractor must supply a proper and comprehensive Traffic Management Plan for the various sites within this identification, i.e. the Site camp and surrounds as well as the work area and surrounds.

**Members of the Public:** The works is in a very busy area. The Principal Contractor is responsible for the safety of the workers as well as the public. The Principal Contractor will have to have sufficient warning & information signage to assist with the information to the public. The Principal Contractor will be responsible to have sufficient directional signage and to have proper road traffic management in place.

**Wild animals:** There are baboons and probably snakes roaming the area and the principal Contractor will have to ensure that they or the workers do not get killed or hurt during the construction phase.

**Normal construction hazards expected are as follow:**

Compacting and filling / Compactors Operations

Confined Spaces

Excavations

Hand Tools

Members of public

Plant / Vehicle and Equipment Operations

Road Construction

Site Establishment

Snakes

Temporary Works

Traffic Management

Transportation of workers

**NOTE: Please refer to the end of this Health and Safety Specification for the baseline risk assessment of these risks.**

**ACTIVITIES REQUIRING APPROVED METHOD STATEMENTS**

Road Traffic Management

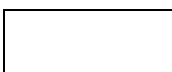
Protection of Public

**ACTIVITIES REQUIRING PERMITS**

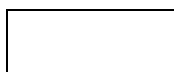
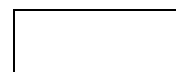
<b>Permit to Dig / Permit to Enter Excavations:</b>	Not applicable on this project
<b>Permit to Work with Electricity:</b>	Not applicable on this project
<b>Confined Space Permit:</b>	Not applicable on this project
<b>Hot Works Permit:</b>	Not applicable on this project
<b>Permit to work under Power Lines:</b>	Not applicable on this project
<b>Blasting:</b>	Not applicable on this project
<b>Temporary Works:</b>	Yes - Authorization in writing by competent person

**GENERAL ARRANGEMENTS**

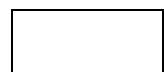
<b>Restrictions on times:</b>	Monday - Friday 08:00 to 17:00	Saturday 08:00-13:00
<b>Access to site by Construction Vehicles:</b>	Yes, principal contractor to manage	



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<b>Access to site by Construction workers &amp; Visitors:</b>	Visitors and personnel to report to site office
<b>Site camp location and set up:</b>	Restrictions/requirements, storage areas and security to be advised in consultation with principal agent
<b>Ablution and Welfare:</b>	Contractor to provide as per regulations
<b>Environmental Conditions:</b>	Contractor must take into account that the West Coast National Park is an echo sensitive conservation area and implement control measures to mitigate risk
<b>Induction Training:</b>	All workers to receive induction training prior to commencement on site. Special reference to SANParks EMP and Code of Conduct

#### PROTECTION OF SITE AGAINST UNAUTHORIZED ACCESS BY PUBLIC

**Excavation Fencing:** Note that excavations accessible to public, or adjacent to public roads / through fares, must have (1) barrier / fence of at least 1m in height, and (2) warning illuminates at night or when visibility is poor, or have other suitable precautionary measures if both of these are not practicable. The entire site is to be fenced off with ready fencing. There needs to be access control as well as security personnel on site at all times.

**Warning Notices:** Construction site, Visitors to report to the site office. Pedestrian arrow signage towards the other side of the road, Fire Extinguisher, First Aid, Emergency Assembly area and Emergency telephone numbers. Reflective vests, safety boots and dust masks signage to be displayed.

#### PERSONAL PROTECTIVE EQUIPMENT (PPE)

The Client requires the Contractor to ensure that employees (and other under his/her control) wear the following minimum PPE:

<b>Overalls:</b>	Yes, required
<b>Safety Harnesses:</b>	May be required
<b>Hard Hats:</b>	Yes, required
<b>Safety Footwear:</b>	Yes, required
<b>Reflective Vests:</b>	Yes, required
<b>Goggles / Gloves / ear and respiratory protection</b>	As per job function
<b>Specialist equipment:</b>	As per job function

#### HAZARDOUS SUBSTANCES

The following materials and substances have, or may have, to be used in the works and are identified as potentially posing special health and / or safety hazards during the project. Appropriate measures will need to be specified for their control:

Petrol	Cement
Diesel	Silicone
Bitumen	Other
Paint	

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**8. COVID-19 REGULATIONS AND PROCEDURES**

This regulation has been categorised as Disaster Management Regulations which will be continuously be reviewed as described below:

# **COVID – 19**

## **OCCUPATIONAL HEALTH AND SAFETY REGULATIONS AND PROCEDURES**

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## 8. 5.2. ENGINEERING CONTROLS

## 8. 5.3. ADMINISTRATIVE CONTROLS

## 8. 5.4. HEALTHY AND SAFE WORK PRACTICES

## 8. 5.5. PPE

## 8. 5.6. PROVISION OF SAFE TRANSPORT FOR EMPLOYEES

**8. 6. RELATED SYSTEMS DOCUMENTS****8.1 PURPOSE**

To provide guidelines and stipulate measures to be taken in order to protect the health safety of all persons and members of the public entering our work sites or are exposed to our work activities from COVID – 19 risk. These measures includes infection transmission prevention, maintaining a minimum distance between participants at all times, the provision of protective equipment and the implementation of hygiene procedures. These measures are supported by awareness campaigns such as the creation of awareness - raising posters for all participants, as well as training on additional OHS measures and fully Integrating these preventive measures into the workplace.

**8.2 APPLICATION**

This procedure applies to Environmental Programmes (EP), including all subsidiary programmes, contractor teams, operational staff and visitors to the work site. It exclude facilities.

**8.3 LEGISLATIVE REFERENCES**

Occupational Health and Safety Act, 1993 (Act 85 of 1993)

Occupational Health and Safety Act, 1993 (Act 85 of 1993): General Administrative Regulations

Occupational Health and Safety Act, 1993 (Act 85 of 1993): Hazardous Biological Agents Regulations

Government Gazette, 2020 (Gazette No. 43257 – Vol. 658): COVID - 19 Occupational Health And Safety

Measures In Workplaces – COVID -19 (C19 OHS), 2020

International Labour Organisation: Employment – Intensive Investment Programme (EIIP)

ISO 45001:2018: Operational Control and Planning Component (Clause 8.1)

ISO 9001:2008 (Clause 8.1)

ISO 14001:2004 (Clause 8.1)

**8.4 DEFINITIONS, ABBREVIATIONS AND ACRONYMS**

“**COVID - 19**” means the Novel Coronavirus (2019 - nCov) which is an infectious disease caused by a virus, which emerged during 2019 and was declared a global pandemic by the WHO during the year 2020 that has previously not been scientifically identified in humans;

“**Corrective Action**” means a reactive process used to address problems after they have occurred. Corrective

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action may be triggered by a variety of events, e.g. non-conformance to documented procedures and work instructions, unacceptable monitoring and measurement results, internal or external OHS complaints, etc.

“**HIRA**” means Hazard Identification & Risk Assessment Team;

“**Isolation**” means separating a sick individual with a contagious disease from healthy individuals without that contagious disease in such a manner as to prevent the spread of infection or contamination;

“**Medical screening**” means to detect early signs of work - related illness by administering tests to apparently healthy persons. Testing may include such tools as questionnaires, physical examinations, and medical investigations;

“**Non-conformance**” means any deviation from policies, procedures, work instructions, regulations, management system performance requirement etc. that could either directly or indirectly lead to injury, illness, disease, property damage, damage to the workplace environment, environment, or a combination of these;

“**PPE**” means personal protective equipment;

“**Quarantine**” means separating asymptomatic individuals potentially exposed to a disease from non-exposed individuals in such a manner as to prevent the possible spread of infection or contamination;

“**Risk**” means the chance or likelihood of the hazard causing harm or damage to an individual, property and/or the environment;

“**Red card offence**” means a warning action issued to individuals or operations / activity, and to alert all in the vicinity to a REAL HAZARD or danger to persons and environment;

“**Work Site/s**” shall mean any location where work is performed or a service is rendered for and have equipment or infrastructure installed, on behalf of the Department;

“**SOP**” means Standard Operating Procedure;

“**WHO**” means the World Health Organisation.

## 8.5 STANDARD PROVISION

### 8.5.1 Risk assessment

#### 8.5.1.1 Identification of exposure levels

8.5.1.2 Develop, review and update current risk assessments in respect of COVID - 19 and adapt measures required by this standard operating procedure (SOP) to your specific working condition/s and environment/s (see SHEQ/PROC 8.5.1.Risk Assessment Plan for Implementation & COVID – 19 Walk through Risk Assessment – as per Department of Health);

8.5.1.3 A systematic approach is to be followed to ensure that all significant hazards and risks are identified. This approach will include the identification of all activities, facilities, equipment, materials, substances, operations and products

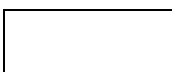
8.5.1.4 Review and update a site specific COVID -19 Hazard Identification and Risk Assessment (HIRA) for each work site, based on the Baseline HIRA as per COVID – 19 Baseline Risk Assessment);

8.5.1.5 Review, update and implement COVID -19 Safe Work Procedure (SWP) for each work site, based on recommended implementation steps in the Generic SWP COVID – 19 SWP);

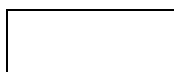
8.5.1.6 The Focal points must provide HIRA information sessions and toolbox talks Safety Toolbox talk/s; to participants everyday prior to work commence, in order for them to be familiar with COVID – 19 risks;

8.5.1.7 Evaluate and complete a project continuity risk assessment plan prior the decision on proceeding with a project/work (see SHEQ/PROC 4.4.6.1/checklist for project continuity);

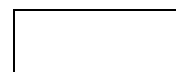
I. The observations should be discussed through social dialogue with Line function, Service Providers and Contract Teams, to assess the capacity of contractors, site supervisors and participants to



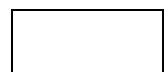
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implement these preventative measures. Consideration should be given to available resources and capacity (see SHEQ/PROC 4.4.6.1/Risk Assessment Plan – Annex 2 Responsibility for each action by stakeholders);

- II. If either contractors, site supervisors and participants are unable to meet the requirements of the measures outlined in this procedure and in the COVID – 19 HIRA, whether partially or in their entirety, the work on sites must be suspended. Project suspension may also be triggered by government restrictions or an infection rate within local communities.

8.5.1.8 Risk assessment plan must be strictly complied with through monitoring and supervision.

8.5.1.19 Non – Conformance to any requirements stipulated in this “SOP” will be treated as a red card offence. **CORRECTIVE MEASURES** will be implemented in accordance with the (see SHEQ/Sub Procedure/ Zero Tolerance – 4.5.3.1.1).

#### **8.5.1.2 Identification of “high contact” activities**

8.5.1.2.1 The transportation of participants to and from work is regarded as a “high contact” activity. To minimise the risk of transmission of COVID – 19 during this activity, the safe work practises stipulated in this procedure, under section 5.6, shall be implemented, monitored and adhered with at all times;

8.5.1.2.2 The site Emergency Preparedness/Response Plan (see PROC 4.4.7) must include and clearly indicate:

- I. register of participants contacts on a daily attendance for the purposes of contact tracing (reduce the spread to other unaffected participants) - (see SHEQ/PROC 4.4.6.1/register of participants contacts);
- II. directory of COVID - 19 hotlines / task force, communication channels on site in the event of COVID - 19 situation and responsibilities, and location of the nearest available and competent medical facilities with sufficient staff;
- III. mitigating measures to prevent the spread of the virus within the community, including health surveillance;
- IV. make arrangements for isolation of any person who develops COVID - 19 symptoms at work, and the area should be accessible only by public health authorities or those with appropriate protective gear;
- V. clarify situations that should trigger suspension or closing of works, agreed by relevant stakeholders;
- VI. potential risks and a contingency plan for the project work if the spread of COVID - 19 increases to the extent that implementation is no longer possible (Include a “force majeure” clause in the contract of agreement).

#### **8.5.1.2. Identification of vulnerable participants and special measures for their protection including protection against unfair discrimination or victimisation,**

8.5.1.3. All participants must undergo pre, periodic and exit medical examinations, at approved Medical Practitioner, and be declared fit to perform their duties. A certificate of fitness must be available on site of all participants;

8.5.1.4. Participant with underlying medical conditions e.g. diabetes, asthma, cardiovascular disease, chronic respiratory disease, chronic renal disease, pregnant workers, HIV diagnosed workers who are virally unsuppressed etc., must be indicate this during screening process. Any medical conditions disclosed must be treated with confidentiality;

8.5.1.5. Focal points must encourage a healthy lifestyle amongst participants e.g. to take prescribed medication daily;

8.5.1.6. If it comes to the attention of the Focal point, that a participant/s with underlying medical conditions refuse to adhere to taking their prescribed medication, they should not be allowed to continue work;

8.5.1.7. Where persons with underlying medical conditions so signs of ill health, they should not be allowed to work and requested to remain home until his/her condition improves;

8.5.1.8. ensure that the participant is not discriminated against on grounds of having tested positive for COVID-19 in terms of section 6 of the Employment Equity Act, 1998 (Act No.55 of 1998).

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## 8.5.2 Engineering controls

### 8.5.2.1 Ventilation

8.5.2.1.1 Ensure vehicles are adequately ventilated. Keep canopy windows open at all times. Preferable, canopies should be replaced with adequate railings to allow for better ventilation to reduce "confine space" risk;

### 8.5.2.2 Physical barriers

8.5.2.2.1 Transportation is regarded as one of the "high contact" activities, which increases the risk of COVID – 19 transmission. "High contact" areas qualifies for the establishment of physical barriers between participants to reduce this risk;

8.5.2.2.2 Due to the nature of the activity, the use of personal protective equipment (PPE) when seated inside a vehicle will apply. This will serve as a physical barrier between participants. The PPE during transportation shall include:

- 1) face shield;
- 2) face mask (3 x material layer washable face mask)
- 3) safety gloves (recommended);
- 4) long sleeve overalls.

## 8.5.3 Administrative controls

### 8.5.3.1 Screening/ reporting of symptoms/ sick leave

8.5.3.1.1. Project Coordinator/Responsible Manager, must facilitate for Contractors and participants to undergo screening, and where necessitated, for testing (COVID – 19) at approved Department of Health local Test Centers. A register shall be kept on site of all persons screened and/or tested (see SHEQ/PROC 4.4.6.1/register of participants screened and/or tested);

8.5.3.1.2. Early detection and isolation of possible infectious participants is key. A "designated focal point" must complete a health check (screening), using the "self-assessment questionnaire" and measure body temperatures for fever symptoms on all contractors, drivers, operators and participants at the time they report for duty and/or prior to them being allowed access to a vehicle or work site. Non - contact thermometers should be used to measure body temperature. Screening will be accompanied with hand sanitization;

8.5.3.1.3. If a participant present with symptoms (sudden onset of at least one of the following: cough, sore throat, fatigue, shortness of breath, **temperature of 37.3 degrees Celsius** or higher) when reporting for duty, he/she must not be permitted to enter the vehicle or work site;

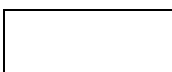
8.5.3.1.4. Where possible, establish a suitable central point for contractors and participants to meet for screening and hand sanitization. Where this is not possible, measures must be put in place to ensure all persons entering the site is screened and their hand sanitized before engaging with other team members;

8.5.3.1.5. Internal health surveillance for COVID - 19 shall be implemented by a responsible Focal point, which will include:

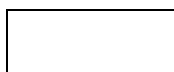
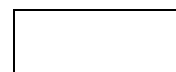
- I. participants must monitor themselves for fever by taking their temperature twice a day and symptoms of COVID - 19 (Method to verify a rise in temperature is as follows; use the back of your hand and place it on your forehead, if the temperature is higher than normal then there might be a rise in temperature);
- II. at end of a shift, Focal point must check with participants whether they have experienced sudden onset of any COVID - 19 symptoms. Should they report any symptoms, s/he, they must be isolated;

### 8.5.3.1 If a participant present with symptoms when reporting for duty, or during working hours, immediately:

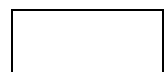
- I. isolate the participant, provide the participant with a FFP1 surgical mask and arrange for the participant to be transported in a manner that does not place other participants or members of the public at risk, either to be self - isolated or for a medical examination or testing; and
- II. assess the risk of transmission, disinfect the area and the participant work area;



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- III. refer the participant who may be at risk for screening and take any other appropriate measure to prevent possible transmission;
- IV. ensure that the participant is tested or referred to an identified testing site;
- V. alternatively refer him / her to nearest medical institution dealing with COVID - 19 cases. Call the institution ahead of the visit and inform them of the symptoms.
- VI. place participants on paid sick leave in terms of section 22 of the BCEA; or
- VII. if the participants sick leave entitlement under the section is exhausted, make application for an illness benefit in terms of clause 4 of the Directive issued on 25 March 2020 on the COVID-19 Temporary Employer Relief Scheme under regulation 10(8) of the Regulations promulgated in terms of section 27(2) of the Disaster Management Act;

#### **Minimising contact**

8.5.3.2 **Social distancing** - Transmission of COVID-19 from one person to another is through respiratory droplets (e.g. sneezing, coughing, talking etc.) or physical contact. The risk of transmission must be reduced by implementing the following:

- I. keep a distance of 2 meters between participants;
- II. avoid unnecessary social contact;
- III. contractor must make extra efforts to allocate participants in a manner that allows them to keep a safe distance of 2 meters from each other, with due consideration of productivity. Therefore, it is suggested that group work is avoided and instead each participant is given individual work tasks to secure sufficient spacing;
- IV. hand shaking and other ways of physical greetings must be avoided;
- V. **camping**: Contractors should take necessary measures, in consultation with the responsible managers, for physical planning of the camp to accommodate the requirements for social distancing and sanitation measures, including the provision of water facilities, crowd management and prevention of large gatherings, with clear upper limits on the number of people allowed at a time in each facility;
- VI. a separate living area should be allotted if a participant develops a mild symptom, and the area should be accessible only by public health authorities or those with appropriate protective gears;
- VII. social distancing measures must be implemented through supervision both in the work site and in the common areas outside the immediate work site through queue control or within the workplace such as canteens and toilets. These measures may include dividing the workforce into groups or staggering break-times to avoid the concentration of participants in common areas.

8.5.3.3 Ensure only authorized persons enter the work site and storeroom areas. Place "no unauthorised entry" signs on doors leading to storerooms;

8.5.3.4 Access by third parties to project sites, as well as physical distance between participants should be strictly monitored by the focal points, in order to avoid the risks of contagion;

#### **Rotation and shift work**

8.5.3.5 Consider introducing working shifts, or time lags to reduce concentrations of participants in the same space, when applicable and where possible;

#### **Work-at-home strategies**

8.5.3.6 If a participant develops a mild symptom similar to that of COVID - 19, the participant should immediately be requested to self-quarantine and stay at home for at least 14 days, and such cases should be reported to health authorities immediately. If a participant develops a serious symptom such as difficulties in breathing or high fever, responsible managers/contractor should immediately contact the nearest designated medical facility for testing (if possible) and arrange logistics. Care should be taken to ensure that risk of contact with other people is minimized as the participant is in transit to home;

8.5.3.7 A person having had face-to-face contact ( $\leq 2$  meters) or was in a closed environment with a COVID - 19 case must go into isolation; this includes, amongst others, all persons living in the same household as a COVID - 19 and, people working closely in the same environment;

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8.5.3.8 Participant/s with suspected COVID - 19 infection with mild symptoms and no underlying or immunocompromising conditions may be cared for / isolated in the home environment;

**Communication and information strategies**

8.5.3.9 Regional OHS Officers, Project Coordinators/ Responsible Managers and Contractors must provide clear and unequivocal messages focusing on what people should do to reduce the risk, or which actions to take if they think they may have COVID - 19. For this purpose, it is essential that awareness-raising posters are displayed throughout the site, or handouts for stakeholders with necessary information, and ideally shared through SNS (Social Network Services) for a wider audience. Awareness raising material may be obtained from your central or local authorities (either general or sector-specific ones).

**Role of health and safety committees and representatives**

8.5.3.10 Project Coordinators/Responsible Managers and Contractors, in consultation with H&S representatives/Focal points, must ensure the risk exposure to COVID - 19 form part of the monthly OHS meeting agenda;

8.5.3.11 Incidents reports relating to COVID – 19 must be discussed, reviewed and corrective measures proposed at the monthly OHS meeting to ensure continual improvement. (see SHEQ/PROC 4.5.3.1/Incident Investigation);

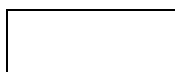
8.5.3.12 Incidents mentioned above must be reported to the EP National OHS meeting (see SHEQ/PROC 4.5.3.1/Incident Investigation);

8.5.3.13 COVID – 19 risks, which cannot be managed at project and/or area level must be escalated to the EP National OHS Committee;

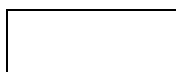
8.5.3.14 Project Coordinator/Responsible Manager, with the assistance of Regional OHS officers, must facilitate the establishment of a team with appointed Focal points for COVID - 19 responses.

- I. team with Focal points should consist of different stakeholders including contractor(s), site supervisor(s), and participant H&S representative(s) with at least one female representative and/or a representative with a disability, if possible.
- II. in cases where a site OHS officer is in place, s/he should take the leading role for the team;
- III. each Focal point shall share and undertake the responsibilities outlined in the attached guideline (*a summary of responsibilities is in the Annex 3 of the guidance*);
- IV. project Coordinator/ Responsible Manager shall instruct and train each focal point to execute their respective roles, with the support of public health authorities when feasible;
- V. a Focal point should hold at least one information update session on the status of COVID - 19 at a specific time during the day;
- VI. a Focal point should hold at least one information update session on the awareness raising material as well as internal "safety toolbox talks" at a specific time during the day;
- VII. the Focal point should also continuously monitor other symptoms such as respiratory symptoms or difficulties in breathing, and ensure that participants are not exposed to potential risks (e.g. travel, contact with sick people, participation in large gatherings);
- VIII. a Focal point should regularly remind and inform participants and contractors of the importance of thoroughly washing their hands with running water and soap for at least 20-30 seconds (40-60 seconds when hands are visibly dirty) at regular intervals. A focal point should also regularly advise participants and contractors to avoid touching eyes, nose, and mouth with unwashed hands;
- IX. focal points must develop suitable safe procedures for the disposal of possibly infected solid wastes (e.g. tissues and other used cleaning consumables and materials) to eliminate these from becoming a potential hazard. Sharp objects must be used with caution to avoid cuts;
- X. early detection is key. A "designated focal point" must complete a health check, using the "checklist for Identification of suspected COVID - 19 case" and measure body temperatures for fever symptoms on all contractors, drivers, operators and participants prior to them getting into a vehicle or being allowed on site. Non-contact thermometers should be used to measure body temperature;

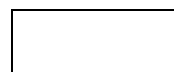
8.5.3.15 Regional OHS Officers, Project Coordinators/Responsible Managers and Contractors, in consultation with H&S representatives, should engage government authorities, to reduce the risk of exposure to COVID - 19 at the work place;



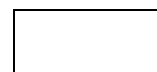
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### **Education and training**

- 8.5.3.16 Train all participants and Focal Points on the effective management and implementation of the OHS Plan and SWP for COVID - 19;
- 8.5.3.17 Training attendees must be screened prior to them being allowed access to the venue;
- 8.5.3.18 Training attendees who have been in close contact with a probable/confirmed COVID - 19 case, attended a funeral/ event or visited an outlet which was later confirmed to have an outbreak or people testing positive must declare it and not be allowed to attend the training session (see SHEQ/PROC 4.4.6.1/register of participants contacts);
- 8.5.3.19 A participant in training and/or meetings (OHS meetings) might be infected, and unknowingly expose others to the virus. Therefore, the organizer of such training and/or meetings must consult central and local government authorities to obtain reliable information on the infection rate of COVID - 19 in the area where the training and/or meeting is expected to be held, and verify the information with public health authorities. When the training and /or meetings takes place, the organizer shall:
- I. abide by the number of participants allowed in a place;
  - II. arrange the seating to ensure that there is sufficient space between participants;
  - III. and ventilate the room (e.g. opening windows) in case the training and /or meeting takes place inside a building;
  - IV. any information pertaining to the training and/or meeting arrangement should be recorded for emergency purposes to be shared with public health authorities;
  - V. in addition, alternative options such as online meetings and/or training for awareness-raising session when a large gathering is not feasible should be considered, as well as technical training in smaller groups through mobile training facilities.

### **Reporting of incidents for regulatory purposes**

- 8.5.3.20 Participants must be informed to alert their contractor or Focal point immediately, if they suspect they have been exposed to COVID – 19 (symptoms: body aches, loss of smell or loss of taste, nausea, vomiting, diarrhoea, fatigue, weakness or tiredness);
- 8.5.3.21 If a participant is diagnosed with COVID – 19, the Responsible Manager must investigate the cause including any control failure and review its risk assessment to ensure that the necessary controls and PPE requirements are in place;
- 8.5.3.22 An incident investigation reports shall be completed, indicating all possible causes and corrective actions taken or proposed. Incident reports shall be submitted to the relevant OHS Committees as well as the office of the DD: Health and Safety (see SHEQ/PROC 4.5.3.1/Incident Investigation);.
- 8.5.3.23 Service Providers/Contractors must **register with the Compensation Fund and be in possession of a "Good Standing" certificate**. Alternatively, the Service Providers/Contractors must have Health Insurance, which provides health cover equivalent to that offered by the Compensation Fund;
- 8.5.3.24 If there is evidence that the worker contracted COVID-19 as a result of occupational exposure, lodge a claim for compensation in terms of the Compensation for Occupational Injuries and Diseases Act, 1993 (Act No. 130 of 1993) in accordance with Notice 193 published on 3 March 2020.
- 8.5.3.25 Reporting for purposes of public health, contact tracing, screening, testing and surveillance;
- 8.5.3.26 If a participant is diagnosed with COVID – 19, the Responsible Manager shall inform the Department of Health and the Department of Employment and Labour.

### **8.5.4 Healthy and safe work practices**

#### **8.5.4.1 Disinfectants, sanitisers and personal hygiene**

- 8.5.4.1.1 Preventative supplies shall be included in the Bill of Quantities (BoQ) for contractors to pre – procure and enforce the provision. Supplies items shall be in sufficient quantities based on the number of participants and duration of the contract and shall include;

#### **8.5.4.1.2 Hands must be kept clean.** Hands must be sanitized / washed with soap and water as follows:

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- ✓ hand must be sanitized:
  - 1) before entering a vehicle or work site.
- ✓ Alternatively, hands may be washed with water and soap (for 20 seconds) where possible;
- ✓ during operations hands must be wash with soup and water,
  - 2) before and after eating,
  - 3) before and after treating a cut or wound,
  - 4) after using toilet,
  - 5) after using tools,
  - 6) after blowing nose, coughing, or sneezing,
  - 7) after touching an animal, animal feed, or animal waste,
  - 8) after touching waste and
  - 9) after being out in the public. *Refrain from using hand sanitizers during operation due its flammable nature;*
- ✓ remove gloves and wash hands with soap and water,
  - 1) before eating,
  - 2) before treating a cut or wound,
  - 3) before touching your face;
- ✓ mouth must be covered with a tissue paper when coughing and sneezing. Once used, throw the tissue away in a closed bag or container;
- ✓ avoid touching your face, eyes, nose, and mouth with unwashed hands at all times.

#### Other

8.5.4.1.3 In areas where centralized safe water supplies are not available, basic water treatment technologies such as boiling or appropriate water filtration/purification equipment must be considered;

- I. separate cups and water bottles for drinking water should also be prepared for each participant, and these items should be washed thoroughly after use. Clean all utensils before eating;
- II. replace existing water containers, with water containers fitted with a tap. Reasons are:
  - ✓ less surface areas will be touched;
  - ✓ sealed water containers poses less risk of water contamination vs opening a container to pour water;
  - ✓ taps allow for easy rinsing with clean running water.
- III. Water containers must be placed as follows:
  - ✓ 1 x 10L hand washing container with tap and a 1 x sanitizer must be located within 5m of toilets. Where portable toilets are used, the seat must be sanitized after each use;
  - ✓ 1 x 10L hand wash container with tap must be located at the working area to wash your hands when required;
  - ✓ 1 x 25L hand wash container with tap to be located at the eating/resting area for hand washing and drinking water.
  - ✓ 1 x 25L container to be kept on site for access water requirements.
- IV. paper towels must be provided to dry hands after washing – the use of fabric toweling is prohibited;

8.5.4.1.4 **Avoid sharing PPE, tools and equipment.** Where the sharing of tools and equipment are unavoidable, hands must be washed before and after using shared tools and equipment;

8.5.4.1.5 All surfaces of PPE, hand tools and equipment that are directly touched by multiple participants should be wiped down and/or washed with water and detergents/ jik, before work begins, regularly during the working period and at the end of every day and stored in a safe location.

- These include safety helmets and boots, visibility vests, gloves, goggles, and ear muffs/plugs, knapsacks, containers, storage containers, toolboxes, vehicle door handles among others.
- Medical reusable / 3 x material layer reusable masks must be washed with water and soap every day after work is complete.
- The tools and equipment registers can be utilized to monitor and record the washing processes Any waste of consumable products should be disposed of in designated disposal bags;

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- Tools and equipment must be washed with a brush, water and detergents starting from the top, working towards the bottom. Do not use disinfectant on tools and equipment as it is not effective when exposed to dirt.
- Domestic safety gloves must be worn during the washing process to protect the skin from hazardous chemical substances;
- Cleaning products and disinfectants that are environmentally preferable and has a lesser or reduced effect on human health must be used on for cleaning tools and equipment – select products with Safer Choice, Green Seal, Ecology and Design for the Environment labels);
- Used water for washing should not be disposed of on site. It must be put in a sealed container and disposed of in approved municipal drainage systems;
- A Material Safety Data Sheet (MSDS) must be available for all disinfectants and detergents, and participants must be trained on the risk associated with and the correct use of these;
- Do not under any circumstances share phones, combs, food, drink, eating utensils; clothing, PPE, books and blankets;
- Clean your electronic devices (phones, tablets, laptops, keyboards) with approved wipes or cleaning products;

#### 8.5.4.1.6 When administering a first aid case, the first aider must:

- I. wash/or sanitize hands before and after administering the first aid;
- II. the patient must wash hands as well in case they touch the first aider;
- III. the first aider must use latex gloves and dispose them in a correct and safe manner;
- IV. face mask must be worn at all times by both the first aider and the patient during this process;
- V. CPR should be administered as per normal using the mouthpiece;
- VI. all First Aid boxes must have FFP1 medical surgical masks available that are to be used when a participant shows symptoms associated with COVID-19.

#### 8.5.4.1.7 All participants returning to work after isolation or quarantine period, should follow general work restrictions that include:

- I. undergo medical evaluation by a Health Practitioner to confirm they are fit to work;
- II. wear a face mask at all times while at work;
- III. implement social distancing measures as appropriate;
- IV. adherence to hand hygiene, respiratory hygiene, and cough etiquette;
- V. continued self-monitoring for symptoms;
- VI. seek medical re - evaluation if respiratory symptoms recur or worse.

#### 8.5.5 PPE

In addition to the existing prescribed **PPE requirements**, contractors and participants must be issued with:

- 8.5.5.1 a face mask (3 x material layer washable face mask - an issue of a minimum of 2 masks per contractor and per participant);
- 8.5.5.2 a pair of working leather gloves;
- 8.5.5.3 a face shield (an issue of a minimum of 2 face shields per contractor and per participant).

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### **Other requirements**

- 8.5.5.1. Face mask (3 x material layer washable face mask) must be worn at all times, unless replaced with other respiratory equipment required by existing HIRA e.g. dust masks and HCS respirators with filters. The required HCS respirators and dust mask must be worn and should not be substituted with the (3 x material layer washable face mask);
- 8.5.5.2. Face mask (3 x material layer washable face mask) and face shield must be worn at all times during transport;
- 8.5.5.3. Proof of PPE issue must be recorded in the PPE issue register;
- 8.5.5.4. Additional 10 face masks (3 x material layer washable face mask) must be kept on site as replacements in the event of masks becoming wet, soiled or damaged;
- 8.5.5.5. 10 face masks (FFP1) must be kept on site. Possibly infected participants must be isolated and provided with a face mask (FFP1);
- 8.5.5.6. Contractors and participants must be informed, instructed and trained on the correct use of face masks / shields;
- 8.5.5.7. Focal points must ensure that participants masks are clean and dry when they report for duty;
- 8.5.5.8. First aiders must be provided with PPE:
- 1) Safety shield;
  - 2) Face mask (FFP1) - an issue of a minimum of 2 masks);
  - 3) Non - sterile medical gloves;
  - 4) Long sleeve overalls.

### **8.5.6. Provision of safe transport for employees**

#### **8.5.6.1. Personal hygiene**

- 8.5.6.2. Where possible, request and allow participants to walk to the work site;
- 8.5.6.3. Where a vehicle is used for transport purposes, the vehicle must be sanitized (deep clean) prior to loading participants. Areas of sanitization will include the steering wheel, switchers, gear shifter, handbrake, mirrors, door handles and loading zone;
- 8.5.6.4. Clean mattress covers must be provided daily and washed at the end of every work day. Alternatively, replace mattresses with secured benches as it is easier to sanitize;
- 8.5.6.5. All occupants must wash /sanitize hands before accessing the vehicle;
- 8.5.6.6. Sneeze and cough inside a tissue or arm when inside a vehicle.

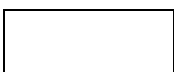
#### **8.5.6.1.2. Social distancing**

#### **Arrangements to minimise exposure associated with commuting will include:**

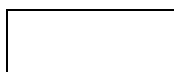
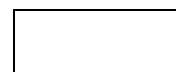
- 8.5.6.2. A maximum of 2 participants may be seated in the vehicle cabin (includes the driver);
- 8.5.6.3. Do not load vehicles to full capacity or overload vehicles. Social distance in vehicles must be in accordance with the "National Road Traffic Act" (NRTA) and/or any amendments made to the NRTA through the "Disaster Management Act";
- 8.5.6.4. Ensure that the vehicle is adequately ventilated. Keep canopy windows open at all times. Preferable, adequate railings should be fitted to reduce "confine space" risk;

#### **PPE (driver/conductor of employer-provided transport)**

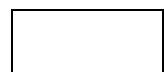
- 8.5.6.5. **During transportation the contractor**, driver and participants must wear the following PPE when seated inside a vehicle:
- 1) Face shield
  - 2) Face mask (3 x material layer washable face mask);
  - 3) safety gloves (recommended);



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4) Long sleeve overalls. This is to ensure a certain level of physical barriers between participants;

#### 8.6 RELATED SYSTEMS DOCUMENTS

COVID – 19 OHS Risk Assessment Plan for Implementation

COVID – 19 Checklist for Project Continuity

COVID – 19 Walk – through Risk Assessment

COVID – 19 Self - Assessment Questionnaire

COVID – 19 Baseline Risk Assessment

COVID – 19 Safe Work Procedure

COVID – 19 Register of participant contacts

COVID – 19 Focal Point Appointment letter

COVID – 19 Toolbox and Safety Talk

COVID – 19 Personal Hygiene

COVID – 19 Poster on how to remove gloves

COVID – 19 Preventative supplies and re-issue register

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**COVID-19 SELF-ASSESSMENT QUESTIONNAIRES**

The Organisation has developed this questionnaire based on information required by the Department of Health to assess risk and determine those participants eligible for COVID - 19 testing. The questionnaire must be completed (by a Focal Point) daily for each participant prior to them being allowed access to a vehicle and/or site.

Please tick the applicable box.

QUESTIONS	YES	NO
Persons with acute respiratory illness with sudden onset of at least <b>one</b> of the following:		
1. Are you experiencing a rise in body temperature recently? (use a non – contact thermometer to measure rise in temperature)		
2. Are you experiencing acute headaches recently?		
3. Are you coughing regularly recently?		
4. Are you experiencing excess sweating?		
5. Are you experiencing frequent shortness of breath recently?		
6. Are you suffering from acute diarrhoea lately?		
7. Are you suffering from any muscle or joint pains recently?		
8. Do you have any underlying illness/disorder that might have an impact on your immune system?		
9. If yes, are you taking medication?		
<b>AND / OR</b>		
In the 14 days prior to onset of symptoms, met at least one of the following criteria:		
10. Have you been in contact with anyone who travelled abroad or has been exposed to the virus in the past 21 days?		
11. Have you travelled abroad in the last 21 days?		
12. Had a history of travel to areas with presumed ongoing community transmission of SARS-CoV-2?		
13. Worked at, or attended a health care facility where patients with SARS-CoV-2 infections were being treated?		
14. <b>Close contact:</b> A person having had face-to-face contact or was in a closed environment with a COVID-19 case; this includes, amongst others, all persons living in the same household as a COVID-19 case and, people working closely in the same environment as a case.		
15. <b>Confirmed case:</b> A person with laboratory confirmation of SARS-CoV-2 infection, irrespective of clinical signs and symptoms.		
16. <b>Probable case:</b> A person for whom testing for SARS-CoV-2 is inconclusive (the result of the test reported by the laboratory) or for whom testing was positive on a pan-coronavirus assay.		
If you have ticked more than five (5) boxes under "YES", then do the following:		
17. Refer the person to nearest medical institution dealing with COVID - 19 cases. Call the institution ahead of your visit and inform them of the symptoms.		
18. Contact the department's internal helpline on: <b>012 399 9300</b> for further assessment and advice.		

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# **Revised as per COVID-19 Baseline Risk Assessments**

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## Baseline Risk Assessment

**PROJECT: ARID REGION – Upgrading of the Lilydale Rest Camp Sewer System and Waste Water Treatment Works in Mokala National Park**

Risk Rating is measured by determining the Likelihood (L) and Consequence (C) and using the Matrix to determine the Risk Rating (R).

**Risk Ranking below is deemed Tolerable, between 11 and 19 is deemed Medium Risk and above 20 is deemed High Risk**

Steps in operation	Ref No.	Hazard	Risk	Risk Rating			Controls Measures	Action Period (AP)	Action to mitigate
				P	F	S			
<b>Entry Onsite Under COVID-19 Pandemic</b>	Aa C-19	Allowing persons to work with flu like symptoms	Infections and contamination that may lead to transfer of diseases	3	4	13	Occupational Health and Safety Act and COVID-19 Training, Regulations Checklist and relevant registers	C	Early detection is key. Contractors and participants should go for voluntary screening, and where necessitated, for testing at approved Department of Health local Test Centres.
		Persons with underlying medical conditions	Infections and contamination that may lead to transfer of diseases	3	3	13	COVID -19 Regulations and Occupational Health and Safety Act	D	All participants must undergo pre, periodic and exit medical examinations and be declared fit to perform their duties. Participants with underlying medical conditions e.g. diabetes, asthma etc., must be on and take prescribed medication to ensure a healthy immune system.
<b>Onsite Establishment for Activities</b>	Ab C-19	Lack of Access control (using vehicles)	Infections and contamination that may lead to transfer of diseases	3	5	13	Occupational Health and Safety Act as per COVID-19 Regulations  "National Road Traffic Act" (NRTA) and/or any amendments made to the NRTA through the "Disaster Management Act".	C	Early detection is key. A "designated focal point" must complete a health check, using the "self-assessment questionnaire" and measure body temperatures for fever symptoms on all contractors, drivers, operators and participants prior to them getting into a vehicle. Non-contact thermometers should be used to measure body temperature. Where occupants show symptoms of the virus (sudden onset of at least one of the following: cough, sore throat, fatigue, shortness of breath, temperature of 37.3 degrees Celsius or higher), they should not be allowed on the vehicle and be requested to stay at home.

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Steps in operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action Period (AP)	Action to mitigate
<b>Access to site</b>	Ac C-19	Lack of Access control (On site - where teams are walking or using alternative public transport to get to site.)	Infections and contamination that may lead to transfer of diseases	3	5	13	Occupational Health and Safety Act and COVID -19 Regulations and Guidelines "Disaster Management Act".	C	Where participants are allowed access, they must wash hands before entering the work site. The focal point should also continuously monitor other symptoms such as respiratory symptoms or difficulties in breathing, and ensure that participants are not exposed to potential risks (e.g. travel, contact with sick people, and participation in large gatherings). Access by third parties to project sites, as well as physical distance between participants should be strictly monitored by the focal points, in order to avoid the risks of contagion.
<b>Lack of Access control on site</b>	Ad C-19	Lack of Emergency Response plan.	Not being able to access Emergency Services / Death.	3	5	13	Occupational Health and Safety Act  COVID -19 Regulations and Guidelines "Disaster Management Act".  Continuous Risk Assessment tool	A	Contractors should register participants' contacts and daily attendance for the purposes of contact tracing, Have a directory of COVID-19 hotlines / task force, communication channels on site in the event of COVID-19 situation and responsibilities, and location of the nearest available and competent medical facilities with sufficient staff, and arrangements for isolation of any person who develops COVID-19 symptoms at work. Clarify situations that should trigger suspension or closing of works, agreed by relevant stakeholders.

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Steps in operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action Period (AP)	Action to mitigate
<b>Emergency Team</b>	Ae C-19	Lack of Emergency Team (Designated focal point) for COVID - 19 Response.	Infections and contamination that may lead to transfer of diseases / Death	4	4	13	Occupational Health and Safety Act  COVID -19 Regulations and Guidelines Competency training Checklist and Registers	C	Establishment a team with appointed focal points for COVID-19 responses. The team with focal points should consist of different stakeholders including contractor(s), site supervisor(s), and participant' H&S representative(s) with at least one female representative and/or a representative with a disability, if possible. In cases where a site OHS officer is in place, s/he should take the leading role for the team. Each focal point shall share and undertake the responsibilities outlined in the COVID - 19 SOP. Train each focal point to execute their respective roles, with the support of public health authorities when feasible. A focal point should hold at least one information update session on the status of COVID-19 at a specific time during the day.
<b>On-site Training</b>	Af C-19	Training	Infections and contamination that may lead to transfer of diseases	3	3	12	Occupational Health and Safety Act. COVID -19 Regulations and Guidelines Skilled training	D	"Screen participants before allowing them access to training venue. Training attendees who have been in close contact with probably/confirmed COVID - 19 case, attended a funeral or visited an outlet, which was later confirmed to have an outbreak of positive tested people, must declare it and not be allowed to attend the training. When training takes place, the organizer should abide by the number of participants allowed in a place, arrange the seating to ensure that there is sufficient space between participants, and ventilate the training room in case the training takes place inside a building. In addition, alternative options such as online training for awareness-raising session when a large gathering is not feasible should be considered, as well as

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Steps in operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action Period (AP)	Action to mitigate
									technical training in smaller groups through mobile training facilities.
<b>Workers care during operation</b>	Ag C-19	Open skin exposure (Cuts and sores)	Infections and contamination that may lead to transfer of diseases	2	3	10	Occupational Health and Safety Act.  First Aid Regulation	E	Keep all wounds and sores clean with antiseptic ointment. Cover any cuts or sores with a waterproof plaster before coming to work.
<b>Workers hygiene</b>	Ah C-19	Not practicing good hygiene in the work place	Infections and contamination that may lead to transfer of diseases / Death	5	5	13	Occupational Health and Safety Act.  COVID -19 Regulations and Guidelines	A	Hand washing facilities are ideally to be located within 5m of toilets and at close range of eating space. Keep your hands clean. Wash your hands with soap thoroughly. Wash the back of your hands, between the fingers, under the nails and rinse with clean running water. Keep your nails short. Always wash your hands 1) before and after you eat, 2) before entering workplace, 3) before and after treating a cut or wound, 4) after using toilet, 5) after using tools, 6) after blowing nose, coughing, or sneezing, 7) after touching an animal, animal feed, or animal waste, 8) after touching waste and 9) after being out in the public. Cover your mouth with a tissue paper when coughing and sneezing. Once used, throw the tissue away in a closed bag or container. Wash your hands afterwards. Keep a distance of 2 meters between you and a person with a cough. Avoid touching your face with dirty hands at all times. Clean all utensils before eating. Where portable toilets are used, the seat must be sanitized after each use. A focal point should regularly remind and inform participants and contractors of the importance of thoroughly washing their hands with

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Steps in operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action Period (AP)	Action to mitigate
									running water and soap for at least 20-30 seconds (40-60 seconds when hands are visibly dirty) at regular intervals. A focal point should also regularly advise participants and contractors to avoid touching eyes, nose, and mouth with unwashed hands.
<b>Transportation of Workers</b>	Ai C-19	Using work transportation to and from work.	Infections and contamination that may lead to transfer of diseases / Death	5	5	13	COVID -19 Regulations and Guidelines  "National Road Traffic Act" (NRTA) and/or any amendments made to the NRTA through the "Disaster Management Act".	A	Vehicles inside must be sanitised prior to loading occupants. During transportation participants must wear the following PPE when seated inside a vehicle: 1) Safety goggles (recommended); 2) Face mask (N95 mask or 3 x material layer washable face mask - an issue of a minimum of 2 masks per participant); 3) Non - sterile medical gloves (recommended); 4) Long sleeve overalls. Ensure that the vehicle is adequately ventilated. Keep canopy windows open at all times. Preferable, adequate railings should be fitted to reduce "confine space" risk. Do not overload vehicles. Social distance in vehicles must be in accordance with the "National Road Traffic Act" (NRTA) and/or any amendments made to the NRTA through the "Disaster Management Act". Sneeze and cough inside a tissue or arm.
<b>Tools and Equipment usage on site</b>	Aj C-19	Tools and equipment (Sharing)	Infections and contamination that may lead to transfer of diseases / Death	3	4	13	COVID -19 Regulations and Guidelines	C	Avoid sharing PPE, tools and equipment during this current crisis. Where the sharing of tools and equipment are unavoidable, hands must be washed / sterilised before and after using shared tools and equipment. All surfaces of hand tools and equipment that are directly touched by multiple participants should be wiped down with water and detergents regularly, every day and stored in a safe

  
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Steps in operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action Period (AP)	Action to mitigate
									location. These include safety helmets and boots, visibility vests, gloves, goggles, and ear muffs/plugs, among others. Medical reusable / 3 x material layer reusable masks must be washed with water and detergents every day after work is complete. Any waste of consumable products should be disposed of in designated disposal bins.
Sharing and usage items	Ak C-19	Sharing items	Infections and contamination that may lead to transfer of diseases / Death	3	4	13	COVID -19 Regulations and Guidelines	C	Do not under any circumstances share food, drink, eating utensils; clothing, PPE, books and blankets.
Distance and spaces during activities on site	Al C-19	Not keeping safe working distances	Infections and contamination that may lead to transfer of diseases	4	4	13	COVID -19 Regulations and Guidelines Occupational Health and Safety Act as Revised	C	Transmission of COVID-19 from one person to another is through respiratory droplets (e.g. sneezing, coughing, etc.) or physical contact. Keep a distance of 2 meters between you and a person with a cough. Avoid unnecessary social contact. Contractor must make extra efforts to allocate participants in a manner that allows them to keep a safe distance of 2 meters from each other, with due consideration of productivity. Therefore, it is suggested that group work is avoided and instead each participant is given individual work tasks to secure sufficient spacing. Also consider introducing working shifts, or time lags to reduce concentrations of participants in the same space, when applicable and where possible. Hand shaking and other ways of physical greetings must be avoided.

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Steps in operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action Period (AP)	Action to mitigate
<b>First Aid and Hygiene</b>	Am C-19	Unqualified First Aider on site	Aggravating injuries and not following correct procedures	3	5	10	Occupational Health and Safety Act. First Aid Regulation	D	There must be a qualified 2 x First Aider on site at all times.
	An C-19	Blood and other biological agents	Infections and contamination that may lead to transfer of diseases	3	3	13	COVID -19 Regulations, Occupational Health and Safety Act. First Aid Regulation	D	First aiders must be provided with PP1) Safety goggles; 2) Face mask (FFP1); 3) Non - sterile medical gloves; 4) Long sleeve overalls. Both the first aider and the person being treated must sanitize their hands. Possibly infected participants must be isolated and provided with a face mask (FFP1).
	Ao C-19	Sharp objects such as safety pins	Injury to beneficiary and first aider	3	3	13	Occupational Health and Safety Act.	D	Sharp objects must be used with caution to avoid cuts. Focal points should develop suitable safe procedures for the disposal of possibly infected solid wastes (e.g. tissues and other used cleaning consumables and materials) to eliminate these from becoming a potential hazard.
<b>Hygiene Practise</b>	Ap C-19	Improper disposal of possibly infected waste	Infections and contamination that may lead to transfer of diseases	2	2	10	Occupational Health and Safety Act.	E	Throw used tissue/s away in a sealed/closed bag or container. Medical waste must be disposed of at the nearest medical centre or clinic.
	Aq C-19	Not washing hands and face with soap and clean water prior to leaving the worksite	Infections and contamination that may lead to transfer of diseases	4	5	13	Occupational Health and Safety Act.	B	When work is completed, do the following: 1) Wash your hands with soap thoroughly. Wash the back of your hands, between the fingers and under the nails; 2) Wash your face and forearms before leaving the worksite. using clean running water for washing. A focal point should regularly remind and inform participants and contractors of the importance of thoroughly washing themselves prior to leaving the work site.

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Steps in operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action Period (AP)	Action to mitigate
PPE Compliance	Ar C-19	Not wearing PPE.	Infections and contamination that may lead to transfer of diseases	4	5	13	COVID -19 Regulations,  Occupational Health and Safety Act.	B	In addition to the existing prescribed PPE requirements, contractors and participants must be issued with a face shield, Face mask (3 x material layer washable face mask - an issue of a minimum of 2 masks per participant). These must be worn at all times during transport. Mask must be worn during normal work activities. For HCS operations, the required HCS respirators must be worn and should not be substituted with the (3 x material layer washable face mask. Face mask (FFP1) must be issued to persons required to go into isolation. Face mask (FFP1) must be worn by the first aider and participant when administering first aid.
	As C-19	Not changing uniforms / PPE when you arrive home.	Infections and contamination that may lead to transfer of diseases	5	5	13	COVID -19 Regulations,	A	Remove uniform / PPE when you arrive home and put it in a sealed plastic bag. Where possible wash the clothes at a high temperature. Wash your body before engaging with family members or prepare food.

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Steps in operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action Period (AP)	Other Controls
<b>Infections Precautions and Hygiene Practise</b>	At C-19	Residues on gloves	Infections and contamination that may lead to transfer of diseases	5	5	13	COVID -19 Regulations,	A	Remove gloves when eating, drinking or answering cell phones. Do not put used gloves inside trouser pockets. When holding the glove, use fingers to grip the glove on the top inner part of the glove covering the risk areas. Avoid touching your face area with dirty gloves and/or hands at all times.
	Au C-19	Unauthorised people in the working area	Infections and contamination that may lead to transfer of diseases	3	3	10	Occupational Health and Safety Act.	D	Ensure only authorised persons enter the work site and storeroom areas. Place "no unauthorised entry" signs on doors leading to storerooms.
	AV C-19	Lack of clean water, soap and sanitizers	Infections and contamination that may lead to transfer of diseases	3	3	13	COVID -19 Regulations, Occupational Health and Safety Act.	C	In areas where centralized safe water supplies are not available, basic water treatment technologies are effective in removing or destroying viruses, such as boiling or using high-performing filters. Project managers and contractors should consult public health authorities to provide appropriate water filtration/purification equipment. Provide washing facilities (clean water, soap and hand sanitizers) in accordance with the COVID - 19 SOP.
	Aw C-19	Not going into self isolation	Infections and contamination that may lead to transfer of diseases	3	3	13	COVID -19 Regulations and Guidelines, Occupational Health and Safety Act.	D	"Remain at home: o Avoid unnecessary social contact o Avoid travel o Remain reachable for monitoring"

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Steps in operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action Period (AP)	Action to mitigate
<b>Actions and Isolation when affected</b>	Ax C-19	Not going into quarantine or self isolation	Infections and contamination that may lead to transfer of diseases	3	3	13	COVID -19 Regulations and Guidelines, Occupational Health and Safety Act.	<b>D</b>	"If a participant develops a mild symptom similar to that of COVID-19, the participant should immediately be requested to self-quarantine and stay at home for at least 14 days, and such cases should be reported to health authorities immediately. If a participant develops a serious symptom such as difficulties in breathing or high fever, responsible managers/contractor should immediately contact the nearest designated medical facility for testing (if possible) and arrange logistics. Care should be taken to ensure that risk of contact with other people is minimized as the participant is in transit to home. A person having had face-to-face contact ( $\leq 2$ metres) or was in a closed environment with a COVID - 19 case must go into isolation; this includes, amongst others, all persons living in the same household as a COVID - 19 and, people working closely in the same environment. Participant/s with suspected COVID - 19 infection with mild symptoms and no underlying or immunocompromising conditions may be cared for / isolated in the home environment. (Isolation is defined as the separation or restriction of activities of an ill person with a contagious disease from those who are well)."

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Steps in operation	Ref No.	Hazard	Risk	Risk Rating			Controls Measures	Action Period (AP)	Action to mitigate
				P	F	S			
General Onsite Activities	A1	Access to Site	Pedestrian & people equipment interaction causing injury	4	2	12	Occupational Health and Safety Act 24(1)		Area to be secured and barricaded / fenced
			Dust Inhalation	3	1	4	Hazardous Chemical Substances Regulation (36)(37)(38)		Induction Training & PPE
			Unauthorised entry	3	2	8	Occupational Health and Safety Act 12(2)		Site Visit Register, signage, Permit for vehicle access
			Slip,trip,and fall	3	2	8	Occupational Health and Safety Act 12(1)(b)(c)		Induction Training & PPE
	A2	Placing of office/ containers if lifting is involved	Heavy objects swinging out of control causing injury/damage	2	4	14	Driven Machinery 18(11)		Safe work area, Induction Training, Trained operator, Lifting Plan
			Crane/lifting tackle failure causing object to fall	2	4	14	General Machinery Regulations 7(a)9b)		Inspection Register, Trained operator
			Accidental collision with overhead power lines	2	4	14	General Machinery Regulations 7(a)(b)		Assign a flag man, determine safe work area
			Lifting machine/crane falling over	2	4	14	General Machinery Regulations 5(1)(2)		Assign a flag man, determine safe work area
	A3	Hand Loading and offloading of heavy machinery & equipment	Items rolling/slipping falling causing injury	4	2	12	General Machinery Regulations 2(1)		Induction training, PPE
			Incorrect Lifting procedure resulting in injury	3	2	8	General Machinery Regulations 3(2)		Induction training, Proper lifting procedure, PPE
	A4	Machine loading and offloading of heavy machinery & equipment	Failure of machinery causing injury	3	3	13	Driven Machinery 18(1)(a)(b)		Supervision
			Equipment falling	3	3	13	General Machinery Regulations 2(2)		PPE
			Collision of vehicles	3	3	13	General Machinery Regulations 7(a)(b)		Flag men
	A5	Traffic	Equipment interaction	3	4	18	Construction Regulation 23(1)(d)(i)(ii)		Traffic management plan
			Pedestrian collision	3	4	18	Construction Regulation 23(2)(c)		Pedestrians Walkways

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Steps in operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action Period (AP)	Action to mitigate
	A6	Lack of employees facilities	Lack of drinking water, dehydration of workers	3	5	22	Construction Regulation 30(1)(a)		Provision of drinking water & Induction training
			Lack of sanitary facilities, unhygienic conditions	3	5	22	Construction Regulation 30(1)(b) and 30(2)		Provision of chemical toilets & proper housekeeping
	A7	Stacking & Storage	Fall, slip resulting in potential injury/damage	4	3	17	Construction Regulation 28(d)		Storage plan, induction training and restricted access
			Obstructing critical equipment and walkways	4	3	17	Construction Regulation 27 (a)(c)(g)		Storage plan, induction training and restricted access
			Flammable liquids catching fire	3	3	13	Construction Regulation 25(a)(b)(c)		Storage plan, induction training and firefighting equipment
			Hazardous storage of materials	3	3	13	Hazardous Chemical Regulation(25)9A(2)		Storage plan, regular inspections
	A8	Handling of chemicals and fuels	Exposure	3	3	13	Hazardous Chemical Regulation 9A(1)(a-p)		PPE
			Inhalation	3	3	13	Hazardous Chemical Substances Regulation (36)(37)(38)		
			Burns to Skin	3	3	13	Hazardous Chemical Substances Regulations 9A(2); Material Data Sheet		
	A9	Temporary Low voltage Electrical installation	Exposure to live wires-electrocution	2	5	19	Construction Regulation 24(a)(b)		Lockable DB box, Inspection register
			Faulty earth leakage	2	5	19	SANS 10142		Competent person to do installation & inspection
			Short circuit causing fire	2	4	14	Construction Regulation 24(b)		Weekly inspection, Induction Training & Firefighting equipment
	A10	Issue of PPE	Incorrect PPE	4	2	12	General Safety Regulation 2(1)		PPE Register
	A11	Usage of PPE	Incorrect use of PPE	4	2	12	General Safety Regulation 3(2)		PPE Register, Induction Training, supervision
			Negligence to use PPE	4	2	12	General Safety Regulation 5		PPE Register, Induction Training, supervision

Contractor

Witness for Contractor

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Employer

Witness for Employer

Steps in operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action Period (AP)	Action to mitigate
	A12	Adverse storms	Struck by lightning	2	5	19	Induction Training Safe Operation Procedure		Proper warning system
	A13	Adverse heat	Dehydration, Sunburn, heat stroke	3	4	18	Induction Training Safe Operation Procedure		Proper drinking water, PPE
	A14	Working in excessive winds	Exposure to dust	3	4	18	Hazardous Chemical Substances Regulation (36)(37)(38)		PPE
	A15	House keeping	Objects lying around can result in slip/fall	4	2	12	Construction Regulation 27(a)(b)		Regular cleaning of site
			Unhygienic conditions	3	3	13	Construction Regulation 27(d)		Induction Training
			Pollution of area	3	2	8	Construction Regulation 27(e)		Proper waste bins and waste removal
	A16	Fire prevention	Open Fires	3	3	13	Construction Regulation 29(a)		SANParks EMP & Code of conduct
			Inadequate firefighting equipment	4	3	17	Construction Regulation 29(g)(h)		Inspection register, supervision
			Run away fires	4	4	21	Emergency evacuation plan		SANParks EMP & Code of conduct
			Accidental Fires	3	4	18	Construction Regulation 29(a)(d)(iii)		Designated smoking areas
	A17	Environmental pollution	Pollution of ground,air,workspace	3	2	8	Environmental Regulation 6(d)		SANParks EMP & Code of conduct
			Littering	4	2	12	SANParks Environmental Management Plan		Induction Training, Provide proper trash bins
	A18	Working near hazardous animals incl snakes, spiders & scorpions	Poisons bites/ attack by large animals	3	3	13	SANParks Environmental Management Plan		Induction Training, SANParks ranger where required, Proper treatment in first aid kit
	A19	Working in close proximity of water	Falling into water & drowning	3	4	18	Construction Regulation 26(1)(a)(b)		Safe work area, Induction Training, barricades

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Witness for Contractor

Employer

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Steps in operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action Period (AP)	Action to mitigate
			Pollution of water body	3	4	18	SANParks Environmental Management Plan Construction Regulation 26(2)		Induction Training
Plant or vehicle & equipment	B1	Construction vehicles	Equipment Failure	4	4	21	Construction Regulation 23(1)(k)		Vehicle check list and regular maintenance
			Speeding/ Operation	3	4	18	Construction Regulation 23(2)(l)		Safe traffic route, imply penalties, traffic calming measures
			Potential accident/collision	4	4	21	General Machinery Regulations 7(a)		Induction Training, Reflective vests, safe work area
			Material/equipment fall from vehicle	4	4	21	Construction Regulations 23(1)(b)(g)(h)		Properly secure all goods
			Vehicle/plant not used for correct purpose	3	3	13	Construction Regulations 23(1)(b)(c)		Supervision, controlled access to vehicle/plant
	B2	Licencing of operators	Unauthorized operation of equipment	3	3	13	Construction Regulation 23(1)(d)(i)(ii)		Valid operator, restricted access to machinery, supervision
			Expired licenses	3	1	6	Construction Regulation 23(1)(d)(i)(ii)		Keep OHS file up to date
	B3	Parking of vehicles	Runaway vehicle	3	4	17	Safe Operation Procedures (SOP)		Vehicle check list, use stop block behind tyres
			Parking in unsafe areas	3	1	4	Construction Regulation 23(2)(i)(j)		Demarcate proper parking areas
Transportation	C1	Transportation of employees	Interaction with other vehicle-collision	4	4	21	Construction Regulation 23(1)(b)(j)		Supervisor
			Equipment not roadworthy	3	1	4			Vehicle checklist, vehicle must meet required standards
			Equipment not licensed	3	1	4	Construction Regulations 23(a)(b)		Supervision and monitor
			Operator of vehicle transporting employees not licensed and authorized	3	1	4	Construction Regulation 23(2)(i)(j)		Supervision and monitor if Driver has Valid PDP

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Steps in operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action Period (AP)	Action to mitigate
			Vehicle not equipped to transport employees	3	1	4	Construction Regulation 23(d)(i)(j)		Vehicle checklist, vehicle must meet required standards
			Not Adhering traffic legislation	3	1	4	Construction Regulation 23(2)(j)		Supervision, implement fines
	C2	Transportation of material or equipment with people	Material/equipment fall from vehicle	4	4	21	Construction Regulation 23(g)(h)		Properly secure all goods
			Potential accident/collision	4	4	21	Construction Regulation 23(2)(g)(h)(j)		Induction Training, Reflective vests, safe work area
	C3	Towing a Trailer	Vehicle accident	4	4	21	Construction Regulations 23(e); Occupational Health and Safety Act 24(1)(c)(iii)(iv)		Awareness, trained operator
			Towing coupler failure	3	3	13	Construction Regulation 22(e)		Inspection Register
Hand Tools	D1	Injury Due to	Incorrect tools used	4	3	17	Hand tool register, Induction Training,		Supervision
			Defective tools	4	3	17	Safe Operation Procedure		Supervision
			Struck by flying debris	3	3	13	Safe Operation Procedure		PPE

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Steps in operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action to mitigate
	D2	Hand Drills	Clothing being grabbed by rotating drill	3	3	13	Safe Operation procedure, Toolbox Talks Electrical Machinery Regulations 10(3)(4)	PPE, Supervision
			Unsecured work piece rotating with drill	3	3	13		PPE, Supervision
			Shaving flying into eyes	3	3	13		PPE, Supervision
			Accidental injury	4	3	17	Electrical Machinery Regulations 10(4)	PPE, Supervision
			Electrocution	3	5	22	Electrical Machinery Regulations 10(1)(a)(b)	Tool inspection register
	D3	Explosive actuated fastening device	Malfunction of equipment causing injury/damage	3	3	13	Explosive Regulations 15(a)(b)	Tool inspection register, inspect extension cord
			Accidental injury	3	3	13	Explosive Regulations 15(b)	PPE, Supervision
			Accidental discharge	3	3	13	Explosive Regulations 15(a)(b)	Safety mechanism working, Store in unloaded condition
	E1	Site/Bush Clearing	Moving machinery accident	4	3	17	Construction Regulation 23(2)(b)	Reflective vests, restricted access, induction training
			Injury due to hand tools	4	3	17	Safe Operation Procedures (SOP)	Induction Training, PPE, First Aider
			Snakes/ Spider bites	3	3	13	SANParks Environmental Management Plan	Induction Training, Proper First Aid treatment available
			Dangerous animals in vicinity	3	3	13	SANParks Environmental Management Plan	Induction training, armed rangers escort
			Electrical cables and other services in way of work area	3	4	17	Construction Regulation 24(c)	Properly mark & demarcate existing services
	E2	Tree felling	Injury from chainsaw	3	3	13	Safe Operation Procedures (SOP)	Trained operator, PPE
			Injury from falling tree	3	3	13		Safe work area, PPE
			Felling from height	3	3	13		Safety Harness, Fall Protection Plan, PPE
			Exposure to electrical cables	3	3	13	Electrical Installation Regulations(5)(1)(2)	Safe work area, PPE

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Steps in operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action to mitigate
	E3	Removal of waste	Moving machinery accident	4	4	22	Construction Regulation 23(1)(b)(c)	Reflective vests, restricted access, induction training
			Waste material falling of vehicle	3	3	13	Construction Regulations 23(h)	Secure load, stay within maximum vehicle load capacity
			Dust Inhalation	3	2	8	Hazardous Chemical Substances Regulation (36)(37)(38)	Induction Training & PPE
	E4	Demolition	Structure/rubble falling on person	3	3	13	Construction Regulation 14(1); 4(ii)	Induction Training, PPE, demarcate area
			Dust Inhalation	3	2	8	Hazardous Chemical Substances Regulation (36)(37)(38)	Induction Training & PPE
			Presence of lead	2	4	14	Lead Regulations (3)	PPE, Induction Training
			Presence of Asbestos	2	4	14	Asbestos Regulations (4)	PPE, Induction Training
			Hitting electrical cable - electrocution	3	5	22	Construction Regulation 24(a)	Induction training, Site map indicating existing services
			Hitting of gas line - explosion	3	5	22	Construction Regulation 14(1)(2)	Induction training, Site map indicating existing services
Excavation & backfilling	F1	Hand Digging of holes/trenches	Injury due to defective tools	4	3	18	Construction Regulation 13(a)	Hand tool register, Induction Training
			Injury due to improper work method	4	3	18		Induction training, supervision
			Trip/fall into holes	3	3	13		Demarcate area, induction training, PPE
	F2	Machine Digging of holes/trenches	Collapse of trench	3	3	13	Construction Regulation 14(4)( iii)	Excavation inspection register by component person daily
			Collapse of adjacent structure	3	3	13	Construction Regulation 11(1)(a)	Safeguard adjacent structures
			Malfunction of machinery	3	3	13	General Machinery Regulations 2(2)	Machinery Inspection Register
			Unauthorized driver	2	2	5	General Machinery Regulations 2(1)	Trained operator, supervision, restricted access to machinery

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Steps in operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action to mitigate
,			Unnecessary Damage to environment	3	2	9	SANParks Environmental Management Plan	Induction Training, designated work area
	F3	Tipping of material	Material falling on to person	3	3	13	Construction Regulation 23(g)	PPE, Safe Work area, Flag men
			Malfunction of equipment causing injury/damage	3	3	13		
	F4	Hitting of electrical cable and services	Electrocution	3	5	22	Construction Regulation 24(a)(b)(c)	Induction training, Site map indicating existing services
	F5	Opening trenches	Risk of collapse	3	3	13	Construction Regulation 13(h)(l)	Stabilize trench, work permit, induction training
			Fall, slip into trench	4	3	17	General Safety Regulations 2(5)(6)	Barricade trench, PPE
	F6	Compaction	Personal Injury	3	3	13	General Safety Regulations 2(5)	PPE, Trained operator
			Collision of machinery	3	3	13	General Machinery Regulations 4(1)	Induction Training, Reflective vests, safe work area
			Dust Inhalation	3	2	8	Hazardous Chemical Substances Regulation (36)(37)(38)	Induction Training & PPE
	G1	Stop & Go Procedures - Moving Vehicles	injuries to employees involved in an accidents whiles setting up and taking down Stop/Go procedure	4	4	21	Construction Regulation 12(3)(d)	Visibility jackets, radio communication
			Injuries to employees involved in an accidents - in the midst of Stop/Go activity	4	4	21		
			Injuries to road users involved in an accidents - approaching a Stop/Go activity	4	4	21	Construction Regulation 12(3)(d)	PPE, Competent person conduct work
			Injury during assembly/dismantling	3	3	13	Construction Regulation 12(3)(a)	Induction Training, PPE, Supervision
Installation of Pipes/cables		Installation of sewer/water pipes in trenches	Fall, slip into trench	4	3	17	Electrical Installation Regulations(5)(1)(12)	Barricade trench, PPE

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Steps in operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action to mitigate
	K1		Exposure to Hazardous biological agents	3	3	13	Hazardous Biological Agents Regulations 5(2)	Hazardous biological
			Pipe handling/lifting resulting in injury	3	3	13	Hazardous Biological Agents Regulations 5(2)	Hazardous biological
	K2	Installation of electrical cable in trench	Fall, slip into trench	4	3	17	Electrical Installation Regulations(2)(1)(2)	Barricade trench, PPE
			Cable handling/lifting resulting in injury	3	3	13	Electrical Installation Regulations(2)(1)	Induction Training, PPE
Concrete	J1	Manual Mixing	Cement dust inhalation	3	2	8		Material Safety Data Sheet , PPE Supervision
			Hazardous substance contact dry cement mix	3	3	13	Hazardous Chemical Substances Regulations 9A(2)(2) Material Safety Data Sheet (MSDS)	PPE, Induction Training
			Spillage/pollution	3	3	13		PPE, Concrete mixing sheet
			Injury during mixing/cement burns	3	3	13		Induction Training, Supervisor, PPE
	J2	Concrete Mixer Machine	Poor ventilation causing ill health	3	2	8	General Safety Regulations 5(5)	PPE, Additional ventilation
			Accidental injury through flying objects	3	3	13		Induction Training, Supervision
			Spillage/Pollution	3	3	13	Hazardous Chemical Substances Regulations 10(3)	Induction Training, PPE
			Clothing/body parts getting caught in open pulley V -BELT	3	3	13		Induction Training, inspection register, moving parts covered with guard

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Steps in operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action to mitigate
	J3	Bulk Mixing Plant	Unauthorised operations	3	3	13	Construction Regulation	Competent Operator, Supervision Maintenance register, inspection register
			Malfunction of equipment causing injury/damages	3	3	13	Construction Regulation	PPE, Fall Protection Plan, Safe Work area
	J4	Road Construction	Risk of being struck by vehicle while working next to road	4	4	21	Occupational Health and Safety Act 24(3)(a)(b)	Traffic Management Plan, Road Signs, reflective vests, Flag man
			Failure of regulating traffic causing collisions	3	4	18		Competent person, supervision
			Injury from road users and public	4	4	21	Construction Regulations 23(1)(e)(j)	Restrict access to site, Signage
			Noise pollution	3	2	8	Noise Induced Hearing Loss Regulations 7(1)(a)(b)(c)(d)	PPE
			Inhalation of dust	3	2	8	Hazardous Chemical Substances Regulations 8(a)(b)(c)	PPE
	L1	Work on Water pipeline reticulation	Person coming into contact with liquid under pressure	3	3	13	Safe Work Procedure Hazardous Biological Agents Regulation 10(1)(a)(b); 2(a)(b)(c)	PPE
			Exposure to thread sealant	3	3	13		PPE
			Release of pressure during pressure test	2	2	5		PPE
	L2	Work on Sewer pipeline reticulation	Person coming into contact with hazardous biological agents	3	2	8	Safe Work Procedure Hazardous Biological Agents Regulation 10(1)(a)(b); 2(a)(b)(c)	PPE
			Explosion due to hazardous fumes	3	2	8		PPE, Induction Training
			Suspended pipe work, pipe falling on person	3	2	8		
			Person coming into contact with liquid under pressure	3	3	13		PPE

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Steps in operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action to mitigate
	L3	Medium Voltage reticulation	Electrocution	3	5	22	Construction Regulation 24(a)(b)(c)	Competent person to do installation & inspection
			Dangerous/unsafe cable Joints	3	3	13	Construction Regulation 24(d)(e)	Supervision
						Apply lockout procedure before doing connections		
			Accidental switch on while work in progress	3	5	22		PPE
			Short circuit can blow up when switching	3	5	22		
	L4	Exposure to mechanical components	Injury from moving parts	3	3	13	Occupational Health and Safety Act 24(1)(a)(c)	
			Electrocution	3	3	13		
			Explosions	3	3	13		
	L5	Water & Sewerage Treatment	Chemical Exposure				Hazardous Chemical Substances Regulations 4(a)(b)(d)(f)(g) Material Date Sheet	Sampling
			Slip and fall					
			Exposure to UV lights					
	L6	High Voltage reticulation > 1000V	Discharge of cable	3	5	22	Electrical Installation Regulations 9(1) General Machinery Regulations 2(1)(2)(3)(i)	Correct measuring equipment

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Steps in operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action to mitigate
			Electrocution	3	5	22	Construction Regulation 24(a)(b)(c)	Competent person to do installation & inspection
			Dangerous/unsafe cable Joints	3	3	13	Electrical Installation Regulations 2(1)(2)(3)	Supervision
			Accidental switch on while work in progress	3	5	22		Apply lockout procedure before doing connections
			Short circuit can blow up when switching	3	5	22		PPE
	L7	Exposure to plant material with reed bed construction	Allergic reaction					
Metalwork	M1	Welding and flame cutting	Unsafe flame cutting/ welding equipment	3	5	22	General Safety Regulations 9(1)(a)(b)(d) General Safety Regulations 9(4)(a)(b)(i)(ii)	Flame cutting equipment to be fitted with flashback arrestors, supervision
			Employees not competent to perform duty	3	3	13		Supervision
			Unsafe storage	3	3	13		Proper storage facility
			Injury / burns to person	3	3	13	Occupational Health and Safety Act 24(1)(a)(c)	Burn shield in First Air Box
			Accidental fire	3	3	13		Fire fighting equipment
	M2	Steel fixing	Injuries from tie wire	3	3	13	Construction Regulations 10(4)(b)(c)(i)(ii)	PPE, Induction Training
			Fall from heights	3	3	13		PPE, Fall Protection Plan
			Falling components	3	3	13		PPE, safe work area, catch nets
			Back injuries from manual handling	3	3	13	Construction Regulations 10(4)(b)(c)(i)	PPE, limit lifting weight
			Steel structure collapsing	3	3	13		PPE, Supervision

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## Risk Rating Matrix

		Likelihood				
		5	4	3	2	1
Consequence	5	25	24	22	19	15
	4	23	21	18	14	10
	3	20	17	13	9	6
	2	16	12	8	5	3
	1	11	7	4	2	1

### Actions

High 20-25	Immediate action to reduce risk. Introduce hard barriers and adequate controls to reduce risk. Control hazards. Monitor regularly
Moderate 11-19	Urgent attention to improve controls and reduce inherent risks. Monitor systems controls & audit quarterly & implementation of controls
Acceptable 1-10	Controls in place. Tolerable risk levels. Ensure monitoring is as per H&S Policy

## COVID -19 RA

INITIALS	SURNAME	DESIGNATION	CONTACT DETAILS	HIRA TRAINING	SIGNATURE	DATE
M	Reinhardt	Regional Project Manager	082 796 9986	Yes		
F	Marais	Manager Technician	072 997 2624	Yes		
C	Jonker	Senior Manager Technical Services	012 426 5303	Yes		
Z	Mkhonza	OHS Coordinator Compliance	012 426 5199	Yes		
A	Plaatjies	Mokala Technical Officer	053 204 8000			

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DEFINITIONS		Probability (1 - 5)		Determining your prioritisation rating (A/P)			
Hazard	Is a condition, activity, object or substance that has the ability to cause harm.	1	Highly improbable	%	Prioritization indicator	Action	
Risk	Is the chance or likelihood of a hazard causing harm or damage.	2	Less than even chance	1% - 20%	E	Monitor the situation	
Probability	The likelihood of a specific outcome/consequence	3	Improbable	21% - 40%	D	Within six months	
Frequency	A measure of the rate of occurrences of an event expressed as the number of occurrences at a given time	4	Probable	41% - 60%	C	Within one month	
Severity	Degree or harm of the outcome/consequence	5	Inevitable	61% - 80%	B	Within one week	
This HIRA does not necessarily cover all hazards associated with the operation / equipment. It is designed as a guide to compliment the Operational Specific HIRA, which must be carried out for each task forming part of an operation.				81% - 100%	A	Immediate	
Frequency (1 - 5)		Severity (1 - 15)					
1	Hazard arise 2 yearly	1	Superficial injuries, minor cuts and bruises, nuisance and irritations (e.g. eye irritations & headaches), ill health leading to temporary discomfort.	6	Laceration, burns, concussion, serious sprains, minor fractures, deafness, dermatitis, asthma, work related upper limb disorder, ill health leading to permanent minor disablement.	11	Amputation, major fractures, poisoning, multiple injuries, fatal injuries, Occupational cancer, other severely life shortening diseases, acute fatal diseases.
2	Hazard arise yearly	2		7		12	
3	Hazard arise every month	3		8		13	
4	Hazard arise every week	4		9		14	
5	Hazard permanently present	5		10		15	

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**Annexure B**

**Environmental Management Plan**

**Contractor**

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# Environmental Management Plan

**Part****1****General construction activities****Park: MOKALA NATIONAL PARK**

**Project: UPGRADING OF THE LILYDALE REST CAMP SEWER SYSTEM AND  
WASTE WATER TREATMENT WORKS, MOKALA NATIONAL PARK**  
**CONTRACT NO: CI-VB-0031**

Prepared by:



**South African National Parks**  
P.O. Box 787  
PRETORIA  
0001

**1. ENVIRONMENTAL MANAGEMENT PLAN****A. DECLARATION**

I the undersigned in my capacity as designated below to hereby undertake to ensure that the conditions and recommendations in terms of the Environmental Management Plan (EMP) for the renovation, upgrading, and construction activities in a National Park are implemented and assume responsibility and accountability in this respect.

I further understand that officials from SANParks may during any phase of the project, conduct an inspection of the development in order to ensure compliance with the conditions and recommendations in the EMP.

**EMPLOYER**

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

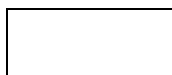
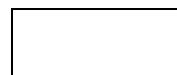
Date: \_\_\_\_\_

**CONTRACTOR**

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**Contractor****Witness for  
Contractor****Employer****Witness for  
Employer**

# Part 1

## 1. ENVIRONMENTAL MANAGEMENT PLAN

### 1.1 GENERAL

Definition of an “**Environmental Management Plan**”:

*A plan or programme that seeks to achieve a required end state and describes how activities, which have or could have an adverse impact on the environment, will be mitigated, controlled, and monitored.*

The EMP will address the environmental impacts during the design, construction and operational phases of a project. Due regard must be given to environmental protection during the entire project. In order to achieve this, a number of environmental specifications/recommendations are made. These are aimed at ensuring that the contractor maintains adequate control over the project in order to:

- Minimise the extent of impact during construction.
- Ensure appropriate restoration of areas affected by construction.
- Prevent long term environmental degradation.

The contractor must be made aware of the environmental obligations that are stipulated in this document, and declares himself/herself to be conversant of all relevant environmental legislation. The contractor should also be aware that the Park Manager / Environmental Control Officer will monitor the implementation of the procedures.

### 1.2 OBJECTIVES OF THE EMP

The EMP has the following goals:

- Identifying those construction activities that may have a detrimental impact on the environment;
- Detailing the mitigation measures that will need to be taken, and the procedures for their implementation;
- Establishing the reporting system to be undertaken during the construction.

The EMP also serves to highlight specific requirements that will be monitored during the development and should the environmental impacts not have been satisfactory prevented or mitigated, corrective action will have to be taken. The document should, therefore, be seen as a guideline that will assist in minimising the potential environmental impact of activities.

Definition of “**mitigation measures**”:

*Mitigation seeks to find better ways of doing things, by the implementation of practical measures to reduce, limit, and eliminate adverse impacts or enhance project benefits and protect public and individual rights.*

The EMP also defines the arrangements that will be put in place to ensure that the mitigation measures are implemented by including recommendations of the roles and responsibilities of the project proponent, environmental management team and contractors.

## 1.3 COMPONENTS OF THE “EMP”

### 1.3.1 Introduction

This EMP adopted a precautionary approach, or in the case of management recommendations, a philosophy of ‘best practice’. Mitigation measures may then be of a more generic nature without compromising its importance to be implemented.

Therefore the purpose of this EMP is to draft and maintain a detailed management plan that, if put into practise, will effectively prevent/minimise environmental degradation.

### 1.3.2 The EMP in Context

This EMP will form part of a project tender and contract. Pre-construction and construction phase mitigation guidelines and clauses should be written into the construction contract documents as specifications. The contents of this EMP shall be deemed to be included in the rates tendered to execute and complete the works.

### 1.3.3 Flexibility

The EMP is a dynamic and flexible document subject to review and updating. During the implementation of a project there is always the possibility that unforeseen issues could arise, this EMP should therefore be revised where necessary to mitigate unanticipated impacts.

### 1.3.4 EMP Implementation Period

The EMP will focus on and operate during the whole implementation / construction period and maintenance phase of the projects.

### 1.3.5 Roles and Responsibilities

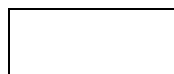
Supervision and monitoring are fundamental to the successful implementation of an EMP. Therefore, it is vital that monitoring of the extent to which the mitigation measures of this EMP, are adhered to by consultants and contractors, takes place.

All of the issues described and discussed in this document will require monitoring, and it will be the responsibility of SANParks to undertake this monitoring according to the specifications of this EMP.

- To draft and implement a monitoring programme to assess compliance with the EMP.
- To appoint an Environmental Control Officer (ECO) during the Construction Phases.
- To undertake the monitoring of operations during the operational phase. Any problems that are identified or encountered must be reported to SANParks management so that appropriate action may be taken to rectify the situation.

#### 1.3.5.1 Appointment of an Environmental Control Officer

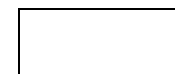
The position of Environmental Control Officer has been created to ensure that the mitigation measures and other requirements set forth in the EMP are adhered to.



Contractor



Witness for  
Contractor



Employer



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It is recommended that SANParks appoint an Environmental Control Officer (ECO) during the construction phase of the project. The ECO can be a Section Ranger.

The following guidelines apply to the functions of an ECO:

- The ECO should have the ability to understand the contents of the Environmental Management Plan (EMP) and explain it to the contractor, the site staff, the supervisors and any other relevant personnel or I&AP's.
- The ECO would have to be on site on a regular basis – preferably daily to supervise environmental actions associated with construction activities.
- The ECO should be able to understand, interpret, monitor, audit and implement the EMP. This is his most important function.
- The ECO must then give feedback of the audits to SANParks and Contractors. This must be in the form of a written report.
- The ECO must ensure that the contractor understands what is to be done to rectify and address any problems that have arisen from the audit.

#### 1.3.6 Feedback to Park Manager and ECO

Reporting to the Park Manager and ECO should take place during site meetings – in the case of potential “fatal flaws”/crises developing due to implementation of the project, reporting should be done immediately and the potentially adverse activities immediately halted in order that corrective action can be taken.

Reporting on the status of implementation of the EMP and the results of the environmental monitoring programme must be recorded and summarised in a monthly report by the ECO and submitted to the Park Manager.

#### 1.3.7 Failure to comply with EMP

Outlined below are a number of steps, relating to increasing severity of environmental problems, which will be implemented. The principle is to keep as many issues within the first few steps as possible.

- **Step 1**  
The ECO discusses the problem with the contractor or guilty party, and they work out a solution together. The ECO records the discussion and the solution implemented.
- **Step 2**  
The ECO or SANParks observes a more serious infringement, and notifies the guilty party in writing, with a deadline by which the problem must be rectified. All costs will be borne by the contractor.
- **Step 3**  
The ECO shall order the contractor to suspend part, or all, the works. The suspension will be enforced until such time as the offending party(ies), procedure or equipment is corrected and/or

remedial measures put in place if required. No extension of time will be granted for such delays and all cost will be borne by the contractor.

- **Step 4**  
Breach of contract - One of the possible consequences of this is the removal of a contractor and/or equipment from the park and/or the termination of the contract, whether a construction contract or an employment contract. Such measures will not replace any legal proceedings that SANParks may institute against the contractor.

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## Part 2

### 2. DESCRIPTION OF MITIGATION MEASURES

This section of the report serves to prescribe mitigation measures to reduce, limit, eliminate or compensate for impacts, to acceptable/insignificant levels. In setting mitigation measures, the practical implications of executing these measures must be borne in mind. With early planning, both the cost and the impacts can be minimised.

The stipulations of this report should be conveyed to contractors prior to the commencement of construction.

#### 2.1 PRE-CONSTRUCTION MANAGEMENT PLAN

The pre-construction or planning management plan is to be used as a guide during the planning, design and detailing of the development components. This part of the plan is to be referenced by all involved in decision making during the planning and design phases.

##### 2.1.1 EMP TRAINING

Mitigation / Management Action	Responsible Agent
The Contractor shall arrange for Environmental and Heritage Awareness Training programmes for the personnel on site, to the satisfaction of the Park Manager and ECO, and familiarise his/her/its employees with the contents of this EMP, either in written format or verbally.	ECO & Contractor

##### 2.1.2 CONTRACT AREAS

Mitigation / Management Action	Responsible Agent
The ECO must indicate/point out to contractors the areas that they will have in their possession for the duration of the contract (this shall include access roads to be used, construction lay-down areas, materials storage and delivery requirements, contractors' offices, operational demarcation etc.). Aspects pertaining to temporary housing for persons involved in the project shall also be included. A material delivery and storage area should be demarcated. The facility must be planned and laid out in such a way that the total footprint area is minimised.	ECO & Contractor

### 2.1.3 SENSITIVE ECOLOGY

Mitigation / Management Action	Responsible Agent
<p>Prior to the commencement of construction, the proposed site/s and roads, must be inspected by SANParks Scientific Services (where necessary), in order to:</p> <ul style="list-style-type: none"> <li>Confirm the absence of Red Data Book Species;</li> <li>Relocate, demarcate or recommend conservation / preservation measures for any identified ecologically "sensitive" and/or protected species and areas, and</li> <li>Point out and/or demarcate all ecologically "sensitive" areas to the contractors (e.g. red data habitats &amp; species, rivers, streams, drainage lines, wetlands, sensitive soils, steep slopes and areas susceptible to erosion).</li> </ul>	SANParks, ECO & Contractor

### 2.1.4 HERITAGE AREAS

Mitigation / Management Action	Responsible Agent
<p>In known archaeological sensitive areas the South African Heritage Resources Agency (SAHRA) must inspect all above-mentioned contract areas, in order to:</p> <ul style="list-style-type: none"> <li>Confirm the absence of archaeological sites and/or artefacts;</li> <li>Relocate, demarcate or recommend further conservation / preservation actions and measures for any identified archaeologically "sensitive" area and/or artefacts prior to the commencing of any work at these sites, and</li> <li>Point out and/or demarcate all archaeologically "sensitive" areas to the contractors.</li> </ul>	SANParks, ECO & Contractor

### 2.1.5 ROADS

Mitigation / Management Action	Responsible Agent
The final alignment of the access routes and internal camp roads shall be planned in conjunction with the Park Manager, SANParks Scientific Services, Section Ranger and ECO and once finalised only the agreed roads must be used.	ECO & Contractor
Roads must be planned to deviate around significant trees and Red Data Species marked out in an approved manner by the ECO.	ECO & Contractor

### 2.1.6 SITE ESTABLISHMENT

Mitigation / Management Action	Responsible Agent
Construction camps and staff accommodation facilities on the site will be required to be established in appropriate locations prior to the	ECO & Contractor

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commencement of construction, preferably within already disturbed areas. After completion of the contract, these areas will be required to be rehabilitated.	
<b>Site Plan:</b> Before construction can begin, the Contractor shall submit a site layout plan to the ECO for approval, including: <ul style="list-style-type: none"> <li>• Site access (including entry and exit points).</li> <li>• All material and equipment storage areas (including storage areas for hazardous substances such as fuel and chemicals).</li> <li>• Construction offices and other structures.</li> <li>• Security requirements (including temporary and permanent fencing, and lighting) and accommodation areas for security staff.</li> <li>• Solid waste collection facilities and waste treatment facilities for litter, kitchen refuse, sewage and workshop-derived effluents.</li> <li>• Storm water control measures.</li> <li>• Provision of potable water and temporary ablution facilities.</li> <li>• Only designated areas may be used for the storage of materials, machinery, equipment and site offices. The site offices should not be sited in close proximity to steep areas, as this will increase soil erosion. Preferred locations would be disturbed areas along routes. Offices (and in particular the ablution facilities, aggregate stockpiles, spoil areas and hazardous material stockpiles) must be located as far away as possible from any watercourse. Regardless of the chosen site, the Contractor's intended mitigation measures shall be indicated on the plan.</li> </ul>	Contractor
Throughout the period of construction, the contractor shall restrict all activities to within the designated areas on the construction layout plan. Any relaxation or modification of the construction layout plan is to be approved by the ECO.	ECO & Contractor
<b>Site Camps:</b> The following restrictions or constraints should be placed on the site camp, and construction staff in general: <ul style="list-style-type: none"> <li>• The use of rivers and streams for washing of clothes.</li> <li>• The use of welding equipment, oxy-acetylene torches and other bare flames where veld fires constitute a hazard.</li> <li>• Indiscriminate disposal of rubbish or construction wastes or rubble.</li> <li>• Littering of the site.</li> <li>• Spillage of potential pollutants, such as petroleum products.</li> <li>• Collection of firewood.</li> <li>• Poaching of any description.</li> <li>• Use of surrounding veld as toilets.</li> <li>• Burning of wastes and cleared vegetation.</li> <li>• No concrete structures allowed, if the site camp is within the Park boundaries.</li> </ul>	ECO & Contractor
<b>Vegetation clearing:</b> The natural vegetation encountered on the site is to be conserved and left as intact as possible. Only trees and shrubs directly affected by the works, and such others as may be approved by the ECO in writing, may be felled	ECO & Contractor

or cleared. A firebreak shall be cleared and maintained around the perimeter of the site camp/s and office sites where necessary.	
<b>Water for human consumption:</b> Water for human consumption should be available at the site offices and at other convenient locations on site.	ECO & Contractor
<b>Sewage Treatment:</b> Sanitary arrangements should be to the satisfaction of the Park Manager and ECO. In no other ablution facilities are available, chemical toilets must be supplied (1 per 15 persons) and must be regularly cleaned and maintained by the contractor. The positioning of the chemical toilets is to be done in consultation with the ECO. The Contractor should arrange for regular emptying of toilets and will be entirely responsible for enforcing their use and for maintaining such latrines in a clean, orderly and sanitary condition to the satisfaction of the ECO. If necessary, the ablution facilities must be screened from the public view. In remote areas where chemical toilets may not be a viable option, agreement must be reached on alternatives before construction starts.	ECO & Contractor
<b>Cooking Fuel:</b> The Contractor shall provide adequate facilities for his staff so that they are not encouraged to supplement their comforts on site by accessing what can be taken from the natural surroundings. Collection of firewood is not permitted.	ECO & Contractor
<b>Waste Management:</b> Solid waste shall be stored in an appointed area within the site camp in covered drums for collection and disposal. Disposal of solid waste shall be at an approved landfill site – this must be agreed to with the Park Manager. During the construction period, the facilities shall be maintained in a neat and tidy condition, and the site is to be kept free of litter. At all places of work, the Contractor shall provide litter collection facilities for later safe disposal at approved waste disposal sites.	ECO & Contractor

## 2.1.7 MATERIALS HANDLING, USE AND STORAGE

Mitigation / Management Action	Responsible Agent
The Contractor's management and maintenance of his plant and machinery will be strictly monitored according to the criteria given below, regardless of whether it is serviced on the site (i.e. at the place of construction activity or at a formalised workshop) or not.	ECO & Contractor
<b>Safety:</b> All the necessary handling and safety equipment required for the safe use of petrochemicals and oils shall be provided by the Contractor to, and used or worn by the staff whose duty it is to manage and maintain the Contractor's and his subcontractor's and supplier's plant, machinery and equipment. Contractor must comply with the Occupational Health and Safety Act (Act 85 of 1993) and Construction Regulations, 2003 as this governs what the contractor has to do/provide for his staff.	ECO & Contractor

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<b>Hazardous Material Storage:</b> Petrochemicals, oils and identified hazardous substances shall only be stored under controlled conditions. All hazardous materials will be stored in a secured, appointed area that is fenced and has restricted entry. Storage of hazardous products shall only take place using suitable containers approved by the ECO. In addition, hazard signs indicating the nature of the stored materials shall be displayed on the storage facility or containment structure.	ECO & Contractor
<b>Fuels and Gas Storage:</b> Fuel should be stored in a secure area in a steel tank supplied and maintained by the contractor according to safety procedures. Gas welding cylinders and LPG cylinders should be stored in a secure, well-ventilated area. The contractor must supply sufficient fire fighting equipment in event of an accident and strictly no smoking will be allowed where fuel is stored and used.	ECO & Contractor

### 2.1.8 WATER SUPPLY

Mitigation / Management Action	Responsible Agent
Water supply pipelines will be according to contract specifications, following the most direct, yet most ecologically responsible route agreed to with the engineer and as per contract documentation.	ECO & Contractor
Point out to contractors where they can obtain water (e.g. water for mixing of cement as well as for drinking). Contractors shall not make use of/collect water from any other source than those pointed out to them as suitable for use by them.	ECO

### 2.1.9 LIQUID WASTE

Mitigation / Management Action	Responsible Agent
Under the General Authorisations in terms of Section 39 of the National Water Act (Act No. 36 of 1998), DWAF does not permit the construction of wastewater disposal sites (such as septic tank systems) within the 100 year flood line of any watercourse, or alternatively, within 100 metres of the edge of a water resource.	SANParks
The treatment and disposal of effluent will comply with all applicable legislation and the relevant permit regarding the disposal of purified effluent into the natural environment will have to be obtained from DWAF if so required during construction and operations.	SANParks
The design, installation and operation of septic tanks and soak-always will conform to Water Act, including all the regulations made under section 26 of the National Water Act.	SANParks

### 2.2 CONSTRUCTION MANAGEMENT PLAN

The Construction Management Plan forms part of the contract documentation. The plan must be read in conjunction with the contract documents including the relevant Bill of Quantities and Specifications.

### 2.2.1 VEHICULAR ACCESS AND MOVEMENT OF CONSTRUCTION VEHICLES

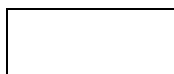
Mitigation / Management Action	Responsible Agent
During construction, use should be made of existing access routes to construction areas where possible. Construct approved vehicle turning areas, avoiding selected ecological sensitive areas or species, and have turning area routes approved by the ECO. Temporary access roads must be rehabilitated after usage as per prior agreement between the Park Manager and Contractor.	ECO & Contractor

### 2.2.2 MOVEMENT OF CONSTRUCTION PERSONNEL, LABOURERS AND EQUIPMENT

Mitigation / Management Action	Responsible Agent
The Contractor must ensure that all construction personnel, labourers and equipment remain within the demarcated construction sites at all times. Where construction personnel and/or equipment wish to move outside the boundaries of the site, the contractor/ labourers must obtain permission from the ECO.	ECO & Contractor

### 2.2.3 VEGETATION CLEARING

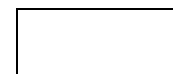
Mitigation / Management Action	Responsible Agent
The extent of all construction site footprints will be minimised and limited to existing and / or already disturbed areas wherever possible.	ECO & Contractor
The areas needing to be cleared and the degree of clearing required will be determined and demarcated in consultation with the ECO before clearing begins.	ECO & Contractor
The Contractor may not deface, paint or otherwise mark and / or damage natural features / vegetation on the site, unless agreed beforehand with the ECO. Any features / vegetation defaced by the Contractor will be restored to the satisfaction of the ECO.	ECO & Contractor
The ECO must be present during vegetation clearing.	ECO
<b>Plant Search and Rescue:</b> <ul style="list-style-type: none"> <li>Plant search and rescue (i.e. the location and removal of specified plant species, without unnecessary damage, and their transfer to a specified location) and the collection of seed, shall be conducted by the ECO prior to the onset of any site clearing operations, should the ecologist/ SANParks Scientific Services indicate this to be necessary.</li> <li>Sensitive areas and/or species that have been selected for conservation by the ecologist / SANParks Scientific Services, Park Manager or ECO, shall be demarcated with danger tape. No activity shall take place at these areas.</li> </ul>	ECO & Contractor



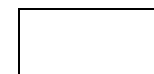
Contractor



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<ul style="list-style-type: none"> <li>De-stumping shall only occur at the request of the ECO. Where roots can act as erosion protection, trees should be cut as close as possible to the ground level.</li> <li>During the clearing of woody vegetation no basal cover or grass and topsoil shall be removed and damage to this layer shall be minimised as far as possible.</li> </ul>	
<b>Vegetation Removal and Trimming in Watercourses:</b> No heavy machinery shall be permitted within watercourses for any purpose, except emergency procedures, without the prior approval of the ECO. Clearing of vegetation shall be conducted by hand. All cleared and trimmed vegetation shall be removed from any watercourse to prevent flooding/snagging hazards being created.	ECO & Contractor
<b>Rehabilitation:</b> The Park Manager, ECO, and Contractor must agree on rehabilitation of areas. The Contractor shall be held responsible for rehabilitation for all areas disturbed during construction. This includes, for example, service roads, stockpile areas, stop/go facilities, windrows and wherever material generated for, or from, road construction has to be stored temporarily or otherwise within the road reserve, or at designated or instructed areas outside the road reserve. This responsibility shall extend until expiry of the Defects Liability Period.	ECO & Contractor

#### 2.2.4 PROTECTION OF FAUNA

Mitigation / Management Action	Responsible Agent
<ul style="list-style-type: none"> <li>Under no circumstances shall any animals be handled, removed, killed or be interfered with by the Contractor, his employees, his subcontractors or his subcontractors' employees.</li> <li>The Contractor and his employees shall not bring any domesticated animals onto the site.</li> <li>The Contractor shall ensure that the work site be kept clean, tidy and free of rubbish that would attract animals.</li> <li>No poaching of fauna and flora shall be tolerated by the Contractor or his personnel on Site or elsewhere.</li> </ul>	ECO & Contractor

#### 2.2.5 HERITAGE AND/OR ARCHAEOLOGICAL SITES

Mitigation / Management Action	Responsible Agent
Historical and Archaeological Sites: If any artifact on site is uncovered, work in the immediate vicinity shall be stopped immediately. The Contractor shall take reasonable precautions to prevent any person from removing or damaging any such article and shall immediately upon discovery thereof inform the ECO of such discovery. The South African Heritage Resources Agency (SAHRA) or the National Monuments Council shall be contacted such that an archaeological consultant can be appointed to excavate and record the site. Work may only resume once clearance is given in writing by the archaeologist.	ECO & Contractor

No stones/rock or any material may be removed from any site in the park without approval by the ECO, and after confirmation that materials do not form part of a cultural site.	
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#### 2.2.6 SOIL MANAGEMENT

Mitigation / Management Action	Responsible Agent
<b>Topsoil:</b> The Contractor is required to strip topsoil together with grass / groundcover from <u>all</u> areas where permanent or temporary structures are located, construction related activities occur, and access roads are to be constructed, etc. This must be read together with the contract specifications & conditions. Topsoil must be stockpiled for later use.	ECO & Contractor
Topsoil is to be handled twice only - once to strip and stockpile, and secondly to replace, level, shape and scarify.	ECO & Contractor
Topsoil stockpiles are not to exceed 1.5 m in height and should be protected to prevent erosion where needed.	ECO & Contractor
Topsoil stockpiles are to be maintained in a weed free condition. The ECO can assist with guidance as to which plants are weeds and require removal.	ECO & Contractor
Topsoil is to be replaced by direct return where feasible (i.e. replaced immediately on the area where construction is complete), rather than stockpiling it for extended periods.	ECO & Contractor
<b>Spoil Material:</b> The location of spoil stockpile sites shall be agreed upon by the ECO prior to the onset of any operations that will generate spoil materials. No spoil material shall be dumped outside the defined site. The Contractor shall ensure that the material does not blow or wash away. If the spoil material is in danger of being washed or blown away, the contractor shall cover it with a suitable material, such as hessian or plastic.	ECO & Contractor

#### 2.2.7 EROSION CONTROL

Mitigation / Management Action	Responsible Agent
The Contractor shall protect all areas susceptible to erosion and shall take measures, to the approval of the ECO. The Contractor shall not allow erosion to develop on a large scale before effecting repairs and all erosion damage shall be repaired as soon as possible.	ECO & Contractor
The specifics of erosion protection work will vary from situation to situation. These specifics should be cleared with the Park Manager and/or ECO and comply with the contract specifications.	ECO & Contractor
Where required, cut-off trenches can be installed to divert substantial run-off and prevent erosion.	ECO & Contractor
During construction, areas susceptible to erosion must be protected by installing temporary or permanent drainage works and energy dispersion mechanisms and could include – to be agreed to by SANParks and Contractor and with considerations of implications on costs: <ul style="list-style-type: none"> <li>Vegetation,</li> </ul>	ECO & Contractor

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<ul style="list-style-type: none"> <li>Mitre drains (afleivore),</li> <li>Benches (grondwalle),</li> <li>Benches consisting of sandbags,</li> <li>Packing branches and rocks in small gullies and disturbed areas.</li> </ul>	
Storm water drainage measures are required on site to control runoff and prevent erosion.	ECO & Contractor

## 2.2.8 SLOPE PROTECTION

Mitigation / Management Action	Responsible Agent
Cut and fill slopes shall be shaped and trimmed to approximate the natural condition and contours as closely as possible and, where possible, be undulating. Levels incongruous to the surrounding landscape, shall be reshaped as per contract specifications.	ECO & Contractor
Slopes that need protection shall be identified by the ECO and the specifications needed must be established using the latest approved methods and technology.	ECO & Contractor

## 2.2.9 ACCESS ROADS

Mitigation / Management Action	Responsible Agent
Construction staff may only use authorised paths and roads.	ECO & Contractor
The proclaimed speed limit in the Park must be strictly adhered to.	ECO & Contractor
ECO will monitor the conduct of drivers and report any negative impact to the contractor immediately.	ECO & Contractor
Construction roads must follow existing roads and tracks and should not be wider than necessary with a maximum width of 3 m. Should a wider road be required, this will require the approval of the ECO.	ECO & Contractor
If two-way traffic movement is to take place, passing bays are to be used where specified by the ECO to prevent access / detours into the surrounding areas. The drivers delivering construction materials to site are to be made aware of this. They may not drive off the road in order to allow another vehicle to pass.	ECO & Contractor
Continual use of dirt access roads by heavy machinery and increased transport loads means they will have to be carefully monitored and regularly graded as soon as potholes or rutting occurs.	ECO & Contractor
Upon completion of the construction period, the Contractor will ensure that the access roads are returned to a state no worse than prior to construction commencing.	ECO & Contractor

## 2.2.10 EXCAVATION, BACKFILLING AND TRENCHING

Mitigation / Management Action	Responsible Agent
Where at all possible, excavations must not stand open longer than 2 days, and should preferably be opened and closed on the same day. They should not be permitted to stand open longer than a week under any circumstances. Excavations must be marked with tape to clearly demarcate the area and warn against access.	ECO & Contractor
Excavations must not be undertaken until such time that all required materials / services etc. are available on-site, to facilitate immediate laying of such services or the construction of subsurface infrastructure.	ECO & Contractor
Any such excavations should ideally be undertaken within the confines of an established construction site - i.e. a site that is either protected with a peripheral fence, or a site that has a regular / continual human presence. Failing this, regular daily inspections are essential.	ECO & Contractor
If need be, spread the rocks in as natural looking manner as possible in the veld.	ECO & Contractor
Excess rocks and sand as a result of excavation activities is not to be dumped along next to construction site – rocks to be spread in a natural looking manner in the surrounding area.	ECO & Contractor
Removed soil is to be used to backfill areas where required (i.e. such as existing and un-rehabilitated gravel pits).	ECO & Contractor
Excavated material is to be stockpiled along the trench within the working servitude, unless otherwise authorised.	ECO & Contractor
Deficiency of backfill material will not be made up by excavation within the protected area. Where backfill material is deficient, it must be made up by importation from an approved borrow pit area.	ECO & Contractor

## 2.2.11 LEVELLING

Mitigation / Management Action	Responsible Agent
Excess sand and soil resulting from levelling activities of the work area should be stored in low heaps either on the access road or already disturbed area.	Contractor
Excess topsoil is to be spread evenly over the area in a manner that blends in with the natural topography.	ECO & Contractor
Once heavy machinery has cleared the bulk of these material stockpiles, the disturbed areas should be levelled and cleared of any foreign material manually e.g. with spades. It is unacceptable to leave foreign material behind with the knowledge that it will become hidden amongst the rejuvenating vegetation with time.	ECO & Contractor

## 2.2.12 SAND EXTRACTION

Mitigation / Management Action	Responsible Agent
This is a specialised and potentially environmentally impacting activity, which must be undertaken with the approval and overall management of the Park.	Contractor / SANParks

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Regular inspections must be undertaken by the local Section Ranger and ECO to monitor and audit the effects and impacts of such removals.	ECO & Contractor
On completion of the sand-winning activity, the river bed will be rehabilitated to the satisfaction of the ECO and Section Ranger.	ECO & Contractor

## 2.2.13 STOCKPILING, HANDLING AND STORAGE OF BUILDING MATERIALS

Mitigation / Management Action	Responsible Agent
Stockpiles and storage yards will be demarcated in areas already disturbed or where they will cause minimal disturbance.	ECO & Contractor
Clearly indicate which activities are to take place in which areas within the site e.g. the mixing of cement, stockpiling of materials etc. Limit these activities to single sites only. This may not always be possible for example for heaps of topsoil, but should definitely be the case for other building materials.	ECO & Contractor
Stockpiles of expensive materials such as cement bags should be such that they can easily be removed from the site over weekends or during rainy weather.	Contractor
Specific sites should be allocated for construction waste e.g. empty cement bags, discarded planks, etc. A low temporary fence may be erected around such a site in order to contain the waste and assist the effective removal thereof from the site.	ECO & Contractor
Old cement mixing bags will be placed in wind and spill proof containers as soon as they are empty. The Contractor will not allow closed, open or empty bags to lie around the site.	ECO & Contractor
The Contractor will ensure that all operations that involve the use of cement and concrete are carefully controlled.	ECO & Contractor
Concrete mixing may only take place in the construction camp or in agreed specific areas on site.	ECO & Contractor
Concrete may not be mixed directly on the ground. No mixed concrete may be deposited directly onto the ground prior to placing. A board or other suitable platform / surface is to be provided onto which the mixed concrete can be deposited whilst it waits placing.	ECO & Contractor
All visible remains of excess concrete will be deposited in a designated area awaiting removal to an approved landfill site.	ECO & Contractor

## 2.2.14 SERVICING AND RE-FUELLING OF CONSTRUCTION EQUIPMENT

Mitigation / Management Action	Responsible Agent
All maintenance and repair work will be carried out at the main construction camp within an area designated for this purpose, equipped with necessary pollution containment measures.	ECO & Contractor
The ground under the servicing and refuelling areas must be protected against pollution caused by spills and / or tank overfills (bunded / lined).	ECO & Contractor
The Contractor may only change oil or lubricant at agreed and designated locations, except if there is a breakdown or emergency repair, and then any accidental spillages must be cleaned up / removed immediately.	ECO & Contractor

Mitigation / Management Action	Responsible Agent
In such instances the Contractor will ensure that he has drip trays available to collect any oil or fluid.	ECO & Contractor
Construction vehicles are to be maintained in an acceptable state of repair. No vehicles or equipment with leaks or causing spills will be permitted to operate at any of the construction sites. These will be sent immediately back to the maintenance yard for repair.	ECO & Contractor
All equipment that leaks must be repaired immediately or must be removed from site.	ECO & Contractor
Fuels required during construction must be stored in a central depot at the construction camp. This storage area should be located on a slab and be contained within a bund capable of containing at least the volume of one of the containers.	ECO & Contractor
Temporary fuel storage tanks and transfer areas also need to be located on an impervious surface adequately bounded to contain accidental spills. Appropriate run-off containment measures must be in place.	Contractor

## 2.2.15 SOLID WASTE MANAGEMENT

Mitigation / Management Action	Responsible Agent
An adequate number of 'scavenger proof' refuse bins must be provided at the construction sites and at the construction camps.	ECO & Contractor
These bins must be provided with lids and an external closing mechanism to prevent their contents blowing out and must be scavenger-proof to prevent baboons and other animals that may be attracted to the waste.	ECO & Contractor
The Contractor will ensure that all personnel immediately deposit waste in the waste bins provided.	ECO & Contractor
All refuse and solid waste generated at all work sites will be stored in appropriate scavenger proof containment vessels at the relevant site and removed to the main construction camp, where the waste will be sorted and stored within a fenced waste storage area.	ECO & Contractor
All waste must be transported in an appropriate manner (e.g. plastic rubbish bags).	ECO & Contractor
The Contractor may not dispose of any waste and / or construction debris by burning, or by burying.	ECO & Contractor
Discard all construction waste at a registered waste management facility / landfill site, particularly those wastes or products that could impact on surface or groundwater quality by leaching into or coming into contact with water.	ECO & Contractor
The contractor will maintain 'good housekeeping' practises as ensure that all work sites and construction camp are kept tidy and litter free.	ECO & Contractor

Contractor

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Employer

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## 2.2.16 LIQUID WASTE MANAGEMENT

Mitigation / Management Action	Responsible Agent
The Contractor must take reasonable precautions to prevent the pollution of the ground and / or water resources on and adjacent to the site as a result of his activities.	Contractor
The Contractor may discharge 'clean' silt laden water overland and allow this water to filter into the ground. However, he must ensure that he does not cause erosion as a result of any overland discharge.	ECO & Contractor
No natural watercourse is to be used for the cleaning of tools or any other apparatus. This includes for purposes of bathing, or the washing of clothes etc.	ECO & Contractor
All washing operations will take place off-site at a location where wastewater can be disposed of in an acceptable manner.	ECO & Contractor
Trucks delivering concrete may not be washed on site or anywhere inside the park.	ECO & Contractor
No spills may be hosed down into a storm water drain or sewer, or into the surrounding natural environment.	ECO & Contractor
Adequate ablution facilities are to be provided at each construction site, conveniently located near to work areas to avoid localised water pollution from camp sewerage.	ECO & Contractor
All soil contaminated, for example by leaking machines, refuelling spills etc. is to be excavated to the depth of contaminant penetration, placed in 200 litre drums and removed to an appropriate landfill site.	ECO & Contractor

## 2.2.17 HAZARDOUS MATERIALS

Mitigation / Management Action	Responsible Agent
The Contractor must comply with all national, regional and local legislation with regard to the storage, transport, use and disposal of petroleum, chemical, harmful and hazardous substances and materials.	Contractor
The Contractor will furthermore be responsible for the training and education of all personnel on site who will be handling the material about its proper use, handling and disposal.	Contractor
The Contractor will be responsible for establishing an emergency procedure for dealing with spills or releases of petroleum.	Contractor
Storage of all hazardous material is to be safe, tamper proof and under strict control.	ECO & Contractor
Petroleum, chemical, harmful and hazardous waste throughout the site must be stored in appropriate, well maintained containers.	Contractor
Exercise extreme care with the handling of diesel and other toxic solvents so that spillage is minimised.	ECO & Contractor
Any accidental chemical / fuel spills to be corrected immediately.	ECO & Contractor
Timber products should be treated off-site prior to use in construction.	ECO & Contractor

Periodic on-site application of timber treatment products (for maintenance purposes) should take place with due care for the nature of the product (toxicity) and for potential spillages that may occur. Areas where timber is to be treated should have secondary containment measures instituted, such as the placement of a plastic layer (some form of covering) over soils, beneath the timber structures to prevent contamination of the soil surface.	ECO & Contractor
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## 2.2.18 RUN-OFF FROM CONSTRUCTION CAMPS

Mitigation / Management Action	Responsible Agent
The Contractor must ensure that rainwater containing pollutants does not run-off into natural areas and thus result in a pollution threat.	ECO/Contract or
A drainage diversion system is to be installed to divert runoff from areas of potential pollution, e.g. batching area, vehicle maintenance area, workshops, chemical and fuel stores, etc.	ECO/Contract or

## 2.2.19 FIRE

Mitigation / Management Action	Responsible Agent
The Contractor must take all the necessary precautions to ensure that fires are not started as a result of activities on site.	Contractor
No fuels or chemicals may be stored under trees.	ECO/Contract or
Gas and liquid fuel may not be stored in the same storage area.	ECO/Contract or
The Contractor must ensure that there is adequate fire-fighting equipment at the fuel stores.	ECO/Contract or
No open fires for heating or cooking will be permitted on site, unless otherwise agreed and then only in designated areas.	Contractor
The Contractor will supply all living quarters, site offices, kitchen areas, workshop areas, material stores and any other areas identified with suitable, tested and approved firefighting equipment.	Contractor
The construction site must be protected against fire, and a sufficient fire break must be constructed, on advice by the Section Ranger, around each construction site and the construction camp where necessary.	ECO/Contract or

## 2.2.20 DUST

Mitigation / Management Action	Responsible Agent
The Contractor shall take precautions to the satisfaction of the ECO to limit the production of dust and damage caused by dust.	ECO/Contract or

Contractor

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Employer

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**2.2.21 NOISE**

Mitigation / Management Action	Responsible Agent
Machinery and vehicle silencer units are to be maintained in good working order. Offending machinery and / or vehicles will be banned from use on site until they have been repaired.	Contractor
Noise levels must be kept within acceptable limits for a protected area, and must not be of such nature as to detract from the natural experience of other visitors to the protected area.	Contractor
The contractor shall take into consideration that the project areas are located within a natural environment and that noise could be a major disturbance/nuisance for the fauna and visitors to the park. Project management should endeavour to keep noise generating activities associated with construction activities to a minimum and within working hours.	Contractor

**2.2.21 VISUAL**

Mitigation / Management Action	Responsible Agent
Security lighting must be placed such that it is not a nuisance to residents and visitors to the area. Shields may be required to prevent lights from being visible from other parts of the protected area.	ECO/Contract or
Care will be taken when positioning the lights to ensure the least visual impact, while still providing a safe work environment for construction staff.	ECO/Contract or
Should any construction activities take place where Park tourists can see the construction activities, then clear signboards must be erected to inform the tourists of the activity taking place. SANParks to provide boards. Contractor to erect boards as required.	Contractor
The Contractor shall not establish any activities which, in the opinion of the ECO, are likely to adversely affect the scenic quality of the area. The ECO may direct the Contractor to refrain from such activities or to take ameliorative actions to reduce the adverse effects of such activities.	ECO/Contract or
No painting or marking of natural features shall take place. Marking for surveying and other purposes shall only be done with pegs and beacons.	ECO/Contract or
All packed rock and exposed rock cuttings shall be treated in order to blend their colour with the colours of the natural weathered rocks of the adjacent environment.	ECO/Contract or

**2.2.22 SITE CLEAN-UP AND REHABILITATION**

Mitigation / Management Action	Responsible Agent
The Contractor must ensure that all temporary structures, materials, waste and facilities used for construction activities are removed upon completion of the project.	Contractor / ECO

Fully rehabilitate (e.g. clear and clean area, rake, pack branches etc.) all disturbed areas and protect them from erosion.	Contractor / ECO
Only indigenous plants which are able to establish easily and will need less maintenance because they have already adapted to the local conditions should be considered.	Contractor / ECO
Before final decisions about the choice of plant species are taken the Section Ranger should be approached for their advice.	Contractor / ECO

**2.3**

**MONITORING OF EMP IMPLEMENTATION**

The correct and successful implementation of impact mitigation measures in order to reduce adverse impacts on environmental conditions needs to be ensured by a proper monitoring programme.

Monitoring of the general implementation of/adherence to the EMP, shall be the responsibility of the ECO. Reporting on adherence/compliance to stipulations as communicated to contractors, shall take place during scheduled site meetings.

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### 2.3.1 Monitoring Form:

A list of environmental issues addressed in the EMP is drawn up. A tick box monitoring form is compiled which makes provision for compliance or non-compliance to the EMP requirements for each environmental issue. This monitoring form makes room for a brief description of the non-compliance(s). The issues identified on the monitoring form must be discussed in detail with the contractor and the Park Manager. A reasonable date of completion of the remedial action must be jointly agreed upon, between the contractor, ECO and Park Manager. This monitoring form must be signed by all parties and a copy be provided to the Park Manager.

The following Monitoring Form may serve as an **example** or point of departure.

<b>Name:</b>	<b>Date:</b>
<b>Project:</b>	

ENVIRONMENTAL MONITORING CHECKLIST (NC = NON-COMPLIANCE, C = COMPLIANCE, NA = NOT APPLICABLE)					
Item		Rating	Item		Rating
1.	Vehicular access and movement of construction vehicles		13.	Stockpiling, handling and storage of building materials	
2.	Movement of construction personnel, labourers and equipment		14.	Servicing and re-fuelling of construction equipment	
3.	Vegetation clearing		15.	Liquid waste management	
4.	Protection of fauna		16.	Hazardous materials	
5.	Cultural and/or archaeological sites		17.	Run-off from construction camps	
6.	Soil management		18.	Fire	
7.	Erosion control		19.	Dust	
8.	Slope protection		20.	Noise	
9.	Access roads		21.	Visual	
10.	Excavation, backfilling and trenching		22.	Site clean-up and rehabilitation	
11.	Levelling		A.	<b>Others</b>	
12.	Sand extraction				
<b>Remedial Action on Non-compliance: (Action and Time Plan)</b>					
<b>Close out:</b> Environmental Control Officer  Name _____  Date _____			<b>Response required by:</b> Contractor  Name _____  Date _____		
Comments:					
Records: <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;"> <input type="checkbox"/> PARK MANAGER           </div> <div style="text-align: center;"> <input type="checkbox"/> CONTRACTOR           </div> <div style="text-align: center;"> <input type="checkbox"/> PROJECT MANAGER           </div> </div>					

 Contractor

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Contractor

 Employer

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Employer



# Annexure C

## Code of Conduct for Working in a National Park

Contractor

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Employer

Witness for Employer





## SOUTH AFRICAN NATIONAL PARKS

### CODE OF CONDUCT FOR WORKING IN A NATIONAL PARK OUTSIDE ORGANISATIONS WORKING TEMPORARILY IN A NATIONAL PARK

#### CODE OF CONDUCT FOR PERSONNEL FROM OTHER ORGANISATIONS TEMPORARILY WORKING IN NATIONAL PARKS

##### 1. INTRODUCTION

You will presently begin an important task in a national park, which is an area controlled by South African National Parks (SANParks). For obvious reasons your task must be completed in the shortest possible time and to accomplish this, there has to be co-operation at all levels between yourselves and personnel from SANParks.

In the past, you and your sub-ordinates worked in uncontrolled areas, but you are presently in a controlled area and furthermore in a national park.

As the name implies, the main objective with a national park is the protection, conservation and utilization of our heritage, in such a way to allow future generations to enjoy, appreciate and admire nature in its unspoiled state. This great endeavor can only be achieved if every individual who works in a national park admits to and accepts nature conservation as part of their heritage (daily life). Certain procedures were followed in the past to accomplish your tasks, but now you must accept that adaptations will have to be made to complete your task in a national park without disturbing the natural environment. You will also be subjected to certain necessary restrictions during your stay and operations in a national park. Certain expectations will be made in accordance with your work commitments. Restrictions will be

kept to a minimum, those that are enforced must please be respected and seen in a positive light to promote co-operation and to prevent any unpleasantness.

Depending on where you are resident while working in a national park, you are requested to discuss any problems you may encounter, with the Park Manager, (*Section Ranger or the person in charge of Visitor Services*). You can be assured that these officials will do everything in their power to ensure that you have a pleasant and productive stay in the national park.

Please study and commit yourself to the attached Code of Conduct.

Any uncertainties must be cleared up with a SANParks' official.

We wish you a pleasant and productive stay in our national parks.

##### 2. PRINCIPLES WITH RESPECT TO BEHAVIOUR AND DISCIPLINE

All persons residing in or working in a national park, are subject to the National Environmental Management Protected Areas Act 57 of 2003.

The following principles should be complied with at all times in a national park:

- 2.1 No prospecting or mining is allowed on any land forming part of a national park or protected area.
- 2.2 No person, except an employee authorized by SANParks may:
  - 2.2.1 Enter or reside in a national park without permission;
  - 2.2.2 Be in possession of an unsealed weapon, explosives, traps or poison in the park or convey the same into a park;
  - 2.1.3 Hunt or kill an animal, collect, damage or destroy a bird's nest or it's eggs;
  - 2.1.4 Purposely or negligently cause a veld fire or damage any object of geological, archaeological, historical, ethnological or of any other scientific value to SANParks;
  - 2.1.5 Bring any animal or pet into a national park or allow domestic animals to stray into a national park, if found it will be confiscated and destroyed by an official;
  - 2.1.6 Remove any animal (dead or alive) or parts thereof from the park (unless lawfully brought into the park);
  - 2.1.7 Cut down trees or remove plants from a park or in any way damage any tree, plant or seeds;
  - 2.1.8 Feed animals in national parks;
  - 2.1.9 Drive a vehicle without a licence or allow a minor to drive a vehicle under his control;

Contractor

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Contractor

Employer

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Employer



- 2.1.10 Spend the night anywhere in a national park, (other than in a designated area) except in a rest camp or private home, without the permission of SANParks;
- 2.1.11 Enter a national park in an:
- Unlicensed (or unregistered) vehicles;
  - Enter or use any closed road (no entry);
- 2.1.12 Vehicles may not be driven recklessly or negligently in a national park.
- 2.1.13 All drivers must consider other drivers and all animals.
- 2.1.14 No person under the influence of alcohol or drugs may drive a vehicle in a national park or be in the drivers seat of a vehicle with the engine running.
- 2.1.15 Without special permission, no person may organize or perform public entertainment or fund-raising campaigns.
- 2.1.16 Angling in rivers or dams is prohibited.
- 2.1.17 Angling, where permitted, is only allowed from sunrise to sunset.
- 2.1.18 Swimming is prohibited at designated angling areas.
- 2.1.19 No person may damage property or endanger property belonging to SANParks.
- 2.1.20 No person may use a radio or musical instruments in such a way as to cause a disturbance to others.
- 2.1.21 No person may dispose of any article or rubble other than in containers provided by SANParks.
- 2.1.22 No person may remove sand, stone or wood without the permission of SANParks.
- 2.1.23 Unless issued with an official late permit, no one may travel from a rest camp or entry gate after gate closing times. Permits are issued by the Park Manager or designated person after acceptance of a legitimate motivation.
- 2.1.24 The proclaimed speed limit in a national park must be strictly adhered to, except if and when concessionary speed limits have been approved.
- 3. RESPONSIBILITIES TOWARDS NATURE CONSERVATION**
- 3.1 Antiquities or objects of historical value which you may discover during your operation in a national park, are and remain the property of SANParks. These items must be handed the Park Manager or designated person as soon as possible. Any person found possession of such articles, either to keep or sell, will be liable to prosecution.
- 1.2 No firewood may be collected or removed without the permission of a Nature Conservation official. Under no circumstances will permission be granted to remove firewood from the park unless proof of sale from one of the shops can be produced.
- 1.3 Stone, sand and/or soil may not be removed from any area, unless permission has been granted by the Park Manager or designated person. These products may only be removed from sites specified by the Park Manager.
- 1.4 On request, the Park Manager or local Section Ranger will point out to the foreman, the sites allowed for removal of stone, sand and/or water for building or other purposes. No water may be taken from existing boreholes unless the Park Manager or designated person gives permission.
- 1.5 The removal, cutting down or damage to any living plant in a national park is illegal and may only be done with permission. Where the construction of roads, buildings etc. necessitates the destroying of indigenous trees, shrubs or plants, it must be kept to an absolute minimum.
- 1.6 Gravel pits must, where at all possible, not be visible from any road. After construction, these gravel pits must be rehabilitated as per contract document and/or Environmental Management Plan.
- 1.7 No animals may be killed in the park.
- 1.8 Other than SANParks employees, personnel resident in a park, but not employed by SANParks, may only kill an animal in an emergency, to protect a life or property or when specifically authorized to do so by SANParks. A report of all animals killed and the circumstance surrounding if, must be sent to the Park Manager or designated person as soon as possible.
- NB** Snakes may only be killed in residences, rest camps and living quarters if it cannot be captured and removed by a knowledgeable person. Under no circumstances may poisonous or non-poisonous snakes be killed in the bush or elsewhere. Residents in a park are encouraged to study the poisonous and non-poisonous snake species for their own protection.
- 4. FIREARMS**
- Only authorized persons are allowed to possess firearms in a park. Firearms will only be allowed in exceptional circumstances, where an employee may need it in the execution of his duties and will be subject to certain strict conditions.
- 5. LITTER**
- All residents and work teams are expected to have proper respect towards the scenic beauty of a national park and not litter tins, paper etc. as well as construction debris, where new roads, bridges, dams or buildings are being constructed. It is the duty of the contractor and/or his supervisors to ensure that after completion of the projects, all litter is carted away. Under no circumstances may this litter be dumped in the bush or anywhere else. It is your responsibility to find out from the Park Manager or designated person if and where litter may be dumped. Littering is a serious offence and perpetrators can be prosecuted.
- NB:** After completion of any project, a contractor is required to obtain a report from the Park Manager declaring his satisfaction with the condition of the terrain and immediate surroundings.

**Contractor****Witness for  
Contractor**

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**6. PETS**

No dogs or other pets are allowed in a national park without written permission of the Executive Director: Parks.

**7. PERSONNEL RELATIONS**

7.1 Park Managers or any designated person are officials of the SANParks and are responsible for the enforcement of the Protected Areas Act 57, 2003 in their respective parks. To uphold the organisation's authority, they have to be aware of all activities and especially extraordinary activities in their park. It is therefore not only a matter of courtesy but of necessity to report all activities to the Park Manager. It is very important that all new building activities, the construction of new roads, etc., be reported by the supervisor to the Park Manager. It is just as important to report the use of firebreak roads as well as unscheduled night trips to the Park Manager.

7.2 No person residing or working in a rest camp may leave the rest camp gate after gate closing times, without the Park Manager's or designated person's permission.

**8. TRAVELLING TIMES AND TRANSPORT MATTERS**

10.1 All private and official trips within a national park, must be undertaken during daylight hours and permission to travel after-hours will only be given in emergencies, by the Park Manager or designated person.

10.2 No person (employee or visitor) may transport passengers on the back of an open vehicle within a national park, unless in the execution of official duties.

**9. ROAD RULES AND SPEED LIMITS****9.1 Road Rules**

All personnel, whether in an official or private capacity, must ensure that their driving sets an example to other drivers. Although all people working in a park with the necessary approval, may drive at a faster speed than the tourists, they must do this as unobtrusively as possible by approaching another vehicle at a decreased speed, passing it and then accelerating slowly to the required speed. As soon as an oncoming vehicle is in sight, speed must once again be decreased until the vehicle is out of sight.

**9.2 Speed limit for personnel**

All employees of SANParks, as well as employees from outside organisations with written consent working in a national park, may travel at a maximum speed of 65km/h during the day and 50km/h at night regardless of the speed limit. These speed limits are applicable to all official trips and may only be exceeded in emergencies. Personnel and/or their spouses may also drive at 65km/h during the day, whilst in their private vehicles en route to the entrance gate closest to their residence. During private trips in the rest of the park, the designated speed limit has to be adhered to as well as in all the rest camps and personnel villages.

Please take note that all transgressors of this privilege will be prosecuted in the same way as tourists who disregard the speed limit.

**10. CONTROL AT ENTRANCE AND RESTCAMP GATES**

When entering or leaving an entrance gate of a national park, you must identify yourself to the tourist officer in charge. No one may leave a rest camp after hours unless the Park Manager or designated person has granted permission and anyone arriving after hours at a rest camp must report to the Park Manager or designated person.

**11. ENTRANCE TO NO-ENTRY ROADS****Fire-break and patrol roads**

Please take note that no one may drive along a fire-break or patrol road with a no-entry sign in their private capacity or along any road which has been closed in any way. Only the Park Manager or designated person may give permission to do so. When a fire-break or patrol road has to be used officially the Park Manager or designated person must preferably be given prior notice of the date and the route. If it is not possible to notify him, it must be done immediately on completion of the trip.

**12. GUEST PRIVILEGES**

Arrangements regarding guests must be made by the site supervisor with the Park Manager or designated person.

Only immediate family members (parents and children) will be allowed free access to a national park with the permission of the Park Manager or designated person.

**13. GENERAL DISCIPLINE**

It is the responsibility of every supervisor in a park to ensure that the following rules and regulations are brought to the attention of every employee under their supervision and to see that it is adhered to.

13.1 Every employee residing in living quarters in a rest camp or on a designated site must:

- 13.1.1 Obey all reasonable and lawful rules given by the Park Manager or designated person;
- 13.1.2 Reside only in specific quarters/designated site reserved for them;
- 13.1.3 Maintain cleanliness and sanitation in his place of residence.

13.2 No person residing, working or officially present in a park, is allowed to:

- 13.2.1 Accommodate any unauthorized person, assist him or give him permission to enter or live in any designated living areas;
- 13.2.2 Behave in such a way as to be detrimental to maintaining discipline, order for health in such living areas;

13.3 Without written permission from the Park Manager or designated person;

- 13.3.1 Keep live animals or poultry;

**Contractor****Witness for  
Contractor****Employer****Witness for  
Employer**

- 13.3.2 Excavate or have excavations made  
13.3.3 Build or make any alterations to existing building;

- 13.4 In any way, either directly or indirectly, hinder any employee, Security Officer, Ranger or anyone authorized by the Park Manager, in the execution of their duties; inspections or any investigations deemed necessary or purposely hinder, obstruct, mislead or refuse to divulge information when requested to, or refuse to assist in any way or heed legitimate request or command.
- 13.5 Purposely disturb the peace by making a noise, shouting, screaming, arguing, causing violence or acting violently or improperly.
- 13.6 Enter or leave a Park or living quarters other than through the official gates.
- 13.7 Gamble in any way.
- 13.8 Defecate in a place or manner as to offend any other person.
- 13.9 Dispose of rubble or leftovers in any place other than in bins provided.
- 13.10 Aimlessly loiter or hang around near or in a rest camp or personnel accommodation at any time.
- 13.11 Introduce, brew or be in possession of alcohol.
- 13.12 Be in possession of habit forming drugs.
- 13.13 Be in possession of any fresh meat, especially raw venison or other animal products and, if required legally, it may not be transported out of the park without the necessary veterinary permits.
- 13.14 Hitch-hike in a national park.
- 13.15 Possess a firearm or any dangerous weapon without the necessary permission or permit.
- 13.16 Where work teams reside and work in the field, wander away from the work site or living quarters.
- 13.17 Temporary work teams (supervisors excluded) are not allowed to receive visitors in a national park.
- 13.18 It is the contractor's responsibility to ascertain the rules and regulations laid down by SANParks.

#### 14. **MALARIA AND MALARIA CONTROL**

Some of the national parks, e.g. Kruger National Park and Mapungubwe National Park are in an endemic malaria area and the residents are constantly exposed to the disease and must be aware of the fact.

Malaria is a potentially dangerous disease and if not treated timeously and correctly, can be fatal. It is therefore extremely important that all residents, their children and their employees take adequate preventative measure to protect themselves from disease. Malaria is a disease caused by small parasites, which destroy red blood corpuscles of an affected person. Parasites are transmitted from person to person by the *Anopheles* mosquitoes. Various types of malaria occur of which *plasmodium falciparum* is the most common and also the most dangerous.

The possibility of contracting the disease can be reduced by avoiding mosquito bites and taking prophylactics which prevent the development of parasites in the body. Please contact the local physician for precautionary measures or if you think you have malaria.

**END**

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Contractor**

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Employer**