



**SOUTH AFRICAN NATIONAL PARKS**

**TSITSIKAMMA ELECTRICAL INFRASTRUCTURE UPGRADE,  
STORMS RIVER MOUTH, TSITSIKAMMA NATIONAL PARK**

**CONTRACT NO: CI-GK-0130**

**TENDER DOCUMENT**

**January 2024**

**ISSUED BY:**

**Mr. Garret Kobe**

**Manager SCM: Infrastructure and Special Projects**

**SOUTH AFRICAN NATIONAL PARKS**

**P.O. BOX 787**

**PRETORIA**

**0001**

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

**Tsitsikamma Electrical Infrastructure Upgrade,  
Storms River Mouth, Tsitsikamma National Park**

**CONTRACT No. CI-GK-0130**

**CONTENTS**

Number	Heading	Colour
	<b>THE TENDER</b>	
	<b><i>Part T1: Tendering procedure</i></b>	
T1.1	Tender Notice and Invitation to Tender	White
T1.2	Tender Data	Pink
	<b><i>Part T2: Returnable documents</i></b>	
T2.1	List Of Returnable Documents	Yellow
T2.2	Returnable Schedules	Yellow
	<b>THE CONTRACT</b>	
	<b><i>Part C1: Agreement and Contract Data</i></b>	
C1.1	Form of Offer and Acceptance (Including Schedule of Deviations)	Yellow
C1.2	Contract Data	Yellow
C1.3	Form of Guarantee	White
C1.4	OHS Mandatory Form	White
C1.5	Declaration of Ownership of Unused Materials	White
	<b><i>Part C2: Pricing data</i></b>	
C2.1	Pricing Instructions	Yellow
C2.2	Activity Schedule / Bills of Quantities	Yellow
	<b><i>Part C3: Scope of work</i></b>	
C3.1	Description of Works	Blue
C3.2	Engineering	Blue
C3.3	Procurement	Blue
C3.4	Construction	Blue
C3.5	Management	Blue
C3.6	Annexes (Particular and Standardised Specifications)	Blue
	<b><i>Part C4: Site information</i></b>	
C4	Site Information	Green
	<b><i>Part C5: Drawings</i></b>	
C5	Drawings	

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 Employer 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

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Employer

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## 1: The Tender

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**Part T1: Tendering procedures**

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**SBD1  
PART A  
INVITATION TO BID**

<b>YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF THE SOUTH AFRICA NATIONAL PARKS</b>					
<b>BID NUMBER:</b>	CI-GK-0130	<b>CLOSING DATE:</b>	22 February 2024	<b>CLOSING TIME:</b>	11h00
<b>DESCRIPTION:</b>	<b>Tsitsikamma Electrical Infrastructure Upgrade, Storms River Mouth, Tsitsikamma National Park</b>				
<b>BID RESPONSE DOCUMENTS MAY BE DEPOSITED IN THE BID BOX SITUATED AT (STREET ADDRESS)</b>					
<p>Location of tender box: Entrance Gate Storms River Mouth, Reception, Tsitsikamma NP, Tender Box Available 8h00 to 18h00 (Monday - Sunday)</p> <p>Physical address: Entrance Gate Storms River Mouth (off the N2 National Road) Tsitsikamma NP.</p> <p>Identification: Contract No. CI-GK-0130: Tsitsikamma Electrical Infrastructure Upgrade, Storms River Mouth, Tsitsikamma National Park</p> <p>Google Earth Coordinates: <b>34° 00' 39.38" S / 23° 52' 08.23" E</b></p>					
<p>T1.1: Tender Notice and Invitation to Tender</p> <p>The South African National Parks invites tenders for <b>Tsitsikamma Electrical Infrastructure Upgrade, Storms River Mouth, Tsitsikamma National Park</b></p> <p><b><u>ELIGIBILITY</u></b></p> <p><b>CIDB Grading:</b></p> <p>The following tenderers who are registered with the CIDB, or are capable of being so registered prior to the evaluation of submissions are eligible to submit tenders:</p> <ul style="list-style-type: none"><li>• Contractors who have a CIDB contractor grading designation of <b>4EP or 3EP PE</b> or higher, and</li><li>• Joint ventures are eligible to submit tenders provided that:<ul style="list-style-type: none"><li>(i) Every member of the joint venture is registered with the CIDB;</li><li>(ii) The lead partner has a contractor grading designation in the <b>4EP or 3EP PE or higher</b> class of electrical construction work; and</li><li>(iii) 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>4EP or 3EP PE or higher</b> class of electrical construction work or a value determined in accordance with Regulation 25 (1B) of 25(7A) of the Construction Industry Development Regulations.</li></ul></li></ul> <p><b>Mandatory Requirements:</b></p> <p>The following requirements for the <u>Contracts Manager</u>, <u>Construction Manager</u> (Site Agent), and or any other <u>authorized person</u> part of the workforce intended to construct, and or perform electrical switching, linking and safety testing are:</p> <ul style="list-style-type: none"><li>• Registration as Installation Electrician / Master Installation Electrician with the Department of Labour (DoL) in terms of Regulation 11 (2) (competent / authorized person in terms of the OHS Act).</li></ul>					

<div style="border: 1px solid black; height: 30px; width: 100%;"></div> <p>Contractor</p>	<div style="border: 1px solid black; height: 30px; width: 100%;"></div> <p>Witness for Contractor</p>	Page 5 of 219	<div style="border: 1px solid black; height: 30px; width: 100%;"></div> <p>Employer</p>	<div style="border: 1px solid black; height: 30px; width: 100%;"></div> <p>Witness for Employer</p>
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- **ORHVS (Operating Regulations for High Voltage Systems)** qualification as “APPOINTED OPERATOR”, approved in writing, with defined outcomes as per Eskom or Municipal Specification for electrical switching, linking and safety testing for MV equipment and lines up to 22kV.
- Completion of table on as part of (Annexure E) is required

#### Functionality Criteria:

Tenderers are required to demonstrate their ability to undertake the work and provide proof of experience in **construction of bulk electrical infrastructure projects**. Tenderers are required to score a **minimum of 80%** (40/50) in order to qualify for the tender.

Tenderers who fail to meet the minimum threshold shall be declared **non-responsive** and **subsequently rejected**. The onus rests with the tenderer to supply sufficient and verifiable information to allow for the proper scoring, evaluation and awarding of points.

#### Project Organogram

The Tenderer is to attach a **project organogram** of the key personnel the Tenderer intends employing on this contract to returnable schedule.

#### The functionality criteria are:

##### **Company Experience** – in Contracts of Similar Nature of value $\geq$ R4 Million (30 points)

The Tenderer is to attach a record of completed contracts of a similar nature and value to returnable schedule [Annexure D].

##### **Key Personnel** - Qualifications and Experience (20 points)

The Tenderer is to attach all **the CV's and proof of qualifications and registrations** to returnable schedule [Annexure E].

The key personnel for this contract are as follows:

##### **Contracts Manager**

The Contracts Manager is the director / partner / member who takes ultimate responsibility for the contract. The Contracts Manager shall have project specific experience and shall have the appropriate qualifications aligned with the Electricity Act.

##### **Construction Manager (Site Agent)**

The Construction Manager is the person to whom the Contractor has assigned the responsibility of contractual and on-site activities on behalf of the Contractor relating to the contract.

The Construction Manager shall be solely dedicated to this contract and shall be on site at all times when work is being performed.

##### **Note:**

*Key personnel must correspond to the project organogram,*

*Should a substitution of any of the key personnel be allowed, only a person with the same or higher qualifications and experience will be accepted.*

#### FUNCTIONALITY SCORING SCHEDULE *(indicating maximum points)*

3.1	Company Experience in Contracts of Similar Nature
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3.1.1	Number of Contracts completed [related to electrical infrastructure of value >R4 Million]			30
	5 or more contracts		30	
	3 - 4 contracts		20	
	1 – 2 contracts		10	
	0 contracts / No company track record attached / No Completion Certificate		0	
3.2	Key Personnel: (a) Qualifications and (b) Experience			
3.2.1(a)	Contracts Manager – Medium Voltage Switchgear (>11kV)			5
	BEng. / BSc / BTech		5	
	National Diploma / N6		2	
	No certified qualification / No qualification(s) or CV attached		0	
3.2.1(b)	Contracts Manager – Medium Voltage Switchgear (>11kV)			5
	10+ years		5	
	6 – 10 years		2	
	3 – 5 years		1	
	0 – 3 years / No experience / No CV attached		0	
3.2.2(a)	Construction Manager (Site Agent) – Medium Voltage Switchgear (>11kV)			5
	BEng. / BSc / BTech		5	
	National Diploma / N6		2	
	No certified qualification / No qualification(s) or CV attached		0	
3.2.2(b)	Construction Manager (Site Agent) – Medium Voltage Switchgear (>11kV)			5
	10+ years		5	
	6 – 10 years		2	
	3 – 5 years		1	
	0 – 3 years / No experience / No CV attached		0	
TOTAL FUNCTIONALITY POINTS (max. score):				50

*Tenders scoring less than 80% (40 points out of 50)) will not be further evaluated.*

**Tenderer to submit a list of previous projects (ANNEXURE D)** for functionality evaluation. Information must clearly state project information, 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.

The names and detail of the Contract Manager and Construction Manager (Site Agent) that will be employed on this contract must be **submitted (ANNEXURE E)** with the necessary Curriculum Vitae's (CV's). The various individuals must be permanently employed or appointed on a “fix term Contract” by the Tenderer.

### **SPECIFIC GOALS**

#### **Preferential Procurement Regulations, 2022.**

The following Specific Goals forms part of this tender:

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SPECIFIC GOALS ALLOCATED POINTS IN TERMS OF THIS TENDER		NUMBER OF POINTS ALLOCATED (80/20 system)
1.	<b>ENTERPRISES WITH BLACK OWNERSHIP</b>	
	Person historically disadvantaged on the basis of race with 100% black ownership.	8
	Person historically disadvantaged on the basis of race with 75%-99% black ownership.	6
	Person historically disadvantaged on the basis of race with 51%-74% black ownership.	4
	Person historically disadvantaged on the basis of race with 0-50%% black ownership.	2
2.	<b>LOCALITY</b>	
	To Qualify, bidder must include verifiable proof of business address, older than two years. The contractor must be situated within a 500km radius from Storms River Mouth entrance gate in Tsitsikamma (Annexure F) Include Google Earth coordinates of business in Bid document.	12
<b>MAXIMUM TOTAL POINTS:</b>		<b>20</b>

**Important Notes:**

- A “zero” score will be applied if Tenderers does not qualify for any of the above mentioned “specific goals”.
- The Tender will not be disqualified if any of the two “specific goals” mentioned above are not met.

**The physical address for collection of tender documents and site clarification meeting is:**

Physical address: Entrance Gate Storms River Mouth (off the N2 National Road).

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Identification: Contract No. CI-GK-0130: Tsitsikamma Electrical Infrastructure Upgrade,  
Storms River Mouth, Tsitsikamma National Park

Full tender documents will ONLY be available at the COMPULSORY clarification meeting.

A non-refundable tender deposit of R 300-00, payable in **cash**, is required on collection of the tender document.

**All Queries:**

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

Mr. Garret Kobe

Tel No: (021) 426 5132

Email: [garret.kobe@sanparks.org](mailto:garret.kobe@sanparks.org)

A compulsory clarification meeting with representatives of the Employer will take place at **The main boardroom at Entrance Gate Storms River Mouth Tsitsikamma National Park (off the N2 National Road)**. On **8 February 2024** starting at **11:00**.

Prospective tenderers who arrive later than 11h15 will not be allowed into the Clarification meeting.

The Tenderers shall inspect and examine the Site and its surroundings and shall satisfy themselves before submitting their 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 they may require and in general shall themselves obtain all necessary information as to risk, contingencies and other circumstances which may influence or affect their tender.

The tenderers 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.

Tenders may only be submitted on the tender documentation that is issued. Telephonic, facsimile and late tenders will not be accepted.

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	G Kobe	CONTACT PERSON	CT Jonker
TELEPHONE NUMBER	012 426 5132	TELEPHONE NUMBER	012 426 5303
FACSIMILE NUMBER		FACSIMILE NUMBER	
E-MAIL ADDRESS	garret.kobe@sanparks.org	E-MAIL ADDRESS	cornie.jonker@sanparks.org
SUPPLIER INFORMATION			

Contractor

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NAME OF BIDDER					
POSTAL ADDRESS					
STREET ADDRESS					
TELEPHONE NUMBER	CODE		NUMBER		
CELL PHONE NUMBER					
FACSIMILE NUMBER	CODE		NUMBER		
E-MAIL ADDRESS					
VAT REGISTRATION NUMBER					
SUPPLIER COMPLIANCE STATUS	TAX COMPLIANCE SYSTEM PIN:		OR	CENTRAL SUPPLIER DATABASE No:	MAAA
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 THE GOODS / SERVICES / WORKS OFFERED?		<input type="checkbox"/> Yes <input type="checkbox"/> No [IF YES, ANSWER PART B:3 ]
<b>QUESTIONNAIRE TO BIDDING FOREIGN SUPPLIERS</b>					
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> DOES THE ENTITY HAVE A BRANCH IN THE RSA? <span style="float: right;"><input type="checkbox"/> YES   <input type="checkbox"/> NO</span> DOES THE ENTITY HAVE A PERMANENT ESTABLISHMENT IN THE RSA? <span style="float: right;"><input type="checkbox"/> YES   <input type="checkbox"/> NO</span> DOES THE ENTITY HAVE ANY SOURCE OF INCOME IN THE RSA? <span style="float: right;"><input type="checkbox"/> YES   <input type="checkbox"/> NO</span> 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>					
<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>					

 Contractor

 Witness for Contractor

 Employer

 Witness for Employer

**PART B  
TERMS AND CONDITIONS FOR BIDDING**

**BID SUBMISSION:**

BIDS MUST BE DELIVERED BY THE STIPULATED TIME TO THE CORRECT ADDRESS. LATE BIDS WILL NOT BE ACCEPTED FOR CONSIDERATION.

**ALL BIDS MUST BE SUBMITTED ON THE OFFICIAL FORMS PROVIDED—(NOT TO BE RE-TYPED) OR IN THE MANNER PRESCRIBED IN THE BID DOCUMENT.**

THIS BID IS SUBJECT TO THE PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2022,

THE CONDITIONS OF TENDER ARE THE STANDARD CONDITIONS OF TENDER AS CONTAINED IN **ANNEX C OF THE CIDB STANDARD FOR UNIFORMITY IN CONSTRUCTION PROCUREMENT (AUGUST 2019)**

**TAX COMPLIANCE REQUIREMENTS**

BIDDERS MUST ENSURE COMPLIANCE WITH THEIR TAX OBLIGATIONS.

BIDDERS ARE REQUIRED TO SUBMIT THEIR UNIQUE PERSONAL IDENTIFICATION NUMBER (PIN) ISSUED BY SARS TO ENABLE THE ORGAN OF STATE TO VERIFY THE TAXPAYER'S PROFILE AND TAX STATUS.

APPLICATION FOR TAX COMPLIANCE STATUS (TCS) PIN MAY BE MADE VIA E-FILING THROUGH THE SARS WEBSITE [WWW.SARS.GOV.ZA](http://WWW.SARS.GOV.ZA).

BIDDERS MAY ALSO SUBMIT A PRINTED TCS CERTIFICATE TOGETHER WITH THE BID.

IN BIDS WHERE CONSORTIA / JOINT VENTURES / SUB-CONTRACTORS ARE INVOLVED, EACH PARTY MUST SUBMIT A SEPARATE TCS CERTIFICATE / PIN / CSD NUMBER.

WHERE NO TCS IS AVAILABLE BUT THE BIDDER IS REGISTERED ON THE CENTRAL SUPPLIER DATABASE (CSD), A CSD NUMBER MUST BE PROVIDED.

NO BIDS WILL BE CONSIDERED FROM PERSONS IN THE SERVICE OF THE STATE, COMPANIES WITH DIRECTORS WHO ARE PERSONS IN THE SERVICE OF THE STATE, OR CLOSE CORPORATIONS WITH MEMBERS PERSONS IN THE SERVICE OF THE STATE."

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

SIGNATURE OF BIDDER: .....

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

DATE: .....

**PROTECTION OF PERSONAL INFORMATION ACT, 4 of 2013 (POPIA)**

SANParks adheres to the Protection of Personal Information Act, 4 of 2013 (POPIA) requirements regarding personal information which came into effect 1 July 2021.

As SANParks, we are committed to protecting your privacy and ensuring that personal information collected is used properly, lawfully and transparently.

Contractor

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Employer

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Employer

**CONTRACT No. CI-GK-0130**

## **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 (August 2019)** 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.

<b>Clause number</b>	
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><b>VOLUME 1 :</b> 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>.</p> <p><b>VOLUME 2:</b> The Standard Specifications SANS/SABS as prepared by the South African Bureau of Standards (SABS), as well as all other Regulations, Factories Acts and By-laws stated in Part C3.4.1 are applicable to this Contract. This publications is available and tenderers must obtain copies at their own cost.</p> <p><b>VOLUME 3:</b> The Contract Document in which is bound:</p> <p><b>THE TENDER</b></p> <p><b>Part T1: Tendering procedures</b></p> <p>T1.1 - Tender notice and invitation to tender</p> <p>T1.2 - Tender data</p> <p><b>Part T2: Returnable documents</b></p> <p>T2.1 - List of returnable documents</p> <p>T2.2 - Returnable schedules</p> <p><b>THE CONTRACT</b></p> <p><b>Part C1: Agreements and Contract data</b></p> <p>C1.1 - Form of offer and acceptance</p> <p>C1.2 - Contract data</p> <p>C1.3 - Performance Bond</p> <p><b>Part C2: Pricing data</b></p> <p>C2.1 - Pricing assumptions</p> <p>C2.2 - Bill of Quantities</p> <p><b>Part C3: Scope of work</b></p> <p>C3 - Scope of work and Drawings</p> <p><b>Part C4: Site information</b></p> <p>C4 - Site information</p> <p><b>Part C5 : Drawings</b></p> <p>C5 - Drawings</p>

Contractor


Witness for  
Contractor


Employer


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Employer

C.1.4	<p><b>The employer's agent is :</b></p> <p>Name: Mr. J Kotzé Bosch Projects (Pty) Ltd.</p> <p>Address: Block 2, Greenacres Office Park, Newton Park, PORT ELIZABETH, 6045</p> <p>Tel: 041 363 0598 / 082 533 9014 E-mail: <a href="mailto:KotzeJ@boschprojects.co.za">KotzeJ@boschprojects.co.za</a></p>
C.2.1	<p><b>1) Only those tenders who satisfy the following eligibility criteria and who provide the required evidence in their tender submission are eligible to submit and have their tenders evaluated:</b></p> <p>The following tenderers who are registered with the CIDB, or are capable of being so registered prior to the evaluation of submissions, are eligible to have their tenders evaluated:</p> <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> <p>The following tenderers who are registered with the CIDB, or are capable of being so registered prior to the evaluation of submissions, are eligible to have their tenders evaluated:</p> <p>It is estimated that tenderers must have a CIDB contractor grading designation of <b>4 EP</b> or 3EP PE or higher.</p> <p>Joint ventures are eligible to submit tenders provided that:</p> <p>Every member of the joint venture is registered with the CIDB;</p> <p>The lead partner has a contractor grading designation in the <b>4 EP</b> class of construction work; and</p> <p>The combined contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a contractor grading designation determined in accordance with the sum tendered for a <b>4 EP</b> class of construction work or a value determined in accordance with Regulation 25 (1B) of 25(7A) of the Construction Industry Development Regulations.</p> <p><b>2) Mandatory Requirements</b></p> <p>The following requirements for the <u>Contracts Manager</u>, <u>Construction Manager</u> (Site Agent), and or any other <u>authorized person</u> part of the workforce intended to construct, and or perform electrical switching, linking and safety testing are:</p> <p>Registration as Installation Electrician / Master Installation Electrician with the Department of Labour in terms of Regulation 11 (2) (competent / authorized person in terms of the OHS Act).</p> <p><b>ORHVS*</b> qualification as "APPOINTED OPERATOR", approved in writing, with defined outcomes as per Eskom or Municipal Specification for electrical switching, linking and safety testing for MV equipment and lines up to 22kV.</p> <p><i>* ORHVS - Operating Regulations for High Voltage Systems</i></p>

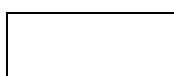
  
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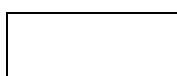
  
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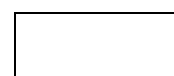
  
Employer

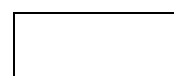
  
Witness for  
Employer

C.2.1	<p><b>3) Tenderers are required to demonstrate their ability to undertake the work and provide proof of experience in the construction of Bulk Electrical Infrastructure projects.</b></p> <p>Tenderers are required to score a minimum of 80% (40 points out of a possible 50 points) in order to qualify for the tender.</p> <p>Tenderers who fail to meet the minimum threshold 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.</p> <p>Where insufficient information is provided, zero points will be awarded for such particular criterion.</p> <p>The functionality criteria and maximum score in respect of each of the criteria as follows:</p> <p>Company Experience (30 points) Key Personnel (20 points)</p> <p>Functionality points for the Tenderer are scored as per the Functionality Scoring Schedule. The requirements of each criterion are described below.</p> <p>Failure to provide <u>verifiable proof</u> for the various criteria will result in a score of <u>zero points</u> for the particular criterion.</p> <p><b>Project Organogram</b></p> <p>The Tenderer is to attach a project organogram of the key personnel the Tenderer intends employing on this contract to returnable schedule.</p> <p><b>3.1 Company Experience in Contracts of Similar Nature of value &gt;R4 Million</b> The Tenderer is to attach a record of completed and current contracts of a similar nature and value to returnable schedule [Annexure D].</p> <p><b>3.2 Key Personnel: Qualifications and Experience</b> The Tenderer is to attach all the CV's and proof of qualifications and registrations to returnable schedule [Annexure E].</p> <p>The key personnel for this contract are as follows:</p> <p><b>3.2.1 Contracts Manager</b> The Contracts Manager is the director / partner / member who takes ultimate responsibility for the contract. The Contracts Manager shall have project specific experience and shall have the appropriate qualifications aligned with the Electricity Act.</p> <p><b>Construction Manager (Site Agent)</b> The Construction Manager is the person to whom the Contractor has assigned the responsibility of contractual and on-site activities on behalf of the Contractor relating to the contract. The Construction Manager shall be solely dedicated to this contract and shall be on site at all times when work is being performed.</p> <p><b>Note:</b> <i>Key personnel must correspond to the project organogram. Should a substitution of any of the key personnel be allowed, only a person with the same or higher qualifications and experience will be accepted.</i></p>
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## FUNCTIONALITY SCORING SCHEDULE

### 3.1 Company Experience in Contracts of Similar Nature

3.1.1	<b>Number of Contracts completed</b> [related to electrical infrastructure of value >R4 Million]		
	5 or more contracts	30	/30
	3 - 4 contracts	20	
	1 – 2 contracts	10	
	0 contracts / No company track record attached / No Completion Cert.	0	

### 3.2 Key Personnel: (a) Qualifications and (b) Experience

3.2.1(a)	<b>Contracts Manager</b> – Medium Voltage Switchgear (>11kV)		
	BEng. / BSc / BTech	5	/5
	National Diploma / N6	3	
	No certified qualification / No qualification(s) or CV attached	0	
3.2.1(b)	<b>Contracts Manager</b> – Medium Voltage Switchgear (>11kV)		
	10+ years	5	/5
	6 – 10 years	3	
	3 – 5 years	1	
	0 – 3 years / No experience / No CV attached	0	
3.2.2(a)	<b>Construction Manager</b> (Site Agent) – Medium Voltage Switchgear (>11kV)		
	BEng. / BSc / BTech	5	/5
	National Diploma / N6	3	
	No certified qualification / No qualification(s) or CV attached	0	
3.2.2(b)	<b>Construction Manager</b> (Site Agent) – Medium Voltage Switchgear (>11kV)		
	10+ years	5	/5
	6 – 10 years	3	
	3 – 5 years	1	
	0 – 3 years / No experience / No CV attached	0	

**TOTAL FUNCTIONALITY POINTS:** /50

*Tenders scoring less than 80% (40/50 points) will not be further evaluated.*

Tenderer to submit list of past and current projects for functionality information – information must clearly state “project information”. Contractor to submit “**Letter of Award**” for current projects, and “**Letter of Award**” and “**Completion Certificates**” for completed projects. Functionality points will only be awarded on letter(s) submitted. Project details shall include telephone contact details of either the client or the engineer for the project [Annexure D].

**Curriculum Vitae's (CV's) of the Contract Manager and Construction Manager (Site Agent) that will be employed on this contract must be submitted with the tender document.** The various individuals must be permanently employed or appointed on a “fix term Contract” by the Tenderer [Annexure E].

Should the key personnel not be available at the time of appointment for any reasonable reason, the Contractor will submit to the Client and Engineer his proposed change in key personnel which will have to be approved. The Client and Engineer may on their discretion reject personnel proposed by the Contractor at such time.

It is the responsibility of the tenderer to submit authentic supporting documentation, tenderers will be disqualified and reported if found to have submitted fraudulent information.

C.2.7

The arrangements details for the compulsory clarification meeting are stated under Part T1.1: Tender Notice and Invitation to Tender.

Tenderers must complete and sign the attendance register at the clarification meeting in the name of the tendering entity.

Contractor

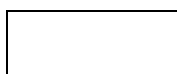
Witness for  
Contractor

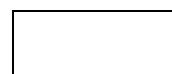
Employer

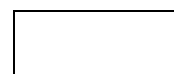
Witness for  
Employer

C2.8	<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. All questions / enquiries must be forwarded in writing not later than <b>11:00 on 15 February 2024</b></p> <p>Questions/enquiries received after <b>11:00 on 15 February 2024</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: 086 416 2121 E-mail: <a href="mailto:Garret.kobe@sanparks.org">Garret.kobe@sanparks.org</a></p>						
C.2.12	No alternative proposals will be accepted.						
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 Nil copies.						
C.2.13.7	<p>The employer's address for delivery of tender offers and identification details to be shown on each tender offer package are:</p> <table border="1"> <tr> <td><b>Location of tender box:</b></td><td>Entrance Gate Storms River Mouth Tsitsikamma National Park (off the N2 National Road).</td></tr> <tr> <td><b>Physical address:</b></td><td>Reception, Storms River Mouth, Tsitsikamma National Park</td></tr> <tr> <td><b>Identification details:</b></td><td>Contract No. CI-GK-0130: TSITSIKAMMA ELECTRICAL INFRASTRUCTURE UPGRADE, STORMS RIVER MOUTH, TSITSIKAMMA NATIONAL PARK</td></tr> </table>	<b>Location of tender box:</b>	Entrance Gate Storms River Mouth Tsitsikamma National Park (off the N2 National Road).	<b>Physical address:</b>	Reception, Storms River Mouth, Tsitsikamma National Park	<b>Identification details:</b>	Contract No. CI-GK-0130: TSITSIKAMMA ELECTRICAL INFRASTRUCTURE UPGRADE, STORMS RIVER MOUTH, TSITSIKAMMA NATIONAL PARK
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<b>Identification details:</b>	Contract No. CI-GK-0130: TSITSIKAMMA ELECTRICAL INFRASTRUCTURE UPGRADE, STORMS RIVER MOUTH, TSITSIKAMMA NATIONAL PARK						
C.2.15.9	Telephonic, telegraphic, telex, facsimile or e-mailed tender offers will not be accepted.						
C.2.15.1	The closing time for submission of tender offers is as per Notice and Invitation to Tender T1.1.						
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 Clearance Certificate issued by the South African Revenue Services or PIN to obtain this information;</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 intent for Construction Guarantee – Compulsory;</li> <li>6) Letter of good standing from the Compensation Commissioner – Compulsory;</li> <li>7) National Treasury Central Supplier Database (CSD) Registration Report – Compulsory;</li> <li>8) All other certificates as listed in the List of Returnable Documents;</li> <li>9) A copy of Joint Venture Agreement if applicable;</li> <li>10) Form C1.1 – Form of Offer and Acceptance;</li> <li>11) Form T2.1 – Certificate of Authority for Signature. For JV's a JV Agreement shall be provided (if applicable);</li> <li>12) Form T2.1 – Certificate of attendance at site inspection;</li> <li>13) Form T2.1 F - Record of addenda to tender documents;</li> <li>14) Signed acknowledgment of the Base Line Risk Assessment;</li> <li>15) Functionality requirements.</li> <li>16) Local Content Declaration</li> </ol>						
C.3.4.1	<p>The time and location for opening of the tender offers are:</p> <p><b>Entrance Gate Storms River Mouth Tsitsikamma National Park (off the N2 National Road). on 22 February 2024</b></p>						
C.3.11.1	<p><b>Evaluation of tenders offers.</b></p> <p><b>The procedure for the evaluation of responsive tenders is Method: Price and Specific Goals</b></p>						

  
Contractor

  
Witness for Contractor

  
Employer

  
Witness for Employer

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

**POINTS AWARDED FOR PRICE**

The total number of tender evaluation points ( $T_{EV}$ ) will be calculate in accordance with the following formula:

$$T_{EV} = N_{FO} + N_P$$

where;

$N_{FO}$  is the number of tender evaluation points awarded for the financial offer made in accordance with;

**80/20 preference point system for acquisition of goods or services for Rand value equal to or above R30 000 and up to R50 million.**

The following formula will be used to calculate the points out of 80 for price in respect of a tender with a Rand value equal to or above R30 000 and up to a Rand value of R50 million, inclusive of all applicable taxes:

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

Where-

$P_s$  = Points scored for price of tender under consideration;

$P_t$  = Price of tender under consideration; and

$P_{\min}$  = Price of lowest acceptable tender.

**POINTS AWARDED FOR SPECIFIC GOALS**

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

Specific Goals allocated points in terms of this tender		Number of Points Allocated
2.1	<b>ENTERPRISES WITH BLACK OWNERSHIP</b>	
	Person historically disadvantaged on the basis of race with 100% black ownership.	8
	Person historically disadvantaged on the basis of race with 75%-99% black ownership.	6
	Person historically disadvantaged on the basis of race with 51%-74% black ownership.	4
	Person historically disadvantaged on the basis of race with 0-50%% black ownership.	2
2.2	<b>Locality</b>	
	To Qualify, bidder must include verifiable proof of business address, older than two years. The contractor must be situated within a 500km radius from Storms River Mouth entrance gate in Tsitsikamma (Annexure B) Include Google Eart coordinates of business in Bid document.	12
<b>MAXIMUM TOTAL POINTS:</b>		<b>20</b>

**Important Notes:**

A "zero" score will be applied if Tenderers does not qualify for any of the above mentioned "specific goals". The Tender will not be disqualified if any of the two "specific goals" mentioned above are not met.

C.3.13

Tender offers will only be accepted if:

- The tenderer is registered with the Construction Industry Development Board in an appropriate contractor grading designation;
- 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;

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	<p>c) The tenderer has not: abused the employer's supply chain management system; or failed to perform on any previous contract and has been given a written notice to this effect; and</p> <p>e) Has completed the Compulsory Enterprise Questionnaire, SBD 1, 4, 6.1 and declaration of local content and there are no conflicts of interest which may impact on the tenderer's ability to perform the contract in the best interests of the employer or potentially compromise the tender process.</p> <p>f) Has submitted the documentation listed in C2.23</p>
C.3.17	Provide to the successful tenderer <b>one</b> copy of the signed contract document.

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# Annex C

## Standard conditions of tender

(As per Construction Industry Development Board, Government Gazette No42622, 08 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 fulfill 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;

#### 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

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- 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.

### **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.

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- 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.
- 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**

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- 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 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 2.2.16 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.

**Note:** Sub-clause C.2.17 does not preclude the negotiation of the final terms of the contract with a preferred tenderer following a competitive selection process, should the Employer elect to do so.

Contractor

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Employer

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**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.

**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.

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Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

- 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 BBEE 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.
- 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 BBEE 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:
- complies with the requirements of these Conditions of Tender,
  - has been properly and fully completed and signed, and
  - 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:
- detrimentally affect the scope, quality, or performance of the works, services or supply identified in the Scope of Work,
  - significantly change the Employer's or the tenderer's risks and responsibilities under the contract, or
  - 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:
- the gross misplacement of the decimal point in any unit rate;
  - omissions made in completing the pricing schedule or bills of quantities; or
  - arithmetic errors in:
    - line item totals resulting from the product of a unit rate and a quantity in bills of quantities or schedules of prices; or
    - 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:
- 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.
  - 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**

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

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:

- Open and record tender offers received
- Determine whether or not tender offers are complete
- Determine whether or not tender offers are responsive
- Evaluate tender offers
- Determine if there are any grounds for disqualification
- Determine acceptability of preferred tenderer
- Prepare a tender evaluation report
- 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:

- is not under restrictions, or has principals who are under restrictions, preventing participating in the employer's procurement;
- 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;
- has the legal capacity to enter into the contract;
- is not; insolvent, in receivership, under Business Rescue as provided for in chapter 6 of the Companies Act

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

- 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;
- e) complies with the legal requirements, if any, stated in the tender data; and
  - f) 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.

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

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## Part T2: Returnable Schedules

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For viewing purposes only

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Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

**Tsitsikamma Electrical Infrastructure Upgrade,  
Storms River Mouth, Tsitsikamma National Park**

**CONTRACT No. CI-GK-0130**

## **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

Schedule of Subcontractors

Capacity of Tenderer (Functionality Information)

Site inspection certificate

Health and Safety Specification acknowledgement receipt

**2. Other documents that must be submitted 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 or Company or other legal entities applicable to tender - Certified copy

Letter of intent for a Construction Guarantee – Compulsory

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

Tax Clearance Certificate – Certified copy

**3. Returnable Schedules that will be incorporated into the contract and are compulsory to be completed**

Form SBD 1: Invitation to Bid

Form SBD 4: Declaration of Interest

Form SBD 6.1: Preference Points Claim Form in Terms of the Preferential Procurement Regulations 2022

Declaration of Local Content

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

Health and Safety Specification for General Construction Activities.

Local Content Declaration.

Code of Conduct for outside organisations working in a National Park.

Environmental Management Plan for General Construction Activities.

**5. C1.1 Offer and Acceptance (the offer portion of C1.1)**

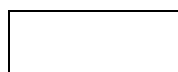
**6. C1.2 Contract Data (Part 2)**

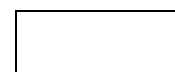
**7. C2.2 Bills of Quantities**

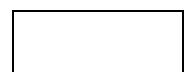
**8. DOCUMENTATION FOR - FUNCTIONALITY EVALUATION** (CV's, Plant & Equipment list and Previous Contracts Information - listed under Annexure D and E) **SPECIFIC GOALS** (Location: Annexure B Google Earth coordinates)

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

  
Contractor

  
Witness for  
Contractor

  
Employer

  
Witness for  
Employer

# 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)

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

B. \*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.

No.	Name	Capacity	Signature
1.			
2.			
3.			
4.			
5.			
6.			

### **NOTE:**

1. \* Delete which is not applicable
2. **NB.** This resolution must be signed by all the Directors / Members / Partners of the Tendering 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. 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:

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

\_\_\_\_\_  
3. (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)

2. 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)

3. \*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 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.

4. 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.

\_\_\_\_\_  
Contractor

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

\_\_\_\_\_  
Employer

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

5. 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:

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

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

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

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

No.	Name	Capacity	Signature
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

**NOTE:**

- \* Delete which is not applicable
- NB. This resolution must be signed by all the Directors / Members / Partners of the Bidding 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.
--

## 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)*

ing purposes only

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

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

**RESOLVED that:**

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**Contractor**

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**Witness for Contractor**

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Employer

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**Witness for  
Employer**

- C. 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)

- D. 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 Enterprises in joint venture mentioned above.

- E. The Enterprises constituting the Joint Venture, notwithstanding its composition, shall conduct all business under the name and style of: \_\_\_\_\_
- F. 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.
- G. 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 day's 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.
- H. 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.
- I. 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)

	Name	Capacity	Signature
1			
2			

\_\_\_\_\_  
Contractor

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

\_\_\_\_\_  
Employer

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

	Name	Capacity	Signature
3			
4			
5			
6			
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

**Tsitsikamma Electrical Infrastructure Upgrade,  
Storms River Mouth, Tsitsikamma National Park**

**CONTRACT No. CI-GK-0130**

**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.		
<b>Section 1: Name of enterprise:</b> .....		
<b>Section 2: VAT registration number, if any:</b> .....		
<b>Section 3: CIDB registration number, if any:</b> .....		
<b>Section 4: Particulars of sole proprietors and partners in partnerships</b>		
Name*	Identity number*	Personal income tax number*
* Complete only if sole proprietor or partnership and attach separate page if more than 3 partners		
<b>Section 5: Particulars of companies and close corporations</b>		
Company registration number .....		
Close corporation number .....		
Tax reference number .....		
<b>Section 6: Record in the service of the state</b>		
Indicate by marking the relevant boxes with a cross, if any sole proprietor, partner in a partnership or director, manager, principal shareholder or stakeholder in a company or close corporation is currently or has been within the last 12 months in the service of any of the following:		
<ul style="list-style-type: none"> <li><input type="checkbox"/> a member of any municipal council</li> <li><input type="checkbox"/> a member of any provincial legislature</li> <li><input type="checkbox"/> a member of the National Assembly or the National Council of Province</li> <li><input type="checkbox"/> a member of the board of directors of any municipal entity</li> <li><input type="checkbox"/> an official of any municipality or municipal entity</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> an employee of any provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act 1 of 1999)</li> <li><input type="checkbox"/> a member of an accounting authority of any national or provincial public entity</li> <li><input type="checkbox"/> an employee of Parliament or a provincial legislature</li> <li><input type="checkbox"/> an employee, director or board member of or otherwise employed by or contracted to the South African National Parks, or had or has any contractual relationships of any kind with the South African National Parks.</li> </ul>	

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

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

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

\* insert separate page if necessary

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

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

- |  |  |
|--|--|
| <input type="checkbox"/> a member of any municipal council                                     | <input type="checkbox"/> an employee of any provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act 1 of 1999)                          |
| <input type="checkbox"/> a member of any provincial legislature                                | <input type="checkbox"/> a member of an accounting authority of any national or provincial public entity   |
| <input type="checkbox"/> a member of the National Assembly or the National Council of Province | <input type="checkbox"/> an employee of Parliament or a provincial legislature   |
| <input type="checkbox"/> a member of the board of directors of any municipal entity            | <input type="checkbox"/> an employee, director or board member of or otherwise employed by or contracted to the South African National Parks, or had or has any contractual relationships of any kind with the South African National Parks. |
| <input type="checkbox"/> an official of any municipality or municipal entity                   |  |

Contractor

Witness for Contractor

Employer

Witness for Employer

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

\*insert separate page if necessary

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

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

Name of Tenderer	Date

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

**Tsitsikamma Electrical Infrastructure Upgrade,  
Storms River Mouth, Tsitsikamma National Park**

**CONTRACT No. CI-GK-0130**

**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)

No.	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

**Tsitsikamma Electrical Infrastructure Upgrade,  
Storms River Mouth, Tsitsikamma National Park**

**CONTRACT No. CI-GK-0130**

**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

<div style="border: 1px solid black; width: 100px; height: 30px; margin: 0 auto;"></div> <div style="font-size: 8px; margin-top: 5px;">Contractor</div>	<div style="border: 1px solid black; width: 100px; height: 30px; margin: 0 auto;"></div> <div style="font-size: 8px; margin-top: 5px;">Witness for Contractor</div>	Page 39 of 219	<div style="border: 1px solid black; width: 100px; height: 30px; margin: 0 auto;"></div> <div style="font-size: 8px; margin-top: 5px;">Employer</div>	<div style="border: 1px solid black; width: 100px; height: 30px; margin: 0 auto;"></div> <div style="font-size: 8px; margin-top: 5px;">Witness for Employer</div>
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**Tsitsikamma Electrical Infrastructure Upgrade,  
Storms River Mouth, Tsitsikamma National Park**

**CONTRACT No. CI-GK-0130**

**Capacity of Tenderer**

**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

Machinery	Plant	Workshops

 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.

For viewing purposes only

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**

**NB:** Letters of Intent / Appointment and all other relevant detail to be attached.

Project	Place (town)	Reference / Contact person	Contact Tel. No.	Contract amount	Contract period	Date of commencement	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

**NB:** Detail for Eligibility Evaluation to be completed on **Annexure D**. Letters of Appointment, Completion Certificates and all other relevant detail to be attached.

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

**Tsitsikamma Electrical Infrastructure Upgrade,  
Storms River Mouth, Tsitsikamma National Park**

**CONTRACT No. CI-GK-0130**

**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

**Tsitsikamma Electrical Infrastructure Upgrade,  
Storms River Mouth, Tsitsikamma National Park**

**CONTRACT No. CI-GK-0130**

**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 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 Contractor: \_\_\_\_\_ Date: \_\_\_\_\_

Comments:

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---

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---

\_\_\_\_\_  
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

<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

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 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.
- 3.5 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.
- 3.6 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.

<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

3.7 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.

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 2022**

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

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

**1. GENERAL CONDITIONS**

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

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

1.2 The applicable preference point system for this tender is the 80/20 preference point system.

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

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

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

	POINTS
<b>PRICE</b>	80
<b>SPECIFIC GOALS</b>	20
<b>Total points for Price and SPECIFIC GOALS:</b>	<b>100</b>

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

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

**2. DEFINITIONS**

- (a) **“tender”** means a written offer in the form determined by an organ of state in response to an invitation to provide goods or services through price quotations, competitive tendering process or any other method envisaged in legislation;
- (b) **“price”** means an amount of money tendered for goods or services, and includes all applicable taxes less all unconditional discounts;
- (c) **“rand value”** means the total estimated value of a contract in Rand, calculated at the time of bid invitation, and includes all applicable taxes;

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

- (d) **“tender for income-generating contracts”** means a written offer in the form determined by an organ of state in response to an invitation for the origination of income-generating contracts through any method envisaged in legislation that will result in a legal agreement between the organ of state and a third party that produces revenue for the organ of state, and includes, but is not limited to, leasing and disposal of assets and concession contracts, excluding direct sales and disposal of assets through public auctions; and
- (e) **“the Act”** means the Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000).

### 3. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES

#### 3.1. POINTS AWARDED FOR PRICE

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

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

**80/20**

$$Ps = 80 \left( 1 - \frac{Pt - P_{min}}{P_{min}} \right)$$

Where

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

#### 3.2. FORMULAE FOR DISPOSAL OR LEASING OF STATE ASSETS AND INCOME GENERATING PROCUREMENT

##### 3.2.1. POINTS AWARDED FOR PRICE

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

**80/20**

$$Ps = 80 \left( 1 + \frac{Pt - P_{max}}{P_{max}} \right)$$

Where

Ps	=	Points scored for price of tender under consideration
Pt	=	Price of tender under consideration
Pmax	=	Price of highest acceptable tender

### 4. POINTS AWARDED FOR SPECIFIC GOALS

- 4.1. In terms of Regulation 4(2); 5(2); 6(2) and 7(2) of the Preferential Procurement Regulations, preference points must be awarded for specific goals stated in the tender. For the purposes of this tender the tenderer will be allocated points based on the goals stated in table 1 below as may be supported by proof / documentation stated in the conditions of this tender:
- 4.2. In cases where organs of state intend to use Regulation 3(2) of the Regulations, which states that, if it is unclear whether the 80/20 or 90/10 preference point system applies, an organ of state must, in the tender documents, stipulate in the case of —

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

- (a) an invitation for tender for income-generating contracts, that either the 80/20 or 90/10 preference point system will apply and that the highest acceptable tender will be used to determine the applicable preference point system; or
- (b) any other invitation for tender, that either the 80/20 or 90/10 preference point system will apply and that the lowest acceptable tender will be used to determine the applicable preference point system,

then the organ of state must indicate the points allocated for specific goals for both the 90/10 and 80/20 preference point system.

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

**Note to organs of state:** The 80/20 preference point system is applicable, corresponding points must also be indicated as such.

**Note to tenderers:** The tenderer must indicate how they claim points for each preference point system. If no points are claimed in the above table, zero points will be allocated during evaluation.

THE SPECIFIC GOALS ALLOCATED POINTS IN TERMS OF THIS TENDER	Number of points allocated (80/20 system) (To be completed by the organ of state)	Number of points claimed (80/20 system) (To be completed by the tenderer)
<b>1) ENTERPRISES WITH BLACK OWNERSHIP</b>		
• Person historically disadvantaged on the basis of race with 100% black ownership.	8	
• Person historically disadvantaged on the basis of race with 75%-99% black ownership.	6	
• Person historically disadvantaged on the basis of race with 51%-74% black ownership.	4	
• Person historically disadvantaged on the basis of race with 0-50% black ownership.	2	
<b>2) LOCALITY</b>		
• To Qualify, bidder must include verifiable proof of business address, older than two years. The contractor must be situated within a 500km radius from Storms River Mouth entrance gate in Tsitsikamma (Annexure B) Include Google Earth coordinates of business in Bid document.	12	
<b>MAXIMUM TOTAL POINTS:</b>	<b>20</b>	

#### DECLARATION WITH REGARD TO COMPANY/FIRM

4.3. Name of company/firm.....

4.4. Company registration number: .....

4.5. TYPE OF COMPANY/ FIRM

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

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

[TICK APPLICABLE BOX]

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

- i) The information furnished is true and correct;
- ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;
- iii) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 1.4 and 4.2, the contractor may be required to furnish documentary proof to the satisfaction of the organ of state that the claims are correct;
- iv) If the specific goals have been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the organ of state may, in addition to any other remedy it may have –
  - (a) disqualify the person from the tendering process;
  - (b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;
  - (c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;
  - (d) recommend that the tenderer or contractor, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted from obtaining business from any organ of state for a period not exceeding 10 years, after the *audi alteram partem* (hear the other side) rule has been applied; and
  - (e) forward the matter for criminal prosecution, if deemed necessary.

.....  
**SIGNATURE(S) OF TENDERER(S)**

**SURNAME AND NAME:** .....

**DATE:** .....

**ADDRESS:** .....

.....

.....

.....  
Contractor

.....  
Witness for  
Contractor

.....  
Employer

.....  
Witness for  
Employer

## Local Content Declaration by bidder:

South African National Parks (SANParks) supports the inclusion of locally manufactured materials and goods in the Construction of **CONTRACT NO: CI-GK-0130 - Tsitsikamma Electrical Infrastructure Upgrade, Storms River Mouth, Tsitsikamma National Park**

The list of materials as specified for this contract is provided and tenderers are requested to complete it in full.

### Declaration by bidder:

Description of Item(s)	Product Description	Percentage threshold for local content required	Bidders' declaration (%) on local content to be used during construction	Comment if lower content is specified
Transformers (Fully-built Unit)	Class 2: 40 to 315 (Power Rating / MVA Range)	80%		
Transformers (Fully-built Unit)	Class 3A: 360 to 500 (Power Rating / MVA Range)	80%		
Low Voltage Cable	<u>Main Cable:</u> 25mm <sup>2</sup> -100mm <sup>2</sup> ; 1-4 cores; Fire Retardant; Low Halogen and Low Smoke Zero Halogen (LSOH); Flexible Cables; Aerial Cables; ACSR; Split Concentric & Aerial Bundled Conductor (ABC)	90%		
Medium & High Voltage Cable	<u>Medium Voltage:</u> 3,3kV-22kV; 1-3 cores; Cross linked Polyethylene (XLPE) and Paper Insulated Lead Covered (PILC); Fire Retardant; Low Halogen and Low Smoke Zero Halogen (LSOH)	90%		
Company name:				
Name & surname of the signatory:				
Signing Capacity:				
Signature:				
Date:				

Contractor

Witness for Contractor

Employer

Witness for Employer

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## 2: The Contract

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For viewing purposes only

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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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For viewing purposes only

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Contractor

Witness for Contractor

Employer

Witness for Employer

**Tsitsikamma Electrical Infrastructure Upgrade,  
Storms River Mouth, Tsitsikamma National Park**

**CONTRACT No. CI-GK-0130**

## **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:

### **CONTRACT No. CI-GK-0130 : Tsitsikamma Electrical Infrastructure Upgrade, Storms River Mouth, Tsitsikamma National Park**

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 one copy of this form of offer 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.

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

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

**Tsitsikamma Electrical Infrastructure Upgrade,  
Storms River Mouth, Tsitsikamma National Park**

**CONTRACT No. CI-GK-0130**

**Acceptance** (NB: To be completed by SANParks and 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 bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the conditions of contract identified in the contract data. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this agreement.

Notwithstanding anything contained herein, this agreement comes into effect on the date when the tenderer receives one signed and fully completed Form of Offer and Acceptance, 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.

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

**Schedule of Deviations**

--

Contractor

--

Witness for  
Contractor

--

Employer

--

Witness for  
Employer

**Notes:**

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

1

Subject

Details

2

Subject

Details

3

Subject

Details

4

Subject

Details

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.

**For the Tenderer:**

Signature(s): .....

Contractor

Witness for Contractor

Employer

Witness for Employer

Name(s): .....

Capacity: .....

Name of organization / tenderer: .....

Address of organization / tenderer: .....

.....

Name and  
signature  
of witness: .....

Date: .....

**For the Employer:**

Signature(s): .....  
.....

Name(s): .....

Capacity: .....

Name and address of organization:      The South African National Parks

Name and  
signature  
of witness: .....

Date: .....

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

Confirmation of Receipt

The Tenderer, (now Contractor), identified in the Offer part of this Agreement hereby confirms receipt from the Employer, identified in the Acceptance part of this Agreement, of one fully completed original copy of this agreement, including the Schedule of Deviations (if any) today:

the..... (day)  
of ..... (month)  
20..... (year)  
at ..... (place)

For the Contractor:

Signature(s): .....

Name(s): .....

Capacity: .....

Signature and name of witness:

Signature: .....

Name: .....

Contractor

Witness for Contractor

Employer

Witness for Employer

**Tsitsikamma Electrical Infrastructure Upgrade,  
Storms River Mouth, Tsitsikamma National Park**

**CONTRACT No. CI-GK-0130**

## **C1.2 Contract Data**

### **Part 1: Contract Data provided by the Employer**

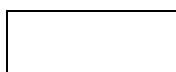
The General Conditions of Contract for Construction Works, Third Edition, 2015 published by the South African Institution of Civil Engineering, Private Bag X200, Halfway House, 1685, is applicable to this Contract and copies of these Conditions of Contract may be obtained from the South African Institution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

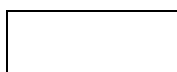
The General Conditions of Contract make several references to the Contract Data for specific data, which together with these conditions collectively describe the risks, liabilities and obligations of the contracting parties and the procedures for the administration of the Contract. The Contract Data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

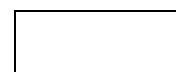
Each item of data given below is cross-referenced to the clause in the General Conditions of Contract for Construction Works, Third Edition, 2015, to which it mainly applies.

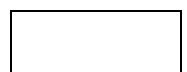
**The variations to the General Conditions of Contract are:**

<b>CLAUSE</b>	<b>DESCRIPTION / WORDING</b>
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 / SABS 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	The time for achieving Practical Completion is <b>7(seven) months</b> , excluding the 14 day period referred to in Clause 5.3.2 below, and inclusive of non-working days referred to in Clause 5.8.1 below, but exclusive of special non-working days (Clause 5.8.1).
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 5126
1.2.1.2	The address of the Employer's Agent is:  <u>Physical address:</u>

  
Contractor

  
Witness for  
Contractor

  
Employer

  
Witness for  
Employer

CLAUSE	DESCRIPTION / WORDING				
	<p>Bosch Projects (Pty) Ltd. Block 2, Greenacres Office Park, Newton Park, Port Elizabeth, 6045</p> <p>Postal Address: Bosch Projects (Pty) Ltd. P.O. Box 27158, Greenacres Port Elizabeth, 6057</p> <p>E-mail: <a href="mailto:kotzéj@boschprojects.co.za">kotzéj@boschprojects.co.za</a> Telephone: (041) 363 0598</p>				
3.1.3	<p>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:</p> <ol style="list-style-type: none"> <li>1. Clause 3.2.1 Nomination of Employer's Agent's Representative.</li> <li>2. Clause 3.2.4 Employer's Agent's authority to delegate.</li> <li>3. Clause 5.8.1 Non-working times.</li> <li>4. Clause 5.11.1 Suspension of the Works.</li> <li>5. Clause 5.12.4 Acceleration instead of extension of time.</li> <li>6. Clause 6.3.2 Orders for variations to be in writing.</li> <li>7. Clause 10.1.1 Contractor's claim.</li> </ol>				
5.3.1	<p>The documentation to be submitted by the Contractor before commencement with Works execution are:</p> <ol style="list-style-type: none"> <li>(1) Health and Safety Plan (Refer to Clause 4.3).</li> <li>(2) Initial programme (Refer to Clause 5.6) - a program must be submitted for each work order issued.</li> <li>(3) Insurance (Refer to Clause 8.6).</li> <li>(4) Occupational Health and Safety Agreement (C1.4 of the Contract Document).</li> <li>(5) Letter of Good Standing from the Compensation Commissioner (if not insured with a Licensed Compensation Insurer).</li> <li>(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).</li> <li>(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).</li> </ol>				
5.3.2	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	<p>Delete the words "between sunrise and sunset" in the first line and replace with "within normal working hours".</p> <p><u>Add the following:</u></p> <p>"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;</p> <table> <tr> <td>Winter: April - September</td><td>07:00 - 17:00</td></tr> <tr> <td>Summer: October - March</td><td>06:00 - 18:00</td></tr> </table>	Winter: April - September	07:00 - 17:00	Summer: October - March	06:00 - 18:00
Winter: April - September	07:00 - 17:00				
Summer: October - March	06:00 - 18:00				
5.8.1	<p>The non-working days are Saturday and Sundays.</p> <p>The special non-working days are: The non-working days are Saturday and Sundays.</p> <p>The special non-working days are:</p> <ol style="list-style-type: none"> <li>(1) All gazetted public holidays falling outside the year end break.</li> <li>(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>).</li> </ol>				

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

CLAUSE	DESCRIPTION / WORDING																										
	<p>The special non-working days are:</p> <ul style="list-style-type: none"> <li>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</li> <li>Any proclaimed statutory day of mourning, and</li> <li>Any proclaimed statutory election day which is proclaimed as a statutory public holiday, and</li> <li>All annual year-end shutdown periods as recommended by the South African Bargaining Council for the Civil Engineering Industry.</li> </ul>																										
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>2 days</td></tr> <tr><td>February</td><td>2 days</td></tr> <tr><td>March</td><td>2 days</td></tr> <tr><td>April</td><td>2 days</td></tr> <tr><td>May</td><td>3 days</td></tr> <tr><td>June</td><td>4 days</td></tr> <tr><td>July</td><td>4 days</td></tr> <tr><td>August</td><td>3 days</td></tr> <tr><td>September</td><td>3 days</td></tr> <tr><td>October</td><td>2 days</td></tr> <tr><td>November</td><td>2 days</td></tr> <tr><td>December</td><td>2 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	2 days	February	2 days	March	2 days	April	2 days	May	3 days	June	4 days	July	4 days	August	3 days	September	3 days	October	2 days	November	2 days	December	2 days
Month	"n" Working days																										
January	2 days																										
February	2 days																										
March	2 days																										
April	2 days																										
May	3 days																										
June	4 days																										
July	4 days																										
August	3 days																										
September	3 days																										
October	2 days																										
November	2 days																										
December	2 days																										
5.13.1	The penalty for failing to complete the Works is <b>R 3 500</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	The security to be provided by the Contractor shall be a performance guarantee of <b>10%</b> of the Contract Sum. The performance guarantee shall contain the precise wording of the document included in Part C1.3 of the Contract Data: <b>Form of Guarantee</b> .																										
6.8.2	Contract Price Adjustment shall <b>NOT</b> be applicable.																										
6.8.4	<p>Add the following to Clause 6.8.4:</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> . Proof of ownership is required.																										
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.																										
6.11	Replace all referencing in the clause and all sub-clauses to 15 %; 15 per cent and/or fifteen percent with 40% and/or forty percent.																										
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> .																										

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

CLAUSE	DESCRIPTION / WORDING
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 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.

Contractor

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Contractor

Employer

Witness for  
Employer

**Tsitsikamma Electrical Infrastructure Upgrade,  
Storms River Mouth, Tsitsikamma National Park**

**CONTRACT No. CI-GK-0130**

**Part 2: Contract Data provided by the Contractor**

Clause	Additions
Clause 1.1.1.9:	<p>The name of the Contractor is: .....</p>
Clause 1.2.1.2:	<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>

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-GK-0130**

for the

**Tsitsikamma Electrical Infrastructure Upgrade,  
Storms River Mouth, Tsitsikamma 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 excursion 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 .....

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

.....(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 .....

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

As witnesses:

1. .... Signature

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

..... Address

.....

.....

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

## C1.4: Pro-Forma – OHS Mandatory Form

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 the **Contractor**

**WITNESS:**

.....

For and on behalf of the **Chief Executive Officer  
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

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

Signed at .....

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

Witnesses:

1.

2.

Signature: .....

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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- C2.1 Pricing Instructions
- C2.2 Day Work Schedule
- C2.3 Bill of Quantities

For viewing purposes only

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Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

**Tsitsikamma Electrical Infrastructure Upgrade,  
Storms River Mouth, Tsitsikamma National Park**

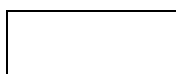
**CONTRACT No. CI-GK-0130**

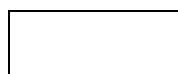
## **C2.1: Pricing Instructions**

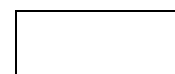
- 1) The measurement and payment clause of the SANS 1200 Standardised Specification and the Standard and Particular Specifications shall be deemed to form part of and included in the Pricing Instruction.
- 2) The units of measurement described in the Bills of Quantities are metric units. Abbreviations used in these Bills of Quantities are as follows:

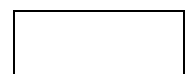
%	=	percent
h	=	hour
ha	=	hectare
kg	=	kilogram
kl	=	kilolitre
km	=	kilometre
km-pass	=	kilometre-pass
kPa	=	kilopascal
kW	=	kilowatt
l	=	litre
m	=	metre
mm	=	millimetre
m <sup>2</sup>	=	square metre
m <sup>2</sup> -pass	=	square metre-pass
m <sup>3</sup>	=	cubic metre
m <sup>3</sup> -km	=	cubic metre-kilometre
MN	=	meganewton
MN.m	=	meganewton-metre
MPa	=	megapascal
No.	=	number
Prov sum	=	Provisional sum
PC sum	=	Prime Cost sum
R/only	=	Rate only
sum	=	lump sum
t	=	ton (1000 kg)
W/day	=	Work day

- 3) Unless otherwise stated, items are measured net in accordance with the drawings, and no allowance is made for waste.
- 4) The quantities set out in the Bills of Quantities are the estimated quantities for the Contract Works, but the Contractor will be required to undertake whatever quantities may be directed by the Engineer from time to time. The Contract Price for the completed contract shall be computed from the actual quantities of work done, valued at the relevant unit rates and prices.
- 5) The prices and rates in these Bills of Quantities are fully inclusive prices for the work described under the items. Such prices and rates cover all costs and expenses that may be required in and for the execution of the work described in accordance with the provisions of the Scope of Work, and shall cover the cost of all general risks, liabilities, and obligations set forth or implied in the Contract Data, as well as overhead charges and profit. These prices will be used as a basis for assessment of payment for additional work that may have to be carried out.
- 6) It will be assumed that prices included in these Bills of Quantities are based on Acts, Ordinances, Regulations, By-laws, International Standards and National Standards that were published 28 days before the closing date for tenders (refer to [www.stanza.org.za](http://www.stanza.org.za) or [www.iso.org](http://www.iso.org) for information on standards).

  
Contractor

  
Witness for  
Contractor

  
Employer

  
Witness for  
Employer

- 7) Where the Scope of Work requires detailed drawings and designs or other information to be provided, all costs associated therewith are deemed to have been provided for and included in the unit rates and sum amount tendered such items
- 8) An item against which no price is entered will be considered to be covered by the other prices or rates in the Bills of Quantities. A single lump sum will apply should a number of items be grouped together for pricing purposes.
- 9) The quantities set out in these Bills of Quantities are approximate and do not necessarily represent the actual amount of work to be done. The quantities of work accepted and certified for payment will be used for determining payments due and not the quantities given in the Bills of Quantities.
- 10) Reasonable compensation will be received where no pay item appears in respect of work required in the Bills of Quantities in terms of the Contract and which is not covered in any other pay item.
- 11) The short descriptions of the items of payment given in these Bills of Quantities are only for the purposes of identifying the items. More details regarding the extent of the work entailed under each item appear in the Scope of Work.
- 12) Descriptions in the Bills of Quantities are abbreviated and comply generally with those in the SANS 1200 Standardised Specification.

**Construction –**

- 13) Attention is drawn to Clause 6.7.1 of the General Conditions of Contract and the Contractor must not order the quantities of materials stated in the Bill of Quantities until he has confirmed from the construction drawings or measurement on Site that such quantities are in fact the correct quantities.

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

**Tsitsikamma Electrical Infrastructure Upgrade,  
Storms River Mouth, Tsitsikamma National Park**

**CONTRACT No. CI-GK-0130**

## **C2.2 Day Work Schedule**

### **C2.2.1 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 bases, all in agreement with Clause 6.5 of the General Conditions of Contract for Construction Works 2015. All the rates are fixed and shall be binding until and with the issuing of the final approval certificate, except for statutory increases announced from time to time, only if this Contract is subject to contract price adjustment as specified in Clause 6.8.2 of the Contract Data.

### **C2.2.2 LABOUR COSTS**

Rates for labour as listed below shall include all the allowances as specified in the General Conditions of Contract for Construction Works 2015. If these rates differs from similar rates tendered in the bill of quantities, the rates in the tendered bill of quantities will apply.

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 dayworks and it will be held that the Contractor has made provision in his rates for possible interruptions and standing time.

DESCRIPTION	UNIT	RATE
Unskilled Labourer	hour	
Semi-skilled Labourer	hour	
Skilled Labourer	hour	
Pipe Layer	hour	
Bricklayer	hour	
Steel Fixer	hour	
Foreman/Section Leader	hour	
General Foreman	hour	
Surveyor	hour	

\* Where there are discrepancies in the rates tendered for similar items in the above table and items listed in the bill of quantities, the rates in the bill of quantities shall govern.

\* All labour not specified above and not listed additionally by the Contractor, will be regarded as "Skilled Labour".

### **C2.2.3 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. If these rates differs from similar rates tendered in the bill of quantities, the rates in the tendered bill of quantities will apply.

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.

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Contractor

Employer

Witness for  
Employer

The Contractor will be paid the actual net cost of plant hired by him for dayworks 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.

DESCRIPTION	UNIT	RATE
1. Digger-Loader (TLB)		
	Hour	
	Hour	
2. Excavators		
	Hour	
	Hour	
3. Trucks (m <sup>3</sup> specified)		
	Hour	
	Hour	
4. Tractors & Trailers		
	Hour	
	Hour	
5. Concrete Mixers (litres specified)		
	Hour	
	Hour	
6. Plate Compactors		
	Hour	
	Hour	
7. Rammer / Jumping Jack Compactors		
	Hour	
	Hour	
8. Breakers		
	Hour	
	Hour	
9. Compressors		
	Hour	
	Hour	

Contractor

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Contractor

Employer

Witness for  
Employer

10. Drills (electrical / battery operated)		
	Hour	
	Hour	
11. Generators		
	Hour	
	Hour	
10. Other Equipment - specify		
	Hour	
	Hour	
	Hour	
	Hour	

\* Where there are discrepancies in the rates tendered for similar items in the above table and items listed in the bill of quantities, the rates in the bill of quantities shall govern.

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

**Tsitsikamma Electrical Infrastructure Upgrade,  
Storms River Mouth, Tsitsikamma National Park**

**CONTRACT No. CI-GK-0130**

## **C2.3 Bill of Quantities**

### **CONTENTS**

The full BoQ will be available in the Tender Document made available at the Clarification Meeting.

<b><u>SECTION</u></b>	<b><u>DESCRIPTION</u></b>
<b>C1.</b>	Preliminary and General
<b>C2.</b>	Medium Voltage Distribution
<b>C3.</b>	Medium Voltage Take-Off
<b>C4.</b>	Low Voltage Distribution
<b>C5.</b>	Summary

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

**BILL OF QUANTITIES**  
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Contractor

Witness for Contractor

Employer

Witness for Employer

**BILL OF QUANTITIES**  
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Contractor

Witness for Contractor

Employer

Witness for Employer

**BILL OF QUANTITIES**  
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## **Part C3: Scope of Work**

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**C3.1 Description of the Works**

**C3.2 Engineering**

**C3.3 Procurement**

**C3.4 Construction**

- PART A: Standard Specifications
- PART B: Specification Data
- PART C: Particular Specifications

**C3.5 Management**

**C3.6 Annexes**

**Status**

Should any requirement or provision in the parts of the Scope of Work conflict with any requirement of any Standardised Specification, particular specification or any drawings, the order of precedence, unless otherwise specified, is:

Drawings  
Scope of Work (Parts C3.1, C3.4, C3.5 and C3.6)  
Standardised Specifications

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**Tsitsikamma Electrical Infrastructure Upgrade,  
Storms River Mouth, Tsitsikamma National Park**

**CONTRACT No. CI-GK-0130**

### **C3.1 Description of the Works**

#### **C3.1.1 Employer's objectives**

This Contract form part of the upgrade and maintenance strategy for the Tsitsikamma National Park. The objective of the South African National Parks is to appoint one contractor to assess the shortcomings on the existing medium voltage infrastructure at the Tsitsikamma National Park and implement the necessary corrective action to ensure the integrity of the electrical supply to the relevant outlets within the Park.

#### **C3.1.2 Description of the works**

Various upgrading is required throughout the electrical network of the Tsitsikamma National Park

The following summarizes the required upgrades in order of importance:

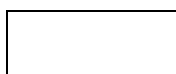
- Installation of medium voltage infrastructure as depicted on the engineering drawings.
- Transfer load from the existing low voltage network to the new distribution zone.
- Integration of a standby emergency generator for the additional load.

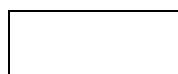
#### **C3.1.3 Extent of the Works**

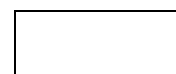
The scope of work for this project covers the manufacture, supply, delivery, installation, testing and commissioning of the electrical installation as described hereunder.

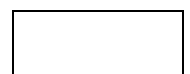
The electrical installation Scope of Work shall include supply, delivery, installation, testing and commissioning of the works as described in the BOQ and summarized as follows:

- a) Burying of medium voltage cables which is still in good condition in ground at 1000mm deep where possible and 300mm deep with precast concrete lintel above where the ground conditions does not allow deeper excavation. This is only applicable to certain lengths along the route.
- b) Convert overhead line from vertical arrangement to cape A-frame arrangement. SANPARKs confirmed that this item will be attended to internally by their on-site maintenance team.
- c) Replace rotten poles on overhead MV line.
- d) Replace rusted stays including stay-plates.
- e) New surge protection along the route at strategic points.
- f) New solid links along the route at strategic points.
- g) Replace approximately 70m of overhead line with underground cable and joint with existing AI PILC cable to TR18.
- h) New RMU at Generator substation.
- i) Replace existing medium voltage cable from TIP to TR18 as well as between TR18 and Restaurant mini-sub. The cables are suspended from wooden poles at approximately 1.2m ANGL and non-compliant with regulation which requires specific clearance for suspended MV cable/conductor.
- j) All transformers need to be properly serviced, oil replaced, earthing repaired and terminals fastened and insulated:
  - i. 1 x 500kVA TRF at Generator Substation.
  - ii. In-line step-up step-down transformers.
  - iii. TR18 – 1 x 200kVA ground mounted transformer.
  - iv. Oceanette – 1 x 160kVA ground mounted transformer.
  - v. Petrusville – 1 x 200kVA ground mounted transformer.

  
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- k) Repair joint in medium voltage cables along the MV cable route between TR18 and Restaurant miniature substation.
- l) Replace RMU in TR18 substation with a 4-way RMU and re-route MV distribution in order to secure the hard connection in open air outside the substation building. The new 4-way RMU will feed the following area: Local 200kVA TRF, Oceanettes 160kVA TRF, Restaurant 160kVA TRF and Petrusville 160kVA TRF.
- m) Remove redundant RMU in Petrusville substation.
- n) Secure cable bridge over stream.
- o) Replace access door to TR18 substation.
- p) Repair water leak in Oceanettes substation.
- q) MV warning signage at all substations to be upgraded.
- r) TAN-Delta Testing to be conducted.

Earthing as per SANS 10142

#### **C3.1.4 Location of the Works and Access**

The Tsitsikama National Park is situated in the Eastern Cape, with the park's entrance gate near the Storms River Village. The entrance to the Main Rest Camp is situated off the N2 road, between Plettenberg Bay and Humansdorp.

The site of works is located within the boundaries of the Camp.

#### **C3.1.5 Temporary Works**

The Contractor will be required to keep all existing access roads to the tourist accommodation in operation at all times during the course of the contract. The Contractor shall not provide a bypass for traffic. No road may be fully closed. The Contractors programme will need to incorporate the required traffic accommodation when working along the mentioned access roads.

All traffic accommodation measures including traffic signals if required shall be installed and operated strictly in accordance with the South African Road Traffic Signs Manual.

#### **C3.1.6 Nature of Ground, Subsoil and Ground Water Conditions**

No geotechnical information regarding the ground conditions on the actual cable routes are available.

A comprehensive geotechnical investigation was done in September 2020 to assess the ground conditions at the proposed wastewater treatment works site, as well as along the proposed pipeline routes.

In general, excavated material will not be suitable for use as bedding for pipelines and material will have to be imported from commercial sources. Allowance will be made in the bill of quantities where bedding or fill material needs to be imported for construction purposes.

Contractors must satisfy themselves regarding the quality and type of material on site, since the Contractor is responsible for the supply of materials in compliance with the minimum requirements for the specific materials.

#### **C3.1.7 Scope of Contract**

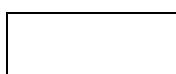
The scope of the contract includes activities contained in the following schedules:

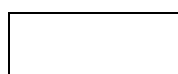
- Schedule C1: Preliminary and General
- Schedule C2: Medium Voltage Distribution
- Schedule C3: Medium Voltage Take-off
- Schedule C4: Low Voltage Distribution
- Schedule C5: Summary

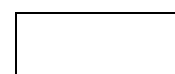
#### **C3.1.8 Construction Program & Methods**

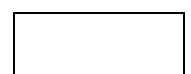
Time for Completion and Programme -

The contract period must include the normal days of inclement weather as specified in the Specification Data and special non-working days listed in the Contract Data.

  
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The Contractor will be required to develop and maintain for the full duration of the contract, a works programme whose purpose will be to ensure that the work is carried out and controlled in such a way that the contract is completed within the time stated in the tender or in the time extended by the Engineer in writing.

The Contractor shall take all aspects regarding the conditions on site, access, transportation, restricted working space, the availability of material, machines and labour into account during the tender stage and the compiling of a construction programme.

#### **C3.1.9 Known services**

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

Where existing works are of such a nature that the Engineer may require them to be moved by the Contractor, the cost of such work will be paid for at scheduled rates or on day works, plant and materials basis. The Contractor will be held responsible for damages to any existing works and any damages caused shall be made good at his own cost without delay.

The Contractor is to exercise care when the proposed work is to cross an existing service, or work is to be performed close to an existing service. Prior to commencement of the relevant portion of the proposed works the Contractor with the Engineer or his duly appointed representative shall also perform a visual inspection of the area in question. This inspection will not waive the Contractor of his obligations with respect care of the works referenced in the General Conditions of Contract.

#### **C3.1.10 Damage to services**

Damage that occurs to unknown services during construction will be paid by the Employer.

However, all services that have been located and exposed, and are subsequently damaged by the Contractor or his subcontractor, shall be reinstated to the same state as it was before the damage occurred at the time and cost of the Contractor.

#### **C3.1.11 Reinstatement of services and structures damaged during construction**

The Contractor shall inform the Engineer immediately when a service or structure is damaged. The extent of the damage and a proposal how to reinstate the service or structure shall be submitted to the Engineer on a sketch with dimensions and time frames.

The Contractor shall not be allowed to reinstate any service or structure unless indicated so by the Engineer. The Contractor shall render all reasonable assistance to the service or structure owner with the reinstatement of the service or the structure if required.

The Contractor shall be liable to reinstate the service or structure to its original state or for the full cost thereof if reinstated by others.

#### **C3.1.12 Services and facilities provided by the employer**

##### **C3.1.12.1 Water and Power Supply**

Water is available for construction at the several points across the identified construction site, but access to these points needs to be approved prior to start of works. The cost of transporting the water must be included in the contractor's rates.

The Contractor shall make his own arrangements for the supply of electricity that he may require for the execution of the works and the costs of any connections, additional reticulation and the supply of electricity shall be borne by the Contractor.

##### **C3.1.12.2 Fuel**

There is a fuelling station on site at the Addo Elephant National Park available for purchasing fuel.

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**C3.1.13 Services and Facilities provided by the Contractor**

**C3.1.13.1 Facilities provided by the Contractor**

The Contractor shall provide, maintain and remove his own facilities to the satisfaction of the Engineer. The Contractor shall provide the area around his office, stores and sheds (i.e. the "Camp") with adequate security fences to ensure that unauthorised persons do not enter the camp area and security personnel should he deem it necessary.

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

**C3.1.13.2 Location of Contractors Camp Site**

The location of the Contractor's camp shall be pointed out at the tender briefing meeting.

The Contractor shall note that the site is within a popular public amenity. The Contractor shall comply with all SANParks and Local Authority regulations including those relating to health and fire. The Contractor shall ensure that all camp facilities, including those for fuelling, comply with all such regulations. Should the contract include the end of year builders holidays, the camp shall be dis-established prior to end of year close-down and re-established at start up the following year. Provision for this is made in the Bill of Quantities.

The Contractor must note that the site camp is within the Tstikamma National Park boundaries and certain wild animals will be present in the area, i.e. baboons. This must be taken into account when planning the site camp. The camp site shall be properly and neatly fenced using temporary fencing with secure access control. The Contractor shall be responsible for providing and maintaining his own security arrangements for the duration of the Contract.

On completion of the Works, or when ordered by the Engineer, the Contractor shall remove all temporary buildings and latrines and restore the Site to a clean and sanitary condition to the satisfaction of the Engineer and rehabilitate the area in accordance with the EMP.

Access to the site will be in a controlled manner. People visiting the site will have to sign in and out on a daily basis.

**C3.1.13.3 Ablution Facilities**

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

**C3.1.13.4 Housing for Contractors Employees**

No housing is available nor shall be allowed on site for the Contractor's employees. It is the sole responsibility of the Contractor, at his own cost, to house his employees and transport them to and from the site.

**C3.1.14 Facilities for the Engineer**

**C3.1.14.1 Office accommodation**

No office facilities are required for the Engineer.

**C3.1.14.2 Site instruction book and Site diary**

The Contractor shall keep a triplicate book for site instructions on the Site at all times and provide a Site diary for daily completion by the Contractor.

**C3.1.15 Other facilities and services**

**C3.1.15.1 Waste Disposal**

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The Contractor shall make arrangements for solid and liquid waste disposal with SANParks. Disposal will take place at an approved Site.

**C3.1.15.2 Telephone Facilities**

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

**C3.1.16 Notice boards, signs, barricades and advertisements**

All notices, signs and barricades may be used only if approved by the Engineer. The Contractor shall be responsible for their supply, erection, maintenance and ultimate removal and shall make provision for this in his tendered rates.

The Engineer shall have the right to instruct the Contractor to move any sign or notice to another position, or to remove it from the Site of the Works if in his opinion it is unsatisfactory, inconvenient or dangerous.

**C3.1.17 Dealing with water**

The Contractor shall make provision and allow for all dewatering and temporary management of stormwater. All costs for this operation for the duration of the contract shall be deemed to be included in the Fixed and Value related charges.

**C3.1.18 Dealing with high winds**

The site is situated in a region where high winds and seasonal rain can be expected and with strong south-easterly winds during the summer months.

All heaps of materials either forming part of the excavations or imported for use in construction shall be kept covered during high winds to prevent contamination of surrounding in-situ soils.

**C3.1.19 Alterations, additions, extensions and modifications to existing works.**

The Contractor shall within 20 days or 10% of the construction period after taking possession of the site (whichever is the lesser), satisfy himself that the dimensional accuracy, alignment, levels and setting out of existing structures or components thereof are compatible with the proposed works and shall notify the Engineer of any areas of dissatisfaction.

**C3.1.20 Wayleaves, Permissions and Permits**

The Contractor shall be responsible for obtaining all of the necessary wayleaves, permissions or permits applicable to working near any existing services or other infrastructure on Site, and shall ensure that any wayleaves, permissions or permits obtained by the Employer's Agent prior to the award of the contract are transferred into the Contractor's name.

The Contractor shall abide by any conditions imposed by such wayleaves, permissions or permits.

The Contractor shall ensure that all wayleaves, permissions and permits are kept on site and are available for inspection by the relevant service authorities on demand.

The Contractor shall also ensure that any wayleaves in respect of electricity services are renewed timeously every three months.

**C3.1.21 Construction in restricted areas**

All working space will be deemed restricted. The construction method used in these restricted areas largely depends on the Contractor's Plant. Notwithstanding, measurement and payment will be strictly according to the specified cross-sections and dimensions irrespective of the method used, and the rates and prices tendered will be deemed to include full compensation for any difficulties encountered by the Contractor while working in restricted areas. No extra payment or any claim for payment due to these difficulties will be considered.

**C3.1.22 Spoiling areas**

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Spoiling area will be made available with in the park boundaries. Rates to include all hauling.

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Contractor

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**Tsitsikamma Electrical Infrastructure Upgrade,  
Storms River Mouth, Tsitsikamma National Park**

**CONTRACT No. CI-GK-0130**

## **C3.2 Engineering**

### **C3.2.1 Design**

**Works designed by, and per design stage:**

Concept, feasibility and overall process	Employer (Engineer)
Basic engineering and detail layout to tender stage	Employer (Engineer)
Final design to approval for construction	Employer (Engineer)
Temporary Works	Contractor
Preparation of "as-built" drawings	Contractor

### **C3.2.2 Employer's design**

The Employer's design is contained in the Tender Documentation and Drawings. Amendments to the design, if necessary, will be issued during the construction phase.

### **C3.2.3 Design brief**

Where the Contractor is to supply the design of designated parts of the permanent Works or temporary Works he shall supply full working drawings supported by a professional engineer's design certificate.

### **C3.2.4 Drawings**

The Contractor shall use only the dimensions stated in figures on the Drawings in setting out the Works, and dimensions shall not be scaled from the Drawings, unless required by the Engineer. The Engineer will, at the request of the Contractor in accordance with the provisions of the Conditions of Contract, provide such dimensions as may have been omitted from the Drawings.

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

All information in possession of the Contractor, required by the Engineer and/or the Engineer's Representative to complete the as-built/record drawings, must be submitted to the Engineer's Representative before a Certificate of Completion will be issued.

The Drawings prepared by the Employer for the permanent Works applicable to the contract are issued with this tender document. The Employer reserves the right to issue and/or amended additional drawings during the Contract.

The drawings listed below are issued with the tender document in order to give an overview of the project. Additional construction drawings will, in terms of the General Conditions of Contract, be issued to the Contractor by the Engineer / Employer on the commencement date and from time to time as required.

<b>Drawing Number</b>	<b>Title</b>
8068-002-EED-001	Site Layout [A0]
8068-002-EED-002	Line Diagram [A1].pdf

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**Tsitsikamma Electrical Infrastructure Upgrade,  
Storms River Mouth, Tsitsikamma National Park**

**CONTRACT No. CI-GK-0130**

### **C3.3 Procurement**

#### **C3.3.1 PREFERENTIAL PROCUREMENT**

The works shall be executed in accordance with the conditions associated with the granting of preferences detailed in Form SBD 6.1: Preference Points Claim Form in Terms of the Preferential Procurement Regulations 2022, where preferences are granted in respect of B-BBEE contribution. In particular, the Contractor may not sub-contract more than 25% of the value of the contract to sub-contractors that do not have an equal or higher B-BBEE status level than the Contractor, unless the sub-contractors are exempted micro enterprises that have the capability and ability to execute the sub-contract works.

#### **C3.3.2 SCOPE OF MANDATORY SUBCONTRACT WORK**

No mandatory subcontract work is envisaged under this contract

#### **C3.3.3 SUBCONTRACTORS**

##### **C3.3.3.1 Procedure for the selection of sub-contractors / suppliers**

Where monetary allowances for provisional sums or prime cost items have been provided in the Bills of Quantities, and where the work is to be executed / supplied by sub-contractors / suppliers, then the following selection process shall be followed in respect of the required sub-contractors / suppliers:

The Contractor shall invite three quotations from suitably qualified sub-contractors / suppliers, the selection of which shall be in consultation with, and to the approval of the Engineer, for the required work or items.

The evaluation of the quotation received must include a preference points system as described in 5.11 of the Tender Data.

##### **C3.3.3.2 Attendance on subcontractors**

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

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**Tsitsikamma Electrical Infrastructure Upgrade,  
Storms River Mouth, Tsitsikamma National Park**

**CONTRACT No. CI-GK-0130**

**C3.4 Construction**

**3.4.1 PART A: STANDARD SPECIFICATIONS**

**3.4.2 PART B: SPECIFICATION DATA**

The Specification Data is contained in Part B.

**3.4.3 PART C: PARTICULAR SPECIFICATIONS**

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### 3.4.1 PART A: STANDARD SPECIFICATIONS

The following **Electrical** and **Civil Standard Specifications**, with the latest revision and amendments as listed below, shall apply to this contract. It is a requirement of this contract that the Contractor shall have a full set of the Standard Specifications available on site at all time.

#### **REGULATIONS, FACTORIES ACT AND BY-LAWS** (for Electrical Works)

The entire contract shall be carried out in accordance with the latest revision and amendments of the following:

- The Standard Regulations for the Wiring of Premises as issued by the South African Bureau of Standards (SANS 10142-1).
- The Occupational Health Safety Act No. 85 of 1993.
- N.O.S.A. Safety Guidelines.
- The Local Fire Office Regulations.
- The Municipal by-laws and any special requirements of the local Supply Authorities of the area or district concerned.
- The applicable IEC Specifications or the BS Specifications where no SANS or IEC Specifications exist.
- The National Building Regulations.
- Earthing design and installations, SANS 10199.
- The protection of structures against lightning, SANS 10313.
- SCSASAAL9 – Part 2: Earthing , Section 1: MV and LV reticulation
- ESKPBAAD6 – Environmental Management Policy
- ESKPVAAL7 – Environmental Impact Assessment
- ESKASABG3 – Standard for bush clearance and maintenance within overhead power line servitudes
- DST 34-1191/2 – Distribution Standard Part 4: Medium Voltage Reticulation Section 0: General - General information and requirements for overhead lines up to 33kV
- SCSASAAM0 – Distribution Standard: Part 0. Structure, Definitions, Abbreviation and Exemption
- SCSASAAP2 – 22 kV Overhead reticulation up to HARE/OAK conductor
- SCSASABE7 – General Information and Requirements for Overhead lines up to 33 kV
- ESKASAAN0 – Labelling of 22 kV Overhead lines
- SCSASABZ5 – MV and LV Pole identification
- SABS 763 – Hot Dip galvanized zinc coatings

The following **Standard Specifications for Civil Engineering Construction, SANS 1200**, shall also form part of the Standard Specifications applicable to this contract.

Section	Description
A	Preliminary and General
AB:	Engineer's Office
C:	Site Clearance
D:	Earthworks
DB:	Earthworks (Pipe Trenches)
LB:	Bedding (Pipes)
ME:	Subbase
MJ:	Segmented Paving

### 3.4.2 PART B: SPECIFICATION DATA

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The following variations and additions to the Standard Specifications mentioned in PART A will be valid for this contract.

**PDK: ELECTRICAL PROJECT TECHNICAL SPECIFICATION**

To be read in conjunction with the Electrical Standard Specification.

- NOTE 1** Contractors are advised that this tender is based on the Electrical Standard Specifications which impose very specific and rigid conditions for the technical and quality requirements of the equipment, materials, installation, testing, commissioning and maintenance of all aspects of this tender.
- NOTE 2** Contractors must acquaint themselves fully with all requirements of the Standard Specifications. Where prices are to be obtained from suppliers of equipment, such as switchboards, Contractors must ensure that their suppliers are also fully conversant with the Electrical Standard Specifications.
- NOTE 3** The Engineer will rigidly enforce each and every requirement of the Electrical Standard Specifications.
- NOTE 4** Unless otherwise agreed by the Engineer, all equipment shall be of South African manufacture.
- NOTE 5** Contractors are advised that only the highest standard of workmanship will be accepted and that all materials supplied must be strictly in accordance with this tender document. If workmanship and/or materials are not suitable, the Engineer will request that the work is repeated or the materials returned until a satisfactory standard is achieved. No additional payment will be made in respect of any remedial works.
- NOTE 6** The submission of all commencement, compliance and completion forms including any test certificates which may be required will remain the responsibility of the Contractor. Copies to be submitted to the Engineers.

**PDK 1. REGULATIONS, FACTORIES ACT AND BY-LAWS**

The entire contract shall be carried out in accordance with the latest revision and amendments of the following:

- The Standard Regulations for the Wiring of Premises as issued by the South African Bureau of Standards

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Contractor

Employer

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- (SANS 10142-1).
- The Occupational Health Safety Act No. 85 of 1993.
  - N.O.S.A. Safety Guidelines.
  - The Local Fire Office Regulations.
  - The Municipal by-laws and any special requirements of the local Supply Authorities of the area or district concerned.
  - The applicable IEC Specifications or the BS Specifications where no SANS or IEC Specifications exist.
  - The National Building Regulations.
  - Earthing design and installations, SANS 10199.
  - The protection of structures against lightning, SANS 10313.
  - SCSASAAL9 – Part 2: Earthing , Section 1: MV and LV reticulation,
  - ESKPBAAD6 – Environmental Management Policy
  - ESKPVAAL7 – Environmental Impact Assessment
  - ESKASABG3 – Standard for bush clearance and maintenance within overhead power line servitudes
  - DST 34-1191/2 – Distribution Standard Part 4: Medium Voltage Reticulation Section 0: General - General information and requirements for overhead lines up to 33kV
  - SCSASAAM0 – Distribution Standard: Part 0. Structure, Definitions, Abbreviation and Exemption
  - SCSASAAP2 – 22 kV Overhead reticulation up to HARE/OAK conductor
  - SCSASABE7 – General Information and Requirements for Overhead lines up to 33 kV
  - ESKASAAN0 – Labelling of 22 kV Overhead lines
  - SCSASABZ5 – MV and LV Pole identification
  - SABS 763 – Hot Dip galvanized zinc coatings

No claims for extras in respect of failure by the Contractor to comply with any of the above regulations will be considered.

Where conflict exists between any of the above regulations and the specifications, the said conflict must be referred to the Engineer in writing for his ruling.

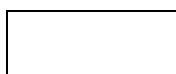
In addition to the above Contractors are advised that only the highest standard of workmanship will be accepted and that all materials supplied must be strictly in accordance with this specification. If workmanship and/or materials are not suitable, the Engineer will request that the work is repeated or the materials returned until a satisfactory standard is achieved. No additional payment will be made in respect of any remedial works.

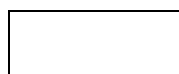
## **PKD 2. SCOPE OF WORK**

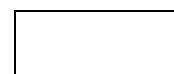
The scope of work for this project covers the manufacture, supply, delivery, installation, testing and commissioning of the electrical installation as described hereunder.

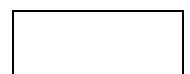
The electrical installation Scope of Work shall include supply, delivery, installation, testing and commissioning of the works as described in the BOQ and summarized as follows:

- s) Burying of medium voltage cables which is still in good condition in ground at 1000mm deep where possible and 300mm deep with precast concrete lintel above where the ground conditions does not allow deeper excavation. This is only applicable to certain lengths along the route.
- t) Convert overhead line from vertical arrangement to cape A-frame arrangement. SANPARKs confirmed that this item will be attended to internally by their on-site maintenance team.
- u) Replace rotten poles on overhead MV line.
- v) Replace rusted stays including stay-plates.
- w) New surge protection along the route at strategic points.
- x) New solid links along the route at strategic points.
- y) Replace approximately 70m of overhead line with underground cable and joint with existing AI PILC cable to TR18.
- z) New RMU at Generator substation.

  
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- aa) Replace existing medium voltage cable from TIP to TR18 as well as between TR18 and Restaurant mini-sub. The cables are suspended from wooden poles at approximately 1.2m ANGL and non-compliant with regulation which requires specific clearance for suspended MV cable/conductor.
- bb) All transformers need to be properly serviced, oil replaced, earthing repaired and terminals fastened and insulated:
- i. 1 x 500kVA TRF at Generator Substation.
  - ii. In-line step-up step-down transformers.
  - iii. TR18 – 1 x 200kVA ground mounted transformer.
  - iv. Oceanette – 1 x 160kVA ground mounted transformer.
  - v. Petrusville – 1 x 200kVA ground mounted transformer.
- cc) Repair joint in medium voltage cables along the MV cable route between TR18 and Restaurant miniature substation.
- dd) Replace RMU in TR18 substation with a 4-way RMU and re-route MV distribution in order to secure the hard connection in open air outside the substation building. The new 4-way RMU will feed the following area: Local 200kVA TRF, Oceanettes 160kVA TRF, Restaurant 160kVA TRF and Petrusville 160kVA TRF.
- ee) Remove redundant RMU in Petrusville substation.
- ff) Secure cable bridge over stream.
- gg) Replace access door to TR18 substation.
- hh) Repair water leak in Oceanettes substation.
- ii) MV warning signage at all substations to be upgraded.
- jj) TAN-Delta Testing to be conducted.
- kk) Earthing as per SANS 10142

### **PDK 3. EXCLUSIONS**

- Intelligent Metering
- LV Distribution not listed above.
- Small Power and lighting Installations to new chalets/developments.
- Area Lighting.
- Lightning Protection.

### **PDK 4. SECURITY OF MATERIALS AND EQUIPMENT**

Unless expressly allowed for in the contract sum, the Contractor shall in connection with the works, provide and maintain, at his own cost, all lights, guards, barriers, fencing and watching when and where necessary or as required by the Engineer or by any competent statutory or other authority for the protection of the works or for the safety and convenience of the public.

### **PDK 5. STORAGE**

The Contractor must provide adequate and secure storage, to the satisfaction of the Engineer, for all materials. All material must, in addition be stored or stacked in positions that will not interfere with other work in progress in the area.

### **PDK 6. CONTRACT WORK**

This part of the specification has preference to any other part of the specification.

The Contractor shall have, before submitting their tenders, acquainted themselves with the local conditions, accessibility of the sites, soil, conditions, availability of labour and labour conditions, transport, off-loading, custom and duties, storage and custody conditions for materials and equipment necessary for the completion of the total contract. No claim based on ignorance in this regard shall be considered.

Permission must be obtained from the Engineer before the Contractor visits the site, or the Contractor establishes himself on the site.

### **PDK 7. INTERCHANGEABILITY OF EQUIPMENT**

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Equipment to be supplied under this contract must be identical in all respects and it shall be possible to interchange such equipment should it become necessary.

All auxiliary equipment shall also be identical, including such items as contactor's, relays, fuses, method of wiring, numbering of wires, indication lamps, push buttons and instruments.

All material and equipment must be suitable for either 22,000 for MV equipment or 400/230V supply voltage, 50 Hz supply frequency and must be approved by the Engineer. In addition all equipment shall be designed, manufactured and tested in accordance with the relevant South African Bureau of Standards Specification or otherwise the relevant IEC or British Standard Specification. All products and equipment used as part of a fixed electrical installation shall bear the "SANS 10142-1 authorization mark for safety" and the necessary precautions shall be taken against corrosion, i.e. exposed metal shall be 304L stainless steel.

**PDK 8. BOLTS, NUTS, WASHERS, BRACKETS AND MOUNTING ACCESSORIES**

All bolts, nuts washers, fixing and mounting accessories shall be manufactured from stainless steel. Should accessories manufactured from mild steel or any other corrosive material be used on site, the Engineer shall instruct the Contractor to remove such accessories and replace them at the Contractors expense.

**PDK 9. SPECIFICATION AND DRAWINGS**

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

Contractors must ensure that their copy of the specification is complete and that all drawings as listed have been received.

**PDK 9.1 Contract Drawings**

The layout and extent of the electrical installation are shown on the drawings which form part of this document. The positions of all power, light and substations or routes which may be affected by other services, must be confirmed by the Contractor with the Engineer before placing such equipment.

The Contractor must request a complete set of Architectural/Structural/Mechanical and any other Services drawing from the Main Contractor for his information. Dimensions shown on the latest revision of Architectural/Structural drawings must be used by the Contractor for setting out purposes. No claims regarding revisions in Architectural/ Structural which are not indicated on the Electrical Drawings will be accepted.

**PDK 10. WORK SEQUENCE**

The sequence in which the work must be carried out, must be established in consultation with the Engineer and any other Contractors on site.

**PDK 11. SUPERVISION**

The work shall at all times, for the duration of the contract be carried out under the supervision of a skilled and competent representative of the Contractor who a Licenced Installation Electrician and who will be able and authorised to receive and carry out instructions on behalf of the Contractor. A sufficient number of workmen shall be employed at all times to ensure satisfactory progress of the work.

**PDK 12. SERVICE CONDITIONS**

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

**PDK 13. EARLY DELIVERY OF BUILT-IN ITEMS**

As soon as the contract has been awarded, the Contractor must establish the full requirements relating to all built-in items, and arrange for their earliest manufacture and delivery to site to suit the programme.

**PDK 14. DAMAGE TO BUILDINGS**

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The Contractor will be held responsible at all time for all damage to the existing infrastructure, buildings and plant due to negligence of any of his workmen or that of his sub-Contractors. The Contractor at his cost shall repair any damage arising out of such negligence.

**PDK 15. RING MAIN UNITS**

**PDK 15.1. SCOPE OF WORK**

The Scope of work forming the basis of the Tender will include the fabrication, FAT (allow for attendance by engineer), supply, delivery to site, offloading:

- a) **11 kV Ring Main Unit (RMU) complete with 1 x 630 A incomer circuit breaker and 2 x 200 A transformer feeder circuit breakers.**
- b) **11 kV Ring Main Unit (RMU) complete with 1 x 630 A incomer circuit breaker and 3 x 200 A transformer feeder circuit breakers.**
- c) **Circuit Breakers to be fitted with auxiliary powered Micom P122 protection relays**
- d) **Stand-alone 110 V DC Battery Tripping Unit to supply auxiliary powered relays**
- e) **PM8000 Power Quality meter to be installed on the incomer**
- f) **Incomer to fitted with VRU 1 VT to be installed in the cable compartment**
- g) **RMU circuit breaker switching pedant with 10m long lead**
- h) **11 kV C-Bushing screened terminations into the new 11 kV RMU**
- i) **11 kV standard terminations on the feeder circuit breaker and in the transformer cable termination boxes**

**PDK 15.2. SCOPE INCLUSIONS**

Included in the above Scope of Work is the following:

- a) **Submission of shop detail drawings for approval by the Project Manager.**
- b) **Submission of procurement, manufacturing and delivery program.**
- c) **Packing, shipping and offloading of all components of equipment to/on site.**
- d) **Submission of a manufacturing quality control plan (in accordance with ISO 9000).**
- e) **All inspections and testing as required by the appointed inspection authority and including all necessary testing equipment for the FAT.**
- f) **Supply of all certification.**
- g) **All safety equipment, guards and locking facilities as applicable.**
- h) **Contractor shall provide own board and lodging for crew if required.**
- i) **Contractor shall provide own crane and site transport for delivery/offloading.**

**PDK 15.3. SCOPE EXCLUSIONS**

Excluded from this scope of work are the following:

- a) **Installation, testing on site and commissioning.**

**PDK 15.4. SITE INFORMATION**

- a) The Tsitsikama National Park is situated in the Eastern Cape, with the park's entrance gate near the Storms River Village. The entrance to the Main Rest Camp is situated off the N2 road, between Plettenberg Bay and Humansdorp.
- b) **Nearest Domestic Airport: OR Tambo International Airport.**

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- c) Design ambient temperature: 40 degrees Celsius.
- d) Coastal Conditions Apply
- e) Electrical supply at site is 50 Hz, 3-phase:
  - The MV system being 11 kV between phases.
  - The LV system 400 V between phases with earthed neutral.
  - Single phase LV supplies are 230 V, with earthed neutral.
  - 11 kV 3 Phase Fault Level – 10.63 kA (max).
  - 11 kV Phase-Ground Fault Level – 2 kA.
  - Lightning Impulse withstand – 95 kV.
  - Power Frequency withstand – 28 kV.

#### **PK 15.5. TERMINAL POINTS**

- a) The outgoing terminals on the overhead feeder circuit breaker;
- b) The 11 kV terminals of the 2 x 200Kva; 1 x 160 kVA and 500 kVA transformer.

#### **PK 15.6. CODES OF PRACTICE**

The Machinery and Occupational Health Safety Act (Act 85 of 1993) – South Africa

SANS 10064 : Code of Practice for Preparation of Steel  
 SANS 10111 : Code of Practice for Electrical Drawings  
 IEC 60204: Safety of Machinery

#### **PK 15.7. ELECTRICAL SPECIFICATIONS**

IEC 62271 : High Voltage Switchgear and Control gear  
 SANS 780 : Distribution Transformers  
 SANS 1091 : SA National Colour standards for paint  
 IEC 60255 : Electrical relays  
 SANS 61312 : Protection against lightning and electromagnetic impulse  
 SANS/IEC 60529 : Degrees of protection provided by enclosures (IP Code)  
 SANS/IEC 62305 : Protection against Lightning  
 IEC 60060 : HV test techniques  
 SANS 1339 : Electric cables - Cross linked polyethylene (XLPE) insulated cables for rated voltages 3,8/6,6 kV to 19/33 kV  
 SANS 10142 : Wiring of Premises (Part 1 and 2)  
 SANS 10199 : The design and installation of earth electrodes  
 SANS 10292 : Earthing of LV distribution systems  
 SANS 725 : IEEE guide for safety in AC substation grounding  
 IEC 61460-1 : Composite string insulators units for O/H lines >1 kV  
 IEC 60071 : Insulation Co-Ordination

#### **PK 15.8. DRAWINGS**

The following drawings are supplied with this tender:

Drawing No.	Rev	Description
8068/003/EED001	1	MEDIUM VOLTAGE DISTRIBUTION NETWORK DIAGRAM DRAWING
8068/003/EED002	1	SINGLE LINE DIAGRAM

#### **PK 15.9. GENERAL**

- a) All awarded contractors to ensure documentation submitted remains valid up until the time of the completion of the contract.


#### **PK 15.10. INDUCTION PROCESS**

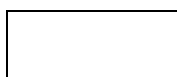
Contractor	Witness for Contractor	Page 101 of 219	Employer	Witness for Employer
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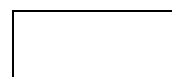
In order to have access to the Site, the Contractor must have a safety document/file with the relevant information:

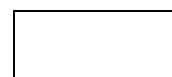
- a) **Safety specification.**
- b) **Signed contract.**
- c) **Letter of good standing.**
- d) **Letter of agreement.**
- e) **Permit to work on Site.**
- f) **Evidence of paid UIF insurance.**
- g) **SARS registration.**
- h) **SARS PAYE registration.**
- i) **Register of PPE per employee.**
- j) **Register of all tools brought to site.**
- k) **Register of all portable electrical equipment.**
- l) **Register of all lifting equipment.**
- m) **Register of locks supplied to each employee (labelled).**
- n) **Copies of medicals per employee.**

Delays caused by the late or incomplete submission of the above safety document/file shall be at the Contractor's **risk** and for the Contractor's account.

  
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## PDK 15.11. DESIGN SPECIFICATIONS

### 11.1. Design Criteria

The equipment sizes supplied shall not be less than those shown on the attached drawings. The Contractor shall however be responsible for the performance of the equipment and shall verify and confirm the size selection. If the Contractor is not in agreement with the selection, alternative sizes shall be offered with full justification for the change.

The information supplied in this Specification in the form of data, drawings and descriptions, etc., is intended to serve as a guide to the requirements of the Employer with respect to the design and operation of the installations. The Contractor shall either concur with each proposal or preference or submit alternative proposals for consideration. The acceptance of the information in this Contract shall in no way relieve the Contractor of its responsibilities in terms of the design and engineering performance of the installations.

The drawings supplied in this Specification are provisional drawings for tender purposes only, to indicate the nature of the Works. Revised drawings for construction purposes will be issued to the Contractor prior to commencement of each section of the Works.

The following design and detail drawings shall be the responsibility of the Contractor:

- a) Detailed equipment design and manufacturing drawings for electrical panels.
- b) RMU detail design drawings.

### 11.2. 11 kV Compact Modular Switchgear

The new 11 kV switchgear to be installed in the existing 11 kV substation shall be the compact Modular switchgear type. The new panel shall replace the outdated oil filled switchgear installed in the existing substations. The panel shall consist of four circuit breaker panels one 630 A incoming breaker and three 200 A transformer feeder circuit breakers. The panel shall comply to the following specifications.

Make of Switchgear	Schneider Premset/ ABB or Actom
Busbar Rated Current	630 A
Rated Voltage	17.5 kV
Short Circuit Withstand	25 kA for 3 sec
Rated Making Capacity (circuit breaker and earth switch)	62 kA
Internal Arc Classification	IAC A-FLR 25 kA for 1 sec
Lightning Impulse Withstand	95 kV
Power Frequency Withstand	28 kV
Partition Class	PM (1)
Loss of Service Continuity Category	LSC2 (2) (3)
Insulation Medium	Vacuum
Circuit Breaker Current Rating	630 A (Incomer) 200 A (Transformer Feeders)
Circuit Breaker Operator mechanism	Motorized
No-load mechanical endurance of circuit breaker	M1 – 2000 operations
Electrical Endurance of circuit breakers	E2 – 25 kA
No-load mechanical endurance of earth switch	M0 – 1000 operations
Electrical Endurance of earth switch	E2 – 5 operations
Switchgear design	Extendable
Manufacturing standard	IEC 62271
Manufactured Colour	RAL 7035
Degree of Protection (IP)	HV-live parts IP4X, LV compartments IP2X
Gas Exhaust Dissipation	Upwards exhaust, gas releases inside room
Auxiliary powered	Yes, 110 VDC
Auxiliary contacts	2 NO & 2 NC
Cable Termination position	Rear bottom connection
Maximum ambient operating temperature	40deg C
Protection Relay	Auxiliary Powered Micom P122
Power Quality Recorder	PM 8000 (on the incomer only)
Current Transformers	1 A Secondary Protection Class – 5P20 (Incomer and Feeders) Metering Class – 0.2 (Incomer) CSH 120 CT – Transformer Feeders
Voltage Transformers	VRU 1 VT (Incomer cable compartment)

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The switchgear shall come complete with 110 VDC auxiliary powered Micom P122 protection relays. The 110 VDC power supply shall be from a stand-alone battery tripping unit, sufficiently sized to provide standby power to the new switchgear with sufficient capacity for an additional 1 to 2 circuit breakers to be added in the future.

The switchgear shall have the facility to switch (Open and Close) via a pendant switch, allowing the operator to be able to switch the circuit breakers standing outside the substation room. The pendant shall be supplied with the panel and shall have a minimum cord length of 10 meters.

Test blocks shall be fitted for access to the CT and VT secondaries, the test blocks shall be PK2 type test blocks.

### 11.3. MV Cabling

All cables to be terminated into the new panels shall be by means of C-Bushing screened elbow type trifurcating terminations, where the individual cores shall enter the panel through the gland plate and the cable crutch shall be external to the panel.

All new MV feeder cables shall comply with the following specifications

Conductor size	50 mm <sup>2</sup> - Incomer 50, 35 and 25 mm <sup>2</sup> - Transformer Feeders
Conductor material	Stranded plain annealed copper
Number of cores	3-core
Voltage grade	6.35kV/11kV
Insulation	XLPE
Bedding	PVC
Armouring	SWA for 3 Core Cables
Screen	Copper Tape
Sheath	PVC (UV retardant)
Colour	Black

Terminals shall be properly sized. Drilling of lugs to suit the terminal size will not be accepted.

The Contractor shall supply all cable termination kits as per the manufacturer's specifications, glands, screened elbow connectors, suitable tinned torque sheer lugs, bolts, nuts and washers for the cables sizes as indicated in cables schedules. All glands shall be IP65 type cable glands.

All cables shall be marked at both ends by means of non-corroding metal bands with punched or embossed numbers.

Where cables enter or exit floors or walls, the opening allowed for the cable shall be sealed with pyro-coating flame proof seal. Where cables enter floors through sleeves in the floor, the sleeve shall be filled with flame proof expansion foam. All unused sleeves on completion shall be filled. All cables shall be coated in intumescent paint. The cable trench opening between the Municipality substation and the RCL Foods MV substation shall be sealed off to prevent the fire from transferring from the one substation to the other. The sealing off of all cable openings shall be done by certified installers.

No cable joints shall be accepted.

Cable tests shall be done in accordance with SANS standards and specifications. All tests shall be recorded and documented, a test certificate shall be provided for each cable test.

### PKD 15.12. TESTS

#### 12.1. OFF Site Tests

The required Tests on Completion consist of the following:

- Pre-Commissioning Tests.
- Cold Commissioning Tests.
- Hot Commissioning Tests.

The Contractor shall be responsible for all aspects of pre-commissioning and plant commissioning activities.

In order to achieve this successfully, the Contractor shall fulfil requirements that include, but are not necessarily limited to, the following:

- Appointment of an appropriately skilled and experienced Commissioning Manager immediately after the Contract is awarded.
- Development of a commissioning plan early in the project that is fully integrated with the construction plan and the overall project programme. This plan should be submitted to the Engineer for approval.
- Implementation of formal handover procedures and documentation from construction to commissioning.
- Implementation of commissioning procedures for approval by the Engineer.
- Implementation of training requirements.
- The contractor to allow for all travelling and accommodation costs related to the engineers cost pertaining the FAT.

## **Pre-Commissioning Tests**

The Contractor shall carry out all Pre-Commissioning Tests on all equipment supplied and installed by the Contractor in this Plant. These tests shall include appropriate inspections and functional tests to demonstrate that the Plant items can be operated safely and at their design performance specification during the commissioning test.

### **12.2. Cold Commissioning Tests**

The Cold-commissioning Tests shall be carried the presence of the Engineer. The Contractor shall give the Engineer a minimum of seven days' written notice of his readiness to carry out the Cold-commissioning Tests.

The Tests shall include the Contractor demonstrating to the Engineer that all Plant systems particular to the Pre-commissioning Tests operate in accordance with the Employer's Requirements, design requirements, and specifications.

All operating and maintenance manuals and drawings shall be issued to the Employer prior to the Cold-commissioning Tests. For the purpose of these tests, these documents may be in final draft form.

- An Electrical Certificate of Compliance shall be issued to the Engineer after successful completion of Cold Commissioning.
- A Take-Over Certificate shall be issued by the Engineer after successful completion of Cold Commissioning.

### **12.3. Hot Commissioning Tests**

After Cold Commissioning and Take-Over the equipment shall be handed over to the Employer for operation and the Contractor shall be present to assist with any commissioning tests on the Works as required by the Employer.

Inter alia, these tests include the following:

- The Contractor shall carry out, simulated operational tests, and any tests required by the Employer/Engineer that cannot be carried out before the Cold Commissioning Test to demonstrate unit operation.
- Tests shall be carried out by the Contractor to demonstrate that the Plant can be operated continuously at the design rate, with all the plant equipment and systems running together safely, reliably and according to specification.

## **PDK 15.13. FINISHING**

The Contractor, on completion of project implementation, shall leave the site and demarcated lay-down areas in a clean and tidy condition, and in the event of damage to any other party's property will be held responsible for re-establishing same to their prior condition.

## **PDK 16. ELECTRICAL CABLING**

### **PDK 16.1 General Details**

All cables shall be in accordance with SANS 1507 and shall be PVC/SWA/PVC with stranded copper conductors. Cables shall bear the SABS mark. The total insulation must have the phase colour. All cables shall be fire retardant and must have passed tests in accordance with SABS IEC 60332-1.

### **PDK 16.2 Specific Details**

The following is a detailed description of the electrical cabling and the Contractor shall allow for all items described and any which he deems necessary to complete the installation in accordance with the specification.

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### Testing

All low voltage cables must be tested on site, in the presence of the Engineer or his representative. All test results must be submitted to the Engineer.

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

### Depth of Trenches

All low voltage cables must be installed 650 mm to the top of the cable, below ground level.

### Marking Tape

Yellow PVC marking tape, 150 mm wide must be supplied and installed 400 mm above all cables. The wording "Electric Cable Below - Caution" and "Elektriese Kabel Hieronder - Gevaar" must be provided on the marking tape.

### Cable Lengths

Tenderers must base their tender price on the preliminary lengths specified in the Bills of Quantities. After installation the exact lengths shall be determined on site. Adjustments to the contract price shall then be calculated using tariffs in the Bill of Quantities.

It shall be the responsibility of the Electrical Contractor to establish the correct lengths of cable on site, before placing an order. The Contractor shall not be reimbursed for any surplus cable.

## **PDK 16.3 Cable Glands and Terminations**

All cable glands shall be suitable for chemical corrosive areas and shall conform to SANS 1213. Positive armoured and compression type glands (Pratley Environglands) with shrouds for SWA and Non-SWA cables respectively, shall be supplied and installed by the CONTRACTOR. Glands shall be selected for the cable sizes and the equipment enclosures. Copper conductor end terminations shall be via tinned copper crimp lugs. Where possible a minimum of one metre slack shall be left in the cables at termination ends and possible joints.

## **PDK 16.4 Cable trenches**

Tenderers must base their tariffs for cable trenches in soil, soft rock and hard rock on the quantities given in the Bill of Quantities. The actual quantities shall be determined on site.

Adjustments to the Contract Price shall be calculated using the tariffs in the Bills of Quantities, after completion of the installation.

**SOIL:** Shall mean hand pickable soil and includes loose gravel, clay, backfilled soil, loose or soft shale, loose literati and rocks less than 75 mm dia.

**SOFT ROCK:** Shall mean rock which is hand pickable including hard shale, dense literati and rocks exceeding 75 mm in dia. to 0.03 cubic metres volume.

**HARD ROCK:** Shall mean granite, quartz sandstone, slate and stone of similar hardness as well as rocks exceeding 0.03 cubic metre volume.

Should excavations be done in close proximity of existing services extreme care must be taken. Only labourers with experience of these conditions may be utilised.

The bottom and sides of trenches must be of smooth contour, and shall have no sharp dips or rises which may cause tensile forces in the cable during backfilling.

Backfilling of trenches may commence after the trenches have been approved and shall be compacted in layers of 150 mm. Sufficient allowance must be made for final settlement. For the first layer of 150 mm, sifted soil of which 75 mm must be below and 75 mm must be above the cable must be used.

Where no suitable soil is available on site, the Contractor shall import fill from elsewhere and make all the necessary arrangements to do so.

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The Contractor shall be responsible for taking the necessary precautions where excavations may be dangerous. Refer to the Machinery and Occupational Safety Act 1983, Reg. 13 of the General Safety Regulations. The Contractor must ensure that all buildings, sewers, etc., are protected against caving.

The cable trenches shall be excavated to be 300 mm 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.

Payment will be made on a cubic excavation rate based on the basis of the given maximum dimensions or the actual dimensions, whichever is the lesser. The only exception shall be in cases of additional excavations caused by obstructions such as water pipes, drains, large rocks, etc., in which case the length of the additional excavation must be agreed upon on site by the Engineer.

#### **PDK 16.5 Joints**

Joints in cable runs shall not be allowed unless specified or authorised in writing, by the Engineer. Where cable joints are to be made, a joint hole must be excavated of sufficient size to enable the cable jointer to work efficiently and unimpeded.

Each cable end must be left in a loop of 0.9 m to prevent any tension on the joint.

During backfilling the section supporting the joint must be compacted to the extent that no movement will take place after the trenches have been backfilled.

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 approved epoxy-resin pressure type jointing kits such as "Scotchcast". Epoxy resin joints must be made entirely in accordance with the manufacturer's instructions and with materials stipulated in such instructions.

Where cables are cut and not immediately made off, the ends are to be sealed without delay.

#### **PDK 16.6 Cable laying**

Cables must be removed from the drums in such a manner that the cable is not subjected to mechanical damage, twisting or tension exceeding that stipulated by the cable manufacturer.

The laying of cables shall not commence until the trenches have been inspected and approved. The cables 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.

#### **PDK 16.7 Sleeves**

Cables that are to be installed underneath any roads shall be installed in 110mm Ø PVC sleeving to maximise protection of the cables.

#### **PDK 16.8 Cable Markers**

Cable markers must be provided on all cable runs at 50 m intervals on straight runs and at all bends. The position of cable markers must be confirmed on site.

Cable markers must consist of 150 mm x 150 mm x 300 mm high concrete blocks with aluminium or other rust free metal plates marked with arrows to indicate the route.

#### **PDK 16.9 EARTHING**

The entire installation shall be properly and effectively earthed as prescribed in the Standard Regulations for the Wiring of Premises SANS 10142-1 and to the requirements of the relevant supply authority.

This portion of the work must be undertaken by Specialists.

Please note that single earth conductors will be supported via stainless steel angle iron. The main cable support system as provided by the CONTRACTOR may also be used to support these conductors in the most economical route.

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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. Earth conductors for individual circuits branching from the ring main shall be connected to the common earth conductor with "Burndy" clamps or soldered.

Conductor clamps shall be made using a strong cast bronze body to provide a high-pressure contact between the earth conductors and earth rods.

The clamps shall be provided with a non-ferrous setscrew.

All rods will be threaded at either end so that extensions can be added to where deep driven installations are required. All connections will be taped or waterproofed to ensure that corrosion does not affect the joint during the life of the installation.

The rods shall be supplied complete with a driving bolt for protecting the ends of the coupling whilst being driven into the ground.

The top of the rods, after installation, shall be 400mm below final ground level.

#### **PK 16.10 TESTING AND COMMISSIONING**

The Contractor is to ensure that, for the purposes of commissioning the complete installation, he has in his possession all the necessary test equipment as well as communication equipment such as portable radio transceivers. The Contractor must supply the Engineer with copies of valid calibration certificates for all testing and measuring equipment before using this equipment.

Commissioning of the whole installation shall not commence until all work which is essential for safe operation has been completed.

The settings of all protective, instrument and timing devices are to be correctly based on the manufacturer's characteristic curves.

The Contractor shall test the entire installation in terms of Regulation 7 of the Electrical Installation Regulations 1992 of the Occupational Health and Safety Act 1993 and shall issue a Certificate of Compliance on the official form, Annex 1, obtainable from the Electrical Contracting Board of South Africa. All tests shall be carried out in conjunction with and to the satisfaction of the supply Authority and in the presence of the Engineer. The Contractor shall make all arrangements for testing and inspection, the costs thereof being included in the Tender Price.

The responsibility of the installation meeting specification and statutory requirements remain with the Contractor.

The Contractor shall ensure that the installation is completed in every respect and that there are no major defects prior to notifying the Engineer (in writing) for the first delivery inspection. The certificates of compliance shall be issued to the Engineer at the first delivery inspection.

The Engineer will accept zero minor defects during the final inspection. Should any defects as listed during the first delivery inspection be found not to have been corrected then the Engineer will terminate that inspection and request that an additional final inspection be arranged by the Contractor.

The Contractor shall be responsible for arranging all the tests as specified, at the appropriate time.

The electrical installation shall be tested in accordance with the Standard Regulations for the Wiring of Premises and any applicable by-laws of Local Authorities.

The Engineer may perform similar tests at any time and the Contractor shall render all assistance and shall provide all tools and instruments, which may be required for such tests.

The Contractor shall replace any portion of the installation if it does not meet with the requirements of the Regulations of this specification, as may be found by test or inspection. Such replacement shall be done at his cost.

All 230V socket outlets shall be tested for polarity and the sensitivity of the earth leakage protection equipment shall be tested by means of an approved instrument.

"Danger " notices shall be displayed at remote ends of cables under test.

The Contractor shall advise the Engineer in writing of all results and furnish copies of all certificates.

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The Contractor shall provide all the necessary instruments for the proper testing of the complete installation. If there is a reason to doubt the accuracy of such instruments, the Contractor shall take the necessary action to prove their accuracy.

TESTING	MINIMUM REQUIREMENTS
Insulation resistance	Whole installations : better than 1 Meg Ohms.
LT Installation	Each sub-distribution section: better than 5 Meg Ohms. Each unterminated cable : better than 5 Meg Ohms omitted.
Earth Leakage on socket outlets	Better than 30 mA
Maximum resistance of earth continuity conductor	As per table 8.1 of SANS 10142-1
Earth electrode resistance	1 Ohm or better

#### PDK 17. MANUALS AND DRAWINGS

Three (3) copies of the operating and maintenance manuals shall be provided on delivery of the equipment. These shall come in the form of plastic covered ring files with the following information indelibly printed on their covers.

SANPARKS

OPERATING AND MAINTENANCE INSTRUCTIONS FOR THE

SUPPLIED BY

(Name, address, telephone and fax number of Contractor).

Each page, pamphlet, booklet, diagram, drawing etc. shall be separately bound into the manuals in a clear plastic pocket. Each pocket shall be numbered and indexed.

The first page of each set of manuals shall be an index which shall include a list of the numbers and descriptions of all drawings and pamphlets included in the set and also a list of the Engineer's drawings relating to the relevant sections of the Contract.

The instructions shall include the following:

- A list of spares, tools and testing equipment supplied under the Contract.
- A list of spare parts and testing equipment which are not supplied under the Contract but which may be required for future major overhaul and/or testing of electrical plant and equipment.
- Suppliers' names, addresses, telephone numbers, fax numbers and costs must be listed.
- List of "Name Plate Data" giving full particulars of serial numbers and other descriptive data pertaining to the equipment installed.
- Routine tests which the Contractor/Supplier(s) would suggest be carried out.

All information mentioned above shall be cross-referenced to the drawings.

Additionally the manuals shall provide the following electrical information which shall also be cross-referenced to the drawings:

- Dimensioned Equipment layout plans;
- Power single line diagrams
- Equipment and component specification sheets;
- Control Wiring diagrams;
- Narrative description of the control circuit operation.
- Maintenance instructions with recommended preventative maintenance programme;
- Fault finding analysis;

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- Operating instruction;
- Adjustment and calibration instructions if applicable;
- Priced spare parts list with names of local suppliers and list of spares recommended to be kept in stock.

For viewing purposes only

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## PART C: PARTICULAR SPECIFICATIONS

The following relevant Particular Specifications, as listed below, shall apply to this contract:

Section	Description
PH:	ELECTRICAL
PH 1:	GENERAL
PH 2:	ELECTRICAL SUPPLY AND PHASE ROTATION
PH 3:	SWITCHING OF POWER SUPPLIES
PH 4:	EARTHING AND BONDING
PH 5:	MAIN DISTRIBUTION BOARDS
PH 6:	MCB DISTRIBUTION BOARDS, SUB-DISTRIBUTION BOARDS AND CONTROL PANELS
PH 7:	LV CIRCUIT BRAKERS
PH 8:	SURGE ARRESTORS
PH 9:	ELECTRICAL ENERGY METERS
PH 10:	INSTRUMENTS, METERS AND PROTECTION RELAYS
PH 11:	CONTROL EQUIPMENT AND WIRING
PH 12:	FIELD CONTROL EQUIPMENT FOR MOTORS
PH 13:	TRENCHING, EXCAVATION AND COMPACTION
PH 14:	MANHOLES
PH 15:	SLEEVES
PH 16:	CABLES
PH 17:	CABLE TRAYS
PH 18:	CABLE JOINTS AND TERMINATIONS
PH 19:	CABLE TESTING
PH 20:	BUSBAR TRUNKING
PH 21:	MULTI-CORE INSULATED CABLE
PH 22:	MISCELLANEOUS ELECTRICAL CONNECTIONS
PH 23:	HOT DIP GALVANISING
PH 24:	PAINTING
PH 25:	LABELS AND NOTICES
PH 26:	DISMANTLING
PH 27:	INSPECTION, TESTING AND COMMISSIONING
PH 28:	COMPLETION OF WORKS

The following Particular Specifications shall also apply to this contract and are Annexed to this Contract

- Annexure A - Health and Safety Specifications for South African National Parks
- Annexure B - Environmental Management Plan
- Annexure C - Code of Conduct for working in the South African National Parks

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## PARTICULAR SPECIFICATION PH : Electrical

### PH 1 GENERAL

In this Specification, the term *Contractor* means the person, firm or company whose tender has been accepted for the work specified in the document of which it forms a part.

### PH 2 ELECTRICAL SUPPLY AND PHASE ROTATION

The phase rotation specified shall be maintained on all overhead lines, cables, transformers, and switchgear and distribution equipment. Where existing connections shall be reconnected to a new system, the phase rotation shall be checked before disconnection and the reconnection made to maintain the same phase rotation.

### PH 3 SWITCHING OF POWER SUPPLIES

Any switching of existing power supplies shall be pre-arranged with the appropriate Authority. All possible preparation shall be made in advance, to minimize the time required for re-energizing the system. All such switching shall be carried out by the "responsible person" unless such authority is given to the Contractor by that person, in writing.

### PH 4 EARTHING AND BONDING

#### PH 4.1 Resistance Values

While every effort should be made to obtain an earth resistance value of 1,0 ohm or less, the maximum values of earth electrode resistance acceptable, unless stated to the contrary elsewhere in this specification, are 10 ohm at any minisub or transformer, 15 ohms at any indoor or outdoor switchboard or HV gang links and 20 ohms at cradle earthing points, lightning arresters or other pole mounted equipment. In the case of the earthing of LV feeder and overhead line neutrals the combined resistance to earth of all systems shall not exceed 10 ohms.

Transformer neutral earthing shall comply with the sub-clause "Transformer Earthing" below.

#### PH 4.2 General Earth Systems

Unless otherwise specified elsewhere in this Specification, the earth systems for distribution transformers, mini subs and ground or pole mounted switchgear, lightning arresters, etc. shall generally comprise two earth electrodes with 1,5m long earth spikes located 6,0m apart, linked with 70mm bare conductor. They shall be located adjacent to pole structures or ends of plinths in the case of mini subs and shall be located at least 1,0m there from.

In the case of transformer earthing, if the neutral earth system resistance is not 1,0 ohm or less, two systems as above shall be installed, one for the LV neutral and the other for the tank and associated equipment in which case they shall be kept at least 6,0m apart and at opposite sides of the transformer position.

The earth system shall be connected with 70mm<sup>2</sup> insulated earth conductor to the earth bar or transformer tank earth stud as appropriate.

Immediately after installation and before livening up the equipment the Contractor shall test the earth resistance of the earth system, using the respective earth bar or termination as the reference point. If the required value is not obtained, each earth spike, if installed in a sidewalk, shall be increased in length by driving a further length of 1,5m but where located in open ground, two additional spikes shall be installed. These latter spikes shall be perpendicular to the original two, in line with the spike at the point of connection of the insulated earth conductor and each 6,0m there from. After installing the additional spikes the earth resistance shall again be determined. The Contractor shall submit a report in duplicate confirming the values measured, including the first set if appropriate, to the Engineer.

Where the number of spikes called for does not achieve the required values, the Engineer shall be advised and will give further instructions for the improvement of the values obtained. Where more spikes are necessary to obtain the required value, these shall not be installed within 6,0m of any other spike.

The common leg of the secondaries of CT's, other than the secondaries of summation transformers, shall be effectively earthed to the main earth system.

#### PH 4.3 Transformer Earthing

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Transformers, pole mounted, ground mounted or in mini-sub, shall be provided with earth systems as described in the sub-Clause "Earth Systems" above. If the earth system resistance is 1.0 ohm the mini-sub neutral and earth bars, or the transformer neutral and the tank earth stud, shall be bonded with an insulated earth conductor.

Where the earth system resistance is in excess of 1,0 ohm, a second separate earth system shall be installed in accordance with the foregoing sub-Clause and the neutral and tank connections shall be taken to each of the independent earth systems with separate insulated earth conductors. In this case a neutral surge arrester, complying with the sub-Clause "Lightning Arresters" elsewhere in this Specification, is to be installed and connected between the transformer neutral and the tank earth point. At mini-sub, where the arrester is NOT to be installed within it, the Engineer is to be consulted. For tendering purposes it shall be assumed that the second earth system and neutral Arrester will not be required unless called for elsewhere in this Specification.

In the case of electrical reticulation contracts the earthing shall also comply with the "AMEU/SAIEE Code of Practice for the use of CNE on Low Voltage Distribution Systems".

#### **PH 4.4 Reticulation Feeder Neutral Earthing**

At kiosks and fused feeder pillars a 30m length of bare earth conductor of half the size of the phase conductors but not greater than 70mm<sup>2</sup> shall be laid from each kiosk earth bar towards the source of supply. The neutral bar shall be connected to the earth bar with green insulated conductor of the equivalent size.

At various points not exceeding 150m apart along the length of overhead lines and at tee connections and the ends thereof as indicated on the drawings, the neutral conductor shall be bonded to an earthing point which shall comprise a 1,5m long earth spike. The insulated earth conductor shall be carried in a galvanised sleeve from 500mm below ground to 3,0m above. The connection of the earth conductor to the line conductor shall be made with a connector suitable for the particular line conductor material.

#### **PH 4.5 Earthing of Pole-mounted Equipment**

Pole mounted transformers shall be provided with an earth system as described above. The insulated earth connections shall be taken up the pole in a section of galvanised conduit extending at least 500mm below ground level and to a height of 3,0m above.

At cradle earthing points, reclosers, or sets of lightning arresters, one 1,5m long earth spike shall be provided, the insulated earth connection being enclosed in galvanised conduit as described above.

#### **PH 4.6 Operator's Platform**

A 1,0m x 1,0m HDG operator's platform complying with the detail shown on the drawing annexed to this Specification is to be installed at each gang-link isolator, unless otherwise indicated in this Specification. The platform is to be erected 150mm above ground level, the legs being cast into mass concrete generally complying with the Clause "Plinths" elsewhere in this Specification.

The platform is to be connected "by means of two 40mm" bare earth conductors to an earth system as described above.

A separate 50mm<sup>2</sup> bare earth conductor is to be used to bond the isolator steelwork to the platform. The steelwork ABOVE the insulated section of the operating rod is not to be bonded.

Where a steel plate in lieu of a platform is specified elsewhere in this Specification, this shall comprise a hot dip galvanised steel plate of 1,0m x 1,0m x 6,0mm steel located at the operating handle position. This plate is to be bonded to the earth system and to the isolator steelwork using two 50mm<sup>2</sup> earth conductors connected to separate points.

#### **PH 4.7 Earth Spikes**

Earth spikes shall comprise 16mm sectional steel core rods with a minimum of 0,25mm pure copper coating molecularly bonded thereto, complying with SABS 1063, and of "Cadweld" or equivalent manufacture. The top of earth spikes and the interconnecting conductors shall be 1,0m below finished ground level.

Under no circumstances are earth spikes to be located closer than 1,0m to any structure or plinth nor are they to be installed in pole holes.

The connections to earth spikes shall be by means of at least two phosphor bronze mechanical clamps of an approved type for this duty, or a "Cadweld" joint. The clamps shall not be attached to the rod but must be installed so that the bolt face is in contact with the rod. Brazing will not be accepted. The connection must be wrapped with two layers of "Denzo" tape.

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A cable marker as described elsewhere in this Specification shall be installed above each spike and shall be labelled "Earth Spike".

#### **PH 4.8 Earth Continuity Conductors**

Earth conductors shall be hard drawn bare copper wire complying with SABS 182, or bi-coloured green/yellow PVC covered, the PVC being UV stabilised complying with SABS 1411 Part 2, as elsewhere specified herein. The conductor sizes shall be such that they can carry the short circuit current likely to be imposed upon them but generally shall be half the area of the phase conductors with a maximum size of 70mm<sup>2</sup> or in accordance with the appropriate Regulations, unless specific sizes are given elsewhere in this Specification. 50mm<sup>2</sup> conductors shall be 7/2, 65 HD.

Bare earth continuity conductors shall be run with all cables constituting a low voltage distribution system except in the case of township reticulation where an earth system as described in the sub-Clause "Neutral Earthing" above shall be installed at kiosks, etc.

A single conductor may be used where two or more cables run together, provided that the conductor cross-sectional area is based on the largest size cable in the run, and that branch earth wires are solidly connected to the main earth conductor using only "Cadweld" connections. Earth continuity conductors shall be connected to main earth bars.

Bare earth conductors shall not be less than 500mm below ground level. Above this level all earth conductors shall be green insulated carried in a PVC conduit sleeve except where galvanised conduit is specified elsewhere herein.

A terminal lug shall be crimped onto the end of the main earth conductor for bolting to the main earth bar of a substation or mini-sub or other outdoor equipment. Two mechanical clamps shall be used for connection onto cradles or other equipment, as appropriate.

Earth connections shall be so made that in the event of any connections being removed the earth connection to the rest of the equipment will not be affected.

#### **PH 4.9 Bonding Generally**

All metallic parts of the installation shall be bonded to the earth system as required by the appropriate Regulations.

All iron roofs, gutters, down pipes water and waste pipes, as well as all steel structures, shall be bonded to earth. The maximum resistance of any such point to the earthed end of the earthing lead shall not exceed 0,2 ohm.

#### **PH 4.10 Bonding of Equipment**

Where equipment is bolted together, as in the case of an HV or LV switchgear panel, there shall be a 32mm x 4mm copper earth strap extending the whole length of the equipment. All earth bars shall be run in one continuous length as far as possible, and shall not be bent or formed in any way that requires hammering or severe distortion. Any joints shall be lapped with at least two bolts with nuts and washers of suitable size. The lapped ends shall be pre-tinned. If multiple straps are used, they shall be bolted and fixed together at not more than 75mm intervals. All connections shall be made using brass or stainless steel bolts, nuts and washers, together with a star lock washer, on all kiosks, fused feeder panels, mini subs and outdoor equipment. Connections to indoor equipment may be made with cadmium plated steel bolts, nuts and washers, with a steel spring washer.

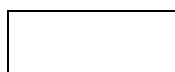
All steelwork on a pole shall be bonded using 25mm<sup>2</sup> solid copper conductor. This requirement applies to cross-arms, all insulator supports and any other hardware. Where equipment is also mounted on the pole, the bonded metal shall be earthed to an earth spike as elsewhere specified herein, using a 50mm<sup>2</sup> bare copper conductor.

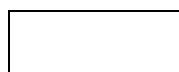
#### **PH 4.11 Bonding of Steel Lighting Poles**

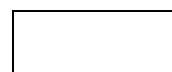
Steel streetlight and site lighting poles shall be bonded with a continuous earth continuity conductor of half the area of the phase conductor, but a minimum size of 4mm<sup>2</sup>, laid with the cables. This conductor shall be connected to the pole earth stud. At the last pole in a run the neutral conductor shall be bonded to earth.

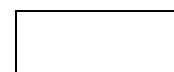
#### **PH 4.12 Supplementary Requirements for Building Services**

The main earth system is to comply with the Supply Authority's requirements. Earth spikes, mats and conductors shall be installed as early as possible in the building program, and the onus is on the Contractor to arrange this

  
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with the Building Contractors to avoid later disturbance of completed construction. Before proceeding, however, the attention of the Engineer shall be drawn to the exact proposals and approval obtained.

Bare earth conductors complying with the requirements of the Wiring Code shall, unless otherwise specified elsewhere in this Specification, be drawn into conduits together with the current carrying conductors, between all main, sub-main and sub-distribution boards. Ends of earth conductors shall be terminated in lugs securely bolted to switchboard frames or trays.

Unless otherwise specified elsewhere in this Specification, bare copper earth wires complying with the Wiring Code shall be run with all socket outlet, water heater, stove and other power outlets. Bare earth wires shall also be run in all ceiling and skirting trunking to bond all light fittings, socket outlets and the trucking lengths themselves. Such conductors shall also be run in all non-metallic conduits. In aluminium trucking, the earth wire shall be insulated with green PVC.

Earth conductors run outside flexible tubing, where this has been permitted, shall be run neatly along the tubing and shall be held in place by approved cable ties. Such conductors shall not be wound around the tubing.

## PH 5

### MAIN DISTRIBUTION SWITCHBOARDS

These are defined as boards controlling the main supplies, either incoming and/or outgoing, by air break or moulded case circuit breakers, or the outgoing supplies with fused-switch units. Where elsewhere specified, the incoming supplies may be controlled by - isolators.

Such boards may be termed main or sub-main distribution boards. The boards shall comply with BS 5486, with particular regard to testing.

Where specialist manufacture of boards is called for elsewhere in this Specification, under no circumstances will such boards be accepted unless supplied by a manufacturer who uses components, the majority of which have been designed and tested by his own firm, and carry approved Testing Authority Certificates relating to the performance of such components. Relief from this condition will only be given by the Engineer in extreme circumstances, and must be in writing, such relief must be obtained before submission of a tender.

The switchboards shall be suitable for the supply voltage, frequency and phase arrangement as detailed elsewhere in this Specification and shall be of the flush fronted cubicle type, floor mounted and arranged for back access, built up of standard factory made units to form an easily extensible board. The cubicles shall comprise a welded or bolted framework of steel sections with minimum 1,6mm thick steel panel cladding. The panels shall be either hinged or removable for ease of access. Securing of panels shall be by means of square key latches with bottom locating pins in the case of fixed panels. The edges of all doors and removable panels shall be so constructed that they can readily accept a rubber gasket, should dust and damp proofing be required.

All equipment shall be mounted behind removable fascia plates; only switch toggles, etc., protruding. Doors over the toggles shall only be provided when asked for elsewhere in this Specification.

Moulded case circuit breakers shall comply with the Clause "LV Circuit Breakers" elsewhere in this Specification. All incoming circuit breakers of 800A or larger shall be withdraw-able pattern. All incoming and outgoing switches shall be provided with means for padlocking in the "OFF" position. Three maximum demand reading ammeters and a voltmeter and selector switch, as specified in the Clause "Instruments, Meters and Protection Relays" elsewhere in this Specification, shall be provided for each incoming supply circuit breaker.

No board shall exceed 2,4m in height nor shall any operating handle, button or switch be mounted higher than 1,8m. No part of any equipment shall be mounted closer than 300mm to the floor.

The bus bars shall be mounted at the top of the board, enclosed by the removable full height panels at the back, removable top panels and removable front panels covering the bus bar section only. Droppers from the enclosed bus bar chamber shall pass through insulating barriers located as necessary. Where bus bars are exposed in cubicles requiring access for operation or maintenance, they shall be shrouded with a suitable insulating material.

The bus bars shall be of high conductivity copper bar of adequate section for the current and short circuit rating. The current density shall not be more than 185A per square centimetre at the current rating specified. Bars shall have a minimum spacing of 32mm between bars and 25mm to earth. Where multiple bars are used, the air gap between bars shall be the same as the bar thickness. Bus bars shall be securely supported by insulators of a size and so spaced that they will prevent bus bar distortion under maximum short circuit conditions. Equipment shall be arranged to connect to the bus bars with solid copper connections of adequate section to resist short circuit stresses imposed by faults up to the maximum breaking capacity of the associated switchgear. Joints between bus bars and the equipment shall be tinned and connected using phosphor bronze or stainless steel nuts and washers above a fault level of 20kA or cadmium plated steel below this rating. Flat washers shall be provided on both sides of the connection and spring lock-washers beneath the nuts. Busbars shall be pre-drilled and tinned at both ends for future extensions and removable plates shall be fitted at either end of the bus bar chamber to enable such extensions to be made. Suitably drilled and tinned fishplates for later coupling of the bars shall be

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provided.

All power cables shall be fixed on lower gland plates, pre-drilled according to the cable schedule provided by the Engineer, and location with respect to the entry points of the cables.

Cabling arrangements shall be such that outgoing feeder ends can be made off with the board live at all times. This shall be provided for by means of a 2mm galvanized gland plate in close proximity to the outgoing terminals of the switchgear. All gland plates shall be bonded to the earth bar by means of a 70mm<sup>2</sup> bare copper conductor fixed with min. 10mm cadmium plated bolts and nuts.

The underside of the board shall be rendered vermin proof by means of similar plates to the gland plates above.

The outgoing connections from tiered equipment shall be brought out to separate terminals behind each switch for ease of making the outgoing connections.

The whole switchboard shall be suitable to control the circuits shown on the drawings, but the actual arrangement of the board is left to the Tenderer so that the most cost-effective arrangement for the type offered will be obtained. Space shall be left to allow access to the rear of the board. The board must be designed to fit into the space available and be of suitable dimensions to enter through the doorways provided. The board must be suitably located to permit future extension at either end and must be bolted to the floor.

Provision must be made for the future addition of further outgoing switches to the switchboards. The board must be so designed as to allow space for the addition of these units. Unless otherwise specified elsewhere in this Specification the number to be allowed for shall be the nearest whole number above 20% of the number of each type of switch unit actually supplied on each board. The current rating to be allowed for each future unit shall be the same as that of the largest outgoing switch of which more than one is actually supplied on each board.

A continuous earth bar sized to match the specified fault rating of the board but of not less than 25mm x 6,3mm cross-section shall be run along the entire length of the board and shall be provided with minimum 10mm cadmium plated bolt for connection of the earth conductor.

All metal surfaces of the boards shall be epoxy powder coated to a thickness of 70 microns to SABS 1274 and of an approved quality and colour. No hammer tone or similar finishes will be acceptable and the final colour of the board shall be a standard SABS colour. Before painting, all boards shall be bonderized or given some similar rustproof treatment to approval. It is the Contractor's responsibility to ensure that when handed over, the board finish is in first class condition. Under no circumstances will boards be accepted if not finished to a first class standard at handover.

## **PH 6 MCB MAIN, SUB-DISTRIBUTION BOARDS AND CONTROL PANELS**

### **PH 6.1 Construction**

All boards and equipment shall be designed and manufactured in accordance with SANS 1473 and 60439. Equipment shall also comply with SANS 60947 parts 1-7, suitable for operation on supply voltages of 230/400VAC and 50Hz.

Larger MCB distribution boards and motor control panels shall be free-standing on the floor and arranged for front access unless elsewhere stated in this Specification. Such boards shall be bolted in position. No board shall exceed 2,4m in height nor shall any meter scale, operating handle, button or switch be mounted higher than 1,8m or lower than 600mm from the floor. No part of any equipment shall be mounted closer than 300mm to the floor.

Minor types of main and sub-distribution boards and control panels shall consist of sheet metal trays, suitably built-in or secured on the surface in the positions shown on the Engineer's drawings. Separate compartments shall be provided for the following:

- Main Incomer supply
- Motor control panels
- Local distribution for lights and small power
- Control panel
- Cable terminations.

All structural elements of main and sub-distribution boards and the complete construction of motor control panels shall be of minimum 2,0mm thick material. Non-structural elements shall be of 1,6mm material. Minor bonding trays shall be of 1,2mm material and all bonding trays shall be galvanized. All board covers, fascia plates and doors shall be 2,0mm thick, primed and treated to a thickness of 70 microns to SABS 1274 specification. If specified as being weather-proof, all boards shall be constructed of 2,0mm 3CR12 sheet, and epoxy powder coated to a thickness of 70 microns to SABS 1274 specification.

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The colour of the panels and facias shall be Electric Orange (code B26, SANS 1091).

The boards shall be of the minimum sizes to accommodate all the equipment specified plus future circuit breakers. Where single phase breakers are used in three-phase boards, there must be arranged in three vertical rows, one for the breakers in each phase. Space for the nearest whole number above 20% of each type of circuit breaker installed shall be provided for unless otherwise specified. Unless made specifically to clip in from the front, blanking plates shall be fixed with short cadmium plated bolts and nuts. All openings for future equipment shall be covered with blanking plates fixed on the inside of the opening. Sufficient outgoing terminals shall be provided for the future equipment. Cognisance must be taken of the heat dissipated by equipment and adequate ventilation must be provided.

Copper bus bars shall be provided for each phase and shall be mounted on suitable insulators or fixed to the terminals of the miniature circuit breakers, and be of sufficient length to accommodate future breakers. Bus bar and other connections shall be made using cadmium plated steel (or brass in Coastal areas) bolts, nuts, flat and spring washers.

Copper bars shall be used on MCB type main boards. The main neutral feed to the bus bar shall be connected by a lug bolted to the bar, as described above. In sub-distribution boards the neutral bus bars shall be solid brass with two per-way pinching screws and sufficient ways for the feed and all the circuits connected, including spare ways to the same number as the spare circuits.

The equipment on these boards shall be mounted on chassis behind sheet metal panels with suitable operating handles, toggles and control buttons, etc., only protruding through slots cut in the panels. The isolating device for all motors situated remote from the control panel shall be lockable in the "OFF" position. The panels shall be either hinged or removable for ease of access to the wiring, etc. Securing of panels shall be by means of square key latches with vertical locating pins in the case of fixed panels. Sub-distribution board fascia panels shall have moulded knobs for ease of removal of the panel.

The interior of the boards shall be arranged for easy access to all wiring and components. Transformers for low voltage supplies and all low voltage wiring shall be separated by metal barriers from the medium voltage circuits. Positions of transformers shall be indicated by labels attached to the face of the board.

All equipment on the boards shall be back-connected and no wire or cable shall be visible from the front. PVC insulated wiring shall be used throughout, the current rating being not less than the rating of the circuit breaker or aggregate rating of the bank of circuit breakers which it connects.

Wiring of the boards shall comply generally with the Clause "Control Equipment and Wiring" elsewhere in this Specification.

Distribution boards shall be at least 115mm in depth unless otherwise approved. A maximum of two rows of conduit shall enter the horizontal edges of boards and the width of the board must be sufficient to accommodate all conduits entering. Where boards are installed in 115mm walls, they shall be provided with expanded metal fixed to the entire back of the board. The trays of flush boards shall be Built-in or suitably secured to the brickwork in the specified places, and shall be installed in good time to prevent delay to the Principal Contractor. Each shall be mounted with the upper edge at a height of 2,0m above floor level, unless otherwise specified.

Unless otherwise specified elsewhere in this Specification, boards contained in cupboards shall be surface-mounted and all conduit shall drop into them neatly, vertically and evenly spaced, in a single row, if possible. Metal doors shall only be fitted if so specified.

Unless otherwise specified elsewhere in the Specification, surface and flush boards shall be provided with doors. All control panel doors shall be fitted with dust and damp proof seals. All instruments, meters, pilot lights, etc., and the main isolator must be operable with the doors closed unless otherwise specified. Flush boards in walls shall be provided with a separately attached metal frame and door which is adjustable so that it may be set plumb. This shall be positioned only after preliminary wall finishes adjacent to the board are complete. Doors shall be secured by a neat flush catch. Boards with a width of 600mm or greater shall be fitted with double doors, the left hand door to be secured with brass barrel bolts, top and bottom, which are readily accessible. Hinges shall be "Barker and Nelson" or "Piranha".

All metal surfaces of the boards shall be epoxy powder coated to a thickness of 70 microns to SABS 1274 and of an approved quality and colour. No hammer tone or similar finishes will be acceptable and the final colour must be readily match able. Before painting, all boards shall be bonderized or given some similar rustproof treatment to approval. It is the Contractor's responsibility to ensure that when handed over, the board finish is in first class condition. Under no circumstances will boards be accepted if not finished to a first class standard at handover.

In the case of MCB Main Boards, cabling arrangements shall be such that outgoing feeder ends can be made off with the board live at all times. This shall be provided for by means of a 2,0mm galvanized gland plate in close proximity to the outgoing terminals of the switchgear. All gland plates shall be bonded to the earth bar by means of a 70mm<sup>2</sup> bare copper conductor fixed with min. 10mm cadmium plated bolts and nuts.

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The underside of the board shall be rendered vermin proof by means of similar plates to the gland plates above.

Where boards shall be mounted in damp situations or where otherwise specified elsewhere in this specification, black heat anti-condensation heaters shall be fitted. The heaters shall have a separate protective device and shall be so constructed and fitted that they cannot be inadvertently touched. The heater rating shall be such that it will maintain the board at a suitable temperature to prevent the occurrence of condensation while not rising to an excessive temperature.

Boards shall be labelled in accordance with the Clause "Labels and Notices" elsewhere in this Specification.

#### **PH 6.2 Manufacturers**

The following are approved manufacturers. Other manufacturers may be considered provided they have a proven track record of manufacture according to SANS 143 and 60439.

ABB, Eaton, Gamma Panels, Electron, Magnol panels, Moeller, Schneider Electric, Siemens, Switchboard Manufacturers.

#### **PH 7 LV CIRCUIT BREAKERS**

##### **PH 7.1 General**

The supply voltage, normal current, fault capacity and type, as well as any special characteristics required of circuit breakers, shall be as stated elsewhere in this Specification.

All main circuit breakers shall be equipped with adjustable instantaneous magnetic and inverse time delay thermal overload releases on each phase and shall be arranged for flush mounting. They shall be connected to the bus bars with solid copper connections of adequate section to resist short circuit stresses that may be imposed by faults up to the maximum rupturing capacity of the breaker.

Where circuit breakers are used to control supply taken directly from the Supply Authority, they shall be of a make approved by that Authority, and shall be set to trip within the specified limits laid down by that Authority.

##### **PH 7.2 Moulded Case Circuit Breakers**

Moulded case circuit breakers shall comply with SABS 156 with time delay tripping on low overloads and high speed tripping on short circuit. Except where larger rupturing capacity MCB's are elsewhere specified, these shall be Class 5kA 240V or 415V, as applicable, and where various current and breaking capacities are required, all MCB's shall be of one size throughout the installation. All MCB's shall carry the SABS Mark to ensure that they comply with Compulsory Specification VC 8036.

The Engineer will not accept a mixture of circuit breakers from various Manufacturers to meet the various duties required.

In the case of motor control, all MCB's shall be supplied with "slow" tripping curve (Curve D or curve 1) except that those MCB's controlling motor starters located in the same control panel shall not have over current trip elements, this feature being provided by the adjacent starter overload device, magnetic high current protection only being required.

Where MCB's are required to be connected to cables larger than 70mm<sup>2</sup>, the terminals shall be of the stub bus bar or rear connecting stud types. For all other cables, box type terminals shall be provided. Three-phases MCB's shall be fitted with suitable phase barriers.

MCB's shall be fitted with purpose made terminal shrouds where no fascia plate is provided.

##### **PH 7.3 Manufacturers**

The following are approved manufacturers of miniature and moulded case circuit breakers:

ABB, CBi Industries, Mitsubishi, Klockner-Moeller, Schneider Electric, Siemens.

#### **PH 8 SURGE ARRESTORS**

Where specified, panels shall be equipped with surge arrestors of approved manufacture and bearing the SANS mark. Surge arrestors shall be suitable to provide both lighting and voltage surge protection, and have a minimum rating of 10kA.

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The arrestors shall be mounted inside the panel on the incoming unit. The supply side connections shall be made in the factory to the three-phase busbars, whilst the earth side connections shall be made to the earth bar of the board.

Arrestors fitted between each phase to neutral shall be of the Metal Oxide Varistar (MOV) type, and fitted between neutral to earth shall be of the spark-gap type. Rupture-type surge arrestors shall not be used.

#### **PH 8.1 Manufacturers**

The following are approved manufacturers of surge arrestors:

Dehn, Phoenix, Yelland.

#### **PH 9 ELECTRICAL ENERGY METERS**

Electrical energy meters shall be installed with the specified CT's on the main incoming feeder cable feeding the distribution kiosk/switchboard. Correct programming shall be done by the supplier of the electrical energy meter and the contractor shall be responsible to determine from the supply authority the correct tariff characteristics for the applicable connection.

#### **PH 10 INSTRUMENTS, METERS AND PROTECTION RELAYS**

##### **PH 10.1 General**

All indicating instruments and meters shall have 5A HRC fuse protection on all voltage connections.

All meters and instruments shall have labels fitted below, stating in which circuit they are installed and the multiplying factor, where appropriate.

All instruments shall have a red line marked on the scale at the normal or maximum operating point as appropriate.

The cases of all meters shall afford complete protection from dust and damp and shall be suitable for the attachment of seals.

Selector switches shall be rated at 16A and shall be similar to Sprecher & Schuh, Telex, Krause and Naimer or equivalent. They shall be provided with an "OFF" position.

All instruments and meters shall comply with the appropriate British Standards Specification.

The Tenderer shall submit full details of the meters, instruments and control switches offered in his tender, including connection diagrams for all equipment.

Protective circuits will operate at 30V DC unless otherwise herein specified elsewhere.

##### **PH 10.2 Potential Indicators**

Potential indicators shall comprise three neon indicating lamps each energised from a capacitor bushing connected to indicate that the incoming cable or the bus bars, as elsewhere specified, are alive.

##### **PH 10.3 Protection Relays**

Protection relays shall be supplied in accordance with the following requirements unless otherwise detailed elsewhere in this Specification. All relays not covered herein will be specified in detail elsewhere in this specification.

Over current and earth fault relays shall be of the static type with either inverse definite minimum time characteristic adjustable from inverse to extremely inverse or definite minimum times of 2,4 or 8 seconds selectable on the relay. Over current settings shall be adjustable from 50% to 200% in 2,5% steps and time settings from 5 to 100% of the DMT. Earth fault current settings shall be adjustable from 10% to 40%.

Generally, two over current and one earth fault relay shall be mounted in a common housing. A suitable relay would be the GEC type MCGG52. Any other relay offered must be an approved equivalent to this unit.

Sensitive earth fault relays shall be of the static type. Current settings shall be from 0,5% to 8% in 5 steps. The time delay unit shall be adjustable from 0,1 to 9,9 seconds in 0,1 steps or 10x these times, selectable on the

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relay. A suitable relay would be GEC type MCSU. Any other relay offered must be equivalent to this unit.

#### PH 10.4 Current Transformers

Current transformers shall be epoxy-resin encapsulated. The rated burden shall be not less than 10VA, unless specified otherwise elsewhere. They shall comply with BS 3938 and shall comply with the following table.

APPLICATION	PRIMARY CURRENT	CLASS
Indication	All	5
Protection	All	3
Metering	Up to 250A	1
Metering	250 - 600A	0,5
Metering	600 - 800A	0,2
Metering	800A and above	0,1

#### PH 10.5 Voltage Transformers

Voltage transformers shall comply with BS 3941 Class 0.5 accuracy, and shall be 3 phase oil filled units mounted on top of the HV switch panel, arranged for horizontal draw-out. The output shall be 50VA per phase at 110V phase to phase unless otherwise specified. Fuse protection shall be provided on both primary and secondary.

Such transformers shall not be affected by single-phasing on the HV side.

#### PH 10.6 Indicating instruments

All instruments shall be square format industrial accuracy grade to BS 89 and shall be flush mounted. All main instruments shall be 96mm square, meters for individual drives or in modular panels being 72mm square.

##### PH 10.6.1 Analog ammeters

All ammeters, including whole current ammeters, shall be calibrated to 120% of the rated current. The overload capability shall be 10 x rated current for 1,0 second. Those reading in excess of 100A shall be CT operated with 5A full scale deflection. Ammeters shall be 0-100A scale with maximum indicator, unless otherwise specified.

Instantaneous reading ammeters shall be of the moving iron type, one instrument being provided, connected via a phase selector switch with "OFF" position.

Maximum demand reading ammeters shall be of the combined maximum demand and instantaneous type, one meter being supplied per phase, unless otherwise specified. They shall comprise a thermal maximum demand ammeter with drag pointer combined with a moving iron instantaneous pointer. The drag pointer reset knob shall be sealable. The bimetal system shall be ambient temperature compensated and shall have a 15-minute response time.

Where dual ratio CTs are specified, ammeter scale plates shall be engraved on both sides to suit these ratios, the plate for the lower ratio being outermost.

##### PH 10.6.2 Digital Multi-meters

Digital multi-meters shall have an LCD display and be mounted on all Main Incomer panels and on panels as indicated according to the Functionality Schedule provided by the Engineer. Each meter shall be equipped with an RS485 Modbus serial master port, unless specified otherwise.

Multi-meters shall be equipped with over and under voltage protection, and shall provide the following indications:

- Voltage, Ph-Ph and Ph-N
- Current
- Frequency
- Power – kW, kVA and kVAr
- Power factor.

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**PH 10.7 Manufacturers**

The following are approved manufacturers of instruments:

ABB, PCI, Rhomberg-Brassler.

**PH 11 CONTROL EQUIPMENT AND WIRING**

**PH 11.1 Time Switches**

All time switches shall be mounted in an accessible position for ease of adjustment, and shall be provided with re-chargeable nickel cadmium batteries to provide up to 48 hours of operation should a power failure occur.

**PH 11.1.1 Motor Control**

Time switches shall be fully programmable to a maximum of 168 switching points with 24 memory addresses permitting hourly, daily and weekly settings. The shortest switching interval shall be 1,0 minute. The units shall include a manual override facility. They shall be suitable for wall or DIN-rail mounting. Protection shall be at least to IP42 and the units shall operate satisfactorily in the temperature range - 5°C to + 55°C. A suitable time switch would be "Sauter" type Memotime Z5D 7.

**PH 11.1.2 General Purpose**

Time switches shall have a crystal controlled stepping motor and be able to perform 48 operations per day with a minimum interval of 30 minutes. A manual override facility must be provided. A suitable time switch would be "Heinemann" type SAT-R.

**PH 11.2 Low Voltage Transformers**

Bell and other low voltage transformers shall be of the double wound type having the secondary voltage specified and shall have an adequate capacity for the duty required but, in any case, not less than 50VA on short-time rating. The transformers shall comply with SABS 743 and shall have one end or the centre point of the low voltage winding earthed.

**PH 11.3 Contactors**

Contactors shall, unless otherwise specified, comply with BS 775 for current making and breaking Category ACI for non-inductive loads and Category AC3 for inductive loads.

**PH 11.4 Earth Leakage Protection Units**

Where required, earth leakage protection units shall be single or three-phase, as indicated, with a sensitivity of 30mA, unless stated to the contrary elsewhere in this Specification or on the drawings. The unit shall actuate a shunt trip isolator or MCB as specified. The earth leakage units shall comply with SABS 767 and shall carry the SABS Mark to ensure that they comply with Compulsory Specification VC 8035 promulgated in Government Gazette No 10987.

**PH 11.5 Push Buttons**

Push buttons shall be flush type.

Push buttons shall have a minimum protection rating of IP65 and shall be of the colours indicated below, unless elsewhere specified.

Run/Forward - Green  
Reverse - Blue  
Stop - Red

**PH 11.6 Pilot Lights**

Pilot lights shall be of cluster LED, neon, transformer or resistor reduced wattage type. Under no circumstances will 230VAC pilot lamps, except in the case of LED, be accepted. Care shall be taken to select pilot lights which

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can be easily seen when operating in normal daylight. Where pilot lights are connected to remote equipment by multi-core control cables neon lamps shall not be used because of the inductive effect of the control cores. 100% spare lamps shall be provided for all pilot lights.

Unless otherwise specified elsewhere herein, in motor control and other multiple control panels, pilot lights shall be controlled by an adjustable timer to limit the duration of operation from 1 to 5 minutes. The timer shall be activated by a suitably labelled push button mounted on the face of the panel. In such cases lamp test facilities, with the test button mounted adjacent to the button described above, must be provided.

Pilot lights shall have a minimum protection rating of IP65 and shall be of the colours indicated below, unless elsewhere specified.

Run/Forward	- Green
Reverse	- Blue
Stop	- Red
Fault/Trip	- Amber

Pilot lights indicating "STARTER CLOSED" and "OVERLOAD TRIP" shall be fitted to motor circuits for motors exceeding 25kW rating.

#### **PH 11.7 Hour Meters**

Hour meters shall be of the digital type with LCD display reading up to 99999 hours. They shall be suitable for 230V, 50Hz. AC operation.

#### **PH 11.8 Duty Selector Switches**

The control of all items of equipment which can act as standby to each other must include a duty selector switch to enable the lead duty to be selected as well as second and third preference, i.e. 1,2,3; 2,3,1; 3,1,2 for a three motor system.

#### **PH 11.9 Hand/Off/Auto Switches**

A hand/off/auto switch shall be fitted to each starter subject to automatic Control. The hand control circuit, which shall comprise stop-start push button, shall be fed from a fuse other than that for the automatic control system.

#### **PH 11.10 Phase Failure Relays**

All phase failure relays shall provide reverse phase rotation protection. The relay is to operate a shunt trip coil in an on-load isolator to be provided to disconnect all but non-motor load feeders from the board, or in the control circuit, as indicated on the schematic diagram. The relay shall be so arranged with a timer that it will only initiate a trip upon a single phase condition occurring and not upon restoration of power. Provision shall be made to ensure that a trip occurs irrespective of which phase is lost.

#### **PH 11.11 Relays**

All relays and timing relays shall be of Schneider Electric, Siemens, Sprecher & Schuh, Klockner-Moeller or approved equivalent manufacture. Each relay shall be numbered and this number must appear on both relay and adjacent to its respective base in the case of the plug-in type. All adjustable timing relays must be labelled with their function.

#### **PH 11.12 Photo-eCells**

Photo-electric switches shall be of the type comprising a photosensitive resistor, thermal actuator with an inherent operating delay to make it insensitive to short duration changes in light levels and a changeover switch mechanism, all housed within a tough, translucent, weather and ultraviolet resistant cover. The operating level shall be factory pre-set to switch on at approximately 50 lux and off at approximately 100 lux. The response time after sudden changes in light level shall be not less than 15 seconds.

Integral protection against voltage surges shall be provided.

A suitable unit would be "National" type ZS-20AR or Royce-Thompson.

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**PH 11.13      Control Circuits**

All control equipment shall be mounted in a separate hinged panel fitted with square key latches to permit ease of access to terminals, etc., at the rear of the panel. Where bus bars are located directly behind such panels, a separate removable insulated panel shall screen them.

Terminal blocks shall be located in the lower terminal compartment of the panels, and are to be integrated within the internal panel wiring.

All wiring shall be carried out using suitably rated, colour coded insulated wire. Internal wiring to and from contactors shall be sized according to the contactor manufacture's recommendation for the duty selected.

All main terminals shall be connected in strict phase rotation. Wires shall not be joined between terminal points and no terminal shall have more than two wires connected to it unless they are lugged connections. Spare terminals shall be provided to accommodate all spare control cable cores. All terminals shall be either bolted or screwed. All terminals for wires smaller than 16mm<sup>2</sup> shall have pressure plates. All terminals for the connection of external control wiring shall be of the "disconnect" type.

All terminations shall be fitted with numbered ferrules, the numbers corresponding to those on the appropriate wiring diagrams to be prepared by the board manufacturer. All terminal strips shall be similarly numbered.

Generally, wiring shall be enclosed in strategically placed plastic wire ways. Small numbers of wires to remote positions may be neatly strapped, using plastic buckle clips or hard plastic "loom formers". Where wiring is run to equipment mounted on hinged doors, the wiring shall be carried in a plastic "loom former" which is so installed that the wiring is not strained with the door fully open.

The colour of all panel wiring shall comply with the following:

- |   |                          |
|---|--------------------------|
| • Phase connections in current and voltage transformer circuits and in all three-phase circuits | Red, White and Blue      |
| • Insulated earth wires   | Green / Yellow bi-colour |
| • Neutral wires   | Black                    |
| • Control circuits  | Grey                     |
| • DC alarm circuits   | White                    |

All control circuits shall have 5A HRC fuse protection.

**PH 11.14      Labelling**

All control equipment both within the panel as well as all projecting items, shall be labelled in accordance with Section "Labels and Notices" elsewhere in this Specification. Any device which can be unplugged shall be label at the base and on the device.

**PH 11.15      Manufacturers**

The following are approved manufacturers of relays and timers:

- CBI Industries, Omron, Rhomberg-Brasler, Schneider Electric, Siemens.

The following are approved manufacturers of terminal blocks:

- Allen Bradley, Klippon, Phoenix, Pratley, Schneider Electric.

The following are approved manufacturers of push buttons, selector switches and pilot lights:


- Allen Bradley, Eaton, Klockner-Moeller, Omron, Schneider Electric.


**PH 12            FIELD CONTROL EQUIPMENT FOR MOTORS**


**PH 12.1        Control Enclosures**

Control enclosures shall be manufactured of cast aluminium or stainless steel and be suitably sized to accommodate entry of up to 50mm<sup>2</sup> three-core armoured PVC insulated cable. The enclosure shall have a minimum protection rating of IP65.

  
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Suitable glands shall be used for cable entry through knock-out or drilled holes into the enclosure.

## **PH 12.2 Arrangement of Controls**

Unless otherwise specified, controls shall be arranged in the following sequence from top to bottom:

1. Emergency Stop Push Button (top)
2. Isolator (middle)
3. Run or Forward/Stop/Reverse push buttons (bottom).

All control devices shall have a minimum protection rating of IP65.

## **PH 12.3 Emergency Stop Push Button**

Emergency Stop push buttons shall have a mechanical latching function in accordance with SANS 60947-5-5, shall be red in colour, and shall protrude prominently from the enclosure.

The Emergency Stop push button shall be mounted a dedicated yellow enclosure, if installed on its own, or shall be marked with a prominent yellow circular sticker if sharing the same enclosure with other controls. The sticker shall be labelled "EMERGENCY STOP" in prominent black capital letters.

## **PH 12.4 Isolators**

Isolators, alternatively referred to as "disconnectors", shall be a padlockable selector type switch. It shall be red and mounted on a yellow holding plate.

Isolators shall be two-pole for single-phase circuits to isolate both the live and neutral. Isolators shall be three-pole for three-phase circuits to isolate all three phases but not the neutral, as the neutral is normally used as the Earth Continuity Conductor.

Isolators shall be suitably rated according to the full load current rating of the motor.

## **PH 12.5 Mounting Support**

Field motor controls shall be mounted in a prominent position such that the Emergency Stop button and isolator are within arm's reach of the terminals of the motor, in accordance with SANS 10142-1. Should a wall be close enough for this purpose, the control enclosure shall be mounted on the wall. Where a convenient mounting location is not available, the control enclosure shall be mounted 1m from the motor terminals, or as close as practically possible, on a hot dipped galvanised steel support bracket. The support bracket shall be designed such that it can be firmly mounted on a flat surface, and rigid enough to support all cables entering the enclosure and so that the enclosure cannot move.

The enclosure shall be clearly labelled according to the label requirements specified elsewhere in this Specification.

## **PH 13 TRENCHING, EXCAVATION AND COMPACTION**

### **PH 13.1 General**

The Contractor shall allow for all excavation and back-filling of cable trenches and holes for planting of poles unless this is stated to be done by others elsewhere in this Specification. In this case the Contractor shall provide the trenching contractor with details of his requirements in this regard prior to work being commenced and shall be responsible for ensuring that these requirements are met. He shall also be responsible for ensuring that any trenches opened by him or for him do not constitute a hazard to the public. Where necessary he shall provide barriers and warning lights at night or any other protection of trenches or excavations as required by the Engineer or any statutory or local Authority requirements.

The Contractor shall be responsible for leaving all areas affected by cable trenches, holes in the ground, and any other work done by him or on his behalf, in a clean and tidy state, and for making good all tarmacadam, concrete, paved or grassed surfaces.

It shall be the Contractor's responsibility to make good any subsidence that may occur within six months of back-filling trenches, and, in the case of tarred-surfaces, to remove and re-tar with new material.

### **PH 13.2 Routing and Dimensions**

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The routes for the underground cables are shown on the drawings. Any proposed variation of these routes by the Contractor, shall be approved by the Engineer or Clerk of Works before trenching is done.

It shall be the Contractor's responsibility to ensure that the routes of the cables are correct. Where the Contractor is in any doubt regarding peg positions, he shall, after having obtained the approval of the Engineer, employ the services of a registered Surveyor to obtain the correct locations. Re-imbursement for the cost of such services will, subject to granting of approval, be made from the Provisional Sum included for this purpose. Any major deviation considered necessary must be approved by the Engineer. The Employer will make no payment for claims for extra work arising out of the cable trenches being in the wrong place.

Routes shall run generally in road reserves parallel with and 1,0m from plot boundaries. Where no road exists or is not indicated, the route shall run in open ground adjacent to the plots and 1,0m from the plot boundaries.

The trench detail is shown on the drawings. Unless otherwise specified, trenches shall be 450mm wide and 650mm deep. If an immovable obstruction is exposed, an alternative route shall be requested of the Engineer. Only upon his approval shall the alternative route be followed to bypass the obstruction.

### **PH 13.3 Trenching and Excavation by Others**

The Contractor is to co-operate closely with the trenching contractor at all times and is required to be in attendance during backfilling of all trenches, etc., to ensure that cables are not damaged in any way and that poles are correctly aligned.

### **PH 13.4 Type of Material**

Unless otherwise specified elsewhere in this Specification or Schedule of Quantities, Tenderers shall allow for excavating cable trenches and holes in earth. In addition, unit rates shall be provided for excavating in soft rock and hard rock.

The following definitions shall apply to the three categories. Where the conditions experienced are a combination of two or more of the conditions listed below, the Contractor shall be paid on rates in proportion to the contents of earth, soft rock or hard rock experienced in the excavations.

"Earth" shall mean ground that can be removed by hand and includes loose gravel, clay, made-up ground, loose or soft shale, loose oukrip, and boulders less than 75mm in diameter.

"Soft rock" shall mean all hard ground such as oukrip, hard shale, decomposed rock, loose boulders and large stones, etc., which require the use of pneumatic tools, mechanical rippers and/or excessive hard labour to excavate and remove economically.

"Hard rock" shall mean granite, quartzite, dolomite, or other rock of similar hardness, which can only be excavated and removed economically by blasting, wedging or breaking.

### **PH 13.5 Verification of Excavation Claims**

Notwithstanding any Provisional Amounts for excavation in rock included in the Schedule of Quantities, payment will only be authorised for excavation in ground other than earth upon submission of documentary proof of such excavation made and signed as correct at the time trenches or holes were excavated.

It is essential that, in all cases where rock has to be excavated, or where poles, etc., have to be stabilised with concrete or by other means, in loose sand or in soft or waterlogged ground or where substitution of the excavated material is necessary for backfilling, that the Engineer or Clerk of Works be notified before such excavation work is back-filled. This is for the purpose of having the soil conditions encountered noted and confirmed in writing.

The amounts and type of rock encountered shall be measured by the Contractor in the presence of the Engineer or Clerk of Works. This information, together with the date and locality, shall be entered by the Contractor in a suitable triplicate book furnished by him. These entries shall be signed by the above parties. The original sheet shall be submitted to the Engineer and the duplicate copy shall be attached, by the Contractor, to his monthly invoice.

### **PH 13.6 Precaution with regard to other Services**

The Contractor shall exercise extreme caution in his work to avoid damage to existing underground services. Certain services may be indicated on the drawings but it is not to be assumed that these are the only services nor that their indicated position is entirely accurate. Such information is given as a guide only and does not negate the above responsibility. All excavation in the vicinity of other services must be undertaken by hand.

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Excavation may proceed only once the position of underground services, as far as practically possible, has been located. If possible, electrical services should be disconnected, isolated and marked with warning signs at the applicable switchgear that work is in progress.

Once services have been located, they must be clearly marked as follows:

- On surfaced areas: paint or waterproof crayon;
- On unsurfaced areas: wooden pegs (no steel spikes may be used).

Trial holes must be dug first using spades and shovels. Excavation must be alongside cables rather than above them, to allow final exposure of the services by horizontal digging rather than above them. Picks may be used only if the soil material is hard to break up, not in soft clay or soils close to the surfaces. Where practically possible, power tools should be avoided to within 500mm of the located line of service. Power tools must not be used above cables. Hand tools should preferably be insulated with wooden handles and power tools with non-conductive material grips to avoid the risk of electrocution.

During excavation, checks must be made for services at regular intervals using the locator until it is exposed. Excavation must continue with care and proper supervision until the entire service in the applicable area is exposed to allow for the burial of new services.

Mechanical excavations should be used only once the supervisor is satisfied that there are no existing services in the planned path of excavation. The supervisor must plan and peg positions beyond which the operator may not excavate, and where only power tools and hand tools may be used.

Should a cable be struck by a mechanical excavator, the operator must immediately move the bucket away from the point of damage and stop the machine. The supervisor must assess the damage and then take appropriate action to render the area safe before excavation can proceed.

#### PH 13.7      **Compaction**

Particular care shall be taken in compacting pole holes, trenches crossing roads and those crossing or running under or within 1,0m of paved or tarred sidewalks. In trenches, the backfill shall be replaced in 150mm layers and four to six passes with a vibrating pan compactor shall be made per layer. Around poles, a jumping jack shall be used on each 150mm layer. When clay is encountered, the Engineer should be advised and may instruct the Contractor to remove all such excavated material and replace it with more suitable material, which shall then be compacted as above. Where material is too wet for proper compaction, it should be dried out and if too dry, shall be dampened. When rain is likely to occur, all excavated material shall be suitably protected to prevent the necessity for later drying out.

In the case of road crossings, the excavated base and sub-base material shall be mixed and replaced up to the top level of the original sub-base. New material equal in composition to the original base course shall be supplied, this material being used for the full depth of the base course layer.

The degree of compaction required shall be a field density of at least 93% of the Modified AASHTO density, as measured by the Sand Replacement Method described in the "Standard Method of Testing Materials" issued by the SANRAL. The Engineer will, if the compaction is in doubt, arrange to have it independently tested and should the compaction prove to be below standard, the cost of the test will be debited to the Contractor, who shall be required, at his own expense, to open and re-fill the trench or pole hole to obtain the specified compaction value.

In all other areas, backfill shall be replaced in 150mm layers and shall be hand tamped, the remaining material being heaped over the trench for later settlement.

#### PH 14      **MANHOLES**

Manholes shall be installed on trenched cable routes at intervals not exceeding 40m and on every cable bend. Manholes shall have a nominal diameter of 750mm and be 750mm deep, including a floated base slab, as per the detail drawing.

Pre-cast "Rocla" type concrete rings complying with SABS 1294 shall be used. Notches shall be cut on site at the base of a ring to allow for the entry and exit of cables. The size of the notches shall be such that all cables can fit snugly yet without abrasion by the exposed concrete surface caused by cutting. Before stacking them, the joint surfaces of the rings shall be cleaned and primed, then have sealant such as Expandite Steelstrip or similar approved applied to the jointing surfaces.

Once the rings are set in the concrete base and stacked, the cables shall be encased in a concrete block 200mm x 200mm on the outside of the ring at both entry and exit points. Where sleeves are used for the cable, they shall be suitably sealed with proper endcaps to prevent water ingress. Sleeves and cable without sleeves shall be sealed using self-expanding polystyrene type foam injected into the cable entry and exit points on the inside of

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the ring.

Manhole covers and frames shall be of type VP4L or similar approved, namely cast metal with concrete infill, suitable for heavy duty traffic up to 10 tons, single seal, and lockable. At least four lifting keys shall be supplied with the locks.

## PH 15 SLEEVES

Sleeves for cables shall be either PVC with single socket joints complying with SABS 791 (heavy duty) or fibre cement complying with SABS 1223 in the case of 50mm and 110mm sleeves (in compliance with SABS 0198: Part VIII) or with SABS 819 for larger sleeves, the sizes being as indicated on the drawings. Sleeves shall be nominal 110mm diameter unless otherwise specified. Pitch fibre sleeves shall NOT be used.

The sleeves shall extend at least 1,0m beyond each side of a public road crossing, or as specified by the Engineer for other roads, and shall be effectively sealed at the ends. Each sleeve shall be provided with a draw-wire. At least one spare sleeve shall be provided at each crossing.

All sleeves shall be laid in accordance with SABS 1200 (LC) and at a depth of 900mm unless otherwise indicated. The radius of the bends used in the sleeves shall not be less than six times the diameter of the sleeve, and the sleeve not be less than twice the cable diameter unless otherwise specified.

Sleeves shall be laid on a 150mm compacted layer of selected bedding material or, if this is not available, on a 150mm sand bedding. The cover layer shall be hand compacted completely around the sleeves and to a cover of 150mm above the top of them. The sleeves shall be supported along their entire length by the bedding. A further 100mm layer of selected bedding material shall be added and this shall be compacted using four to six passes of a vibration pan compactor. Thereafter, the trench shall be back-filled and compacted as specified in the sub-Clause "Compaction" elsewhere in this Specification.

Both ends of all sleeved crossings shall be marked by means of cable markers as elsewhere specified, labelled "cable sleeve".

The Contractor shall make all necessary arrangements with the appropriate Authorities for closing sidewalks and/or half the roadway at a time, and he shall comply fully with any statutory requirement applicable and any requirements the Authorities deem necessary. The surfaces shall be made good to the satisfaction of the authorities and the Engineer, but where tarring or paving shall be laid or re-laid, this shall not be done until the Engineer has given the necessary approval.

Where the HV or main LV cables cross over or pass under other services such as water or drain pipes, they shall be run in sleeves. Where these crossings present a particular hazard to the cable, the Contractor shall draw the attention of the Engineer to any such crossing requiring special attention.

All sleeves for Telkom cables shall be 110mm diameter pitch fibre similar to Santar, supplied by the Regional Engineer, unless otherwise specified. These sleeves shall be laid under this Contract and must be kept at a minimum of 0,6m horizontally from and 0,3m vertically above any power cable sleeve. They shall be laid at a depth of 800mm and one end shall be provided with a marker labelled "Telkom".

Where cable enters sleeves in buildings, the ends shall be sealed with expanding foam to prevent moisture ingress.

## PH 16 CABLES

### PH 16.1 Description

PVC insulated cables for LV shall be to SABS 1507 and shall consist of PVC insulated conductors, PVC bedding, galvanized steel wire armouring (SWA) and PVC sheath.

The abbreviation for this type of cable is SWA PVC.

Paper Insulated Lead Covered cables shall, unless otherwise specified elsewhere in this Specification, be of the screened type suitable for use on an earthed system and complying with SABS 97. They shall be lead sheathed, bedded with two bituminised paper tapes and one layer of fibrous material and preferably armoured with two layers of steel tape or alternatively with a single layer of galvanized steel wires, both served with bituminised fibrous material. Such cables shall comply with Table 19 of SABS 97 and shall be non-draining. They shall have a sheath of lead alloy 'E' and/or be PVC served only if called for elsewhere in this Specification.

The abbreviation for this type of cable is PILC.

Cross-linked polyethylene cables shall be Type A suitable for use on an earthed system and complying with SABS

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1339, being individually screened and armoured, unless otherwise called for elsewhere in this specification.

The abbreviation for this type of cable is XLPE.

Service cables may be multicore PVC insulated and wire armoured and PVC served (PVC), concentric neutral or "Airdac" as specified elsewhere in this Specification.

Concentric neutral cables shall be XLPE insulated complying with SABS 1268. "Airdac" cables shall be XLPE insulated with copper conductors, the phase conductor being contained within a radial band of insulated neutral and bare earth conductors, the whole being XLPE served. All cables shall be installed in compliance with the Manufacturer's recommendations.

The sizes indicated are for cables with copper conductors unless otherwise specified. For LV systems aluminium conductor cables may be offered as an alternative, if a price advantage can be shown. In such cases both the resistance and current carrying capacity of the aluminium cables offered must compare suitably with the sizes of copper conductor indicated. Where cables offered are other than those specified, Scheduled Rates for the supplying, laying, jointing and termination of the cable shall be entered in "Departures from the Specification". The Contractor shall be responsible for advising equipment suppliers of the type of cable termination required if a cable other than that specified is accepted.

#### **PH 16.2 Cable Lengths**

All scheduled cable lengths are for tendering purposes only and the Contractor shall measure the actual lengths required before ordering.

The length of all cables shall be re-measured after installation and the lengths indicated in the Bill Schedule of Quantities shall be adjusted accordingly. The Contractor shall be paid for the actual lengths measured on site and any allowance for snaking, joints or ends must be incorporated in the unit price.

#### **PH 16.3 Handling of Cables**

Particular care shall be taken in handling drums of cable. Cable drums shall not be dropped or allowed to roll unchecked. The drums shall, under no circumstances, be rolled in any direction other than that indicated by arrows thereon.

When running cable off a drum it shall be properly and securely mounted so as to rotate without difficulty and the spindle supporting it shall be straight, horizontal, supported at both ends and of adequate strength. Cable shall only be removed from the drum by rotating the drum. The inner end of the cable shall be released before running any cable off the drum.

Care shall be taken to ensure that each length of cable is run off the drum sequentially so that a crossed core situation does not arise at joints.

No cable shall be bent to a radius less than 12 times the overall diameter of the cable, Bending or straightening shall be done slowly. PILC cable shall not be laid if the ambient temperature falls below 10°C.

Should a cable inadvertently become damaged or the lead sheath or end cap punctured, this fact shall be brought to the notice of the Engineer immediately, who shall decide what further action shall be taken. The Engineer shall also be notified immediately should there be any suspicion of moisture having entered a PILC or XPLE cable.

#### **PH 16.4 Cables fixed to Surface**

Where cables enter flush boards from cable sleeves, the sleeve shall turn up to floor level and a duct shall be forced in the wall to accommodate the cable. Care shall be taken to ensure that the bending tolerance of the cable is not exceeded in drawing the cable into the sleeve. The duct shall be of sufficient size to accommodate the cables. The edges of the duct shall be lined with timber battens to which a bevel edged metal cover shall be screwed; using countersunk headed screws and cup washers.

Wherever cable saddles or any other items shall be fixed to structural components, the use of dry plugs of wood will not be permitted. "Rawl plugs" or other plugs to approval only shall be used. Surface mounted cable protection pipes shall be galvanized and shall be fixed with saddles of 32mm x 3mm galvanized strap bolted to the wall using bolts grouted in, "Rawl bolts" or similar. All cables rising on the outside of buildings or on poles shall be protected by such pipes to a height of 2,0m above ground level. Where a cable is installed fixed to a pole, it shall be attached to the pole using stainless steel "Bandit" strap or equal. Care shall be taken to ensure that the straps are tightened correctly and that they do not distort or indent the cable sheath.

#### **PH 16.5 Cables laid in Trenches**

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HV cables shall generally be laid 1,000mm and LV cables at 500mm below ground level. Where two HV cables are run in the same trench, they shall be laid a minimum of 300mm apart with separate cable slabs over each cable. Where HV and LV cables are laid in the same trench, the HV cable shall be located on the road side and the LV cables on the plot side of the trench. A horizontal distance of not less than 400mm shall be maintained between the cables of different voltage groups. Where a number of LV cables are run in the same trench, they shall be laid with a minimum separation of 100mm. This applies to feeder cables only and not street lighting and service cables which shall be only 25mm apart. Cables shall not cross each other.

Where cables run across even parallel to lateral boundaries, they shall be located 1,0m from the boundary at a depth of 1,0m. If so specified they shall be run in sleeves, otherwise both HV and LV cables shall be protected by cable slabs and a PVC tape marker laid 300mm, above them.

The trench bottom shall be cleared of all sharp or protruding stones. The trench is then to be refilled with 150mm of soft material and compacted. A further layer of soft material shall be installed after the cables are laid to provide 200mm cover for the cable when compacted. Protective cable slabs a minimum of 50mm thick x 230mm wide shall then be laid in the case of HV cables, and PVC sheet cable marker strip 450mm wide with indelibly printed warnings every 150mm along its length, in the case of LV cables. In cases where HV and LV cables run in the same trench, 100mm of soft bedding for the LV cables shall be situated above the protective cable slabs. Where LV service cables or street lighting cables only are installed, a clean trench bottom and soft material back-fill only is required, and no PVC sheet marker.

The soft material described above may be either sand or back-fill material sifted through a 3,0mm mesh grid. Where the bottom of the trench consists of only soft sandy material, the bedding underneath the cable shall be omitted and the cable shall be laid on the trench bottom at the correct depth. Permission must be obtained from the Clerk of Works or the Engineer for the cable bedding to be omitted in such instances. Where sand has to be brought to site, the quantity must be measured and confirmed by the Engineer or Clerk of Works.

The balance of the trench shall be back-filled with excavated material from which all stones, etc. greater than 100mm in size have been extracted. All such extracted material shall be removed from site.

Cable route markers shall be provided for all HV and LV feeder cables at road, culvert and Telkom cable crossings, at all changes of direction, at joints and at intervals not exceeding 30 metres along straight sections. Cable route markers shall comprise concrete blocks in the shape of truncated pyramids 300mm high, 150mm x 150mm at the top and 225mm x 225mm at the base. An aluminium plate 3,0mm thick minimum, with four rods 75mm minimum welded to it on the underside, shall be cast into the top of the concrete block, and the plate shall have stamped on it the cable data and direction arrows, and at a crossing, the crossing shall be indicated.

The cable route markers shall be placed over the cable, in the trench way, and shall protrude 25mm above the finished ground level but not where they are likely to cause an obstruction or be in the way of moving traffic. Joint markers shall indicate as such. The Contractor shall ensure that the ground under and around the cable marker is properly compacted.

#### **PH 16.6 Laying of Cables with other Services**

Where cables are laid in trenches containing water and other pipes, etc., the Contractor shall arrange with the Civil Engineering Contractor and Engineer, to lay the electrical cables along one edge of the trench with the other services occupying the other edge. The cables shall be laid not less than 600mm from such service unless otherwise approved by the Engineer.

At road and services crossings, PVC sleeves as described elsewhere herein shall be provided, one for each HV cable and a separate sleeve for other cables, unless otherwise indicated on the drawings. Shall generally be 110mm in diameter unless specified otherwise.

At Telkom cable crossings, power cables shall cross 300mm below and at right angles to all such cables or sleeves for future cables. The power cables shall be enclosed in PVC split sleeves with cable slabs over, both of which shall extend 1,0m either side of the crossing. The two sections shall be firmly fastened together with robust stainless steel straps. The full length of all such sleeves shall be covered by cable slabs installed 150mm above the sleeve. No power cable running parallel with a Telkom cable shall be laid within a distance of 1,0m measured horizontally from the Telkom cable. Wherever existing buried Telkom cables are encountered, strict precautions and care shall be taken and close supervision given. Any damage to, or disturbance of Telkom cables whatsoever shall be immediately reported and confirmed in writing to the Engineer.

#### **PH 16.7 Labelling of Cables**

All cables shall be labelled with 3mm high letters punched onto aluminium tape attached to the cable with aluminium wire. The label shall state the cable size and number of cores. All main feeder cables shall also be labelled to state from whence they are supplied. The labels shall be so installed that they are easily readable.

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## PH 17 CABLE TRAYS

These consist of two basic types, namely perforated and folded, and wire mesh comprising Light, Medium and Heavy Duty. The actual type and duty required, and the finish if not as set out below, is specified elsewhere in this Specification.

### PH 17.1 Perforated and folded trays

Light duty trays shall be manufactured from pre-galvanized perforated sheet steel. The minimum material thickness shall be 1,0mm for tray widths not exceeding 150mm and 1,2mm for widths not exceeding 305mm. Turned-up edges shall not be less than 12mm for tray widths not exceeding 230mm and 20mm for widths not exceeding 305mm. Maximum spacing between supports shall be 1,000mm.

Medium duty "Standard" or "Marine" tray shall be manufactured from 1,2mm thickness perforated sheet steel with turned-up edges of not less than 12mm for tray widths not exceeding 100mm, and 19mm for tray widths not exceeding 600mm. The tray shall be hot dip galvanized after manufacture. Maximum spacing between supports shall be 1,200mm.

Heavy duty "Heavy Duty" tray shall be manufactured from 2,5mm thickness perforated sheet steel and shall have turned-up edges of not less than 75mm. The tray shall be hot dip galvanized after manufacture. Maximum spacing between supports shall be 2,400mm.

### PH 17.2 Welded wire mesh

Medium duty tray shall be manufactured from 4,0mm wire and shall have turned-up edges of not less than 50mm. The tray shall be hot dip galvanized after manufacture. Maximum spacing between supports shall be 1500mm.

Heavy duty tray shall be manufactured from 4,0mm wire and shall have turned-up edges of not less than 75mm. The tray shall be hot dip galvanized after manufacture. Maximum spacing between supports shall be 1500mm.

Splicing pieces, bends and tee pieces shall be provided to suit the cable tray system. These shall be of an approved make conforming to the width and quality specification of the particular cable tray being used.

Trays shall be installed in accordance with the Manufacturer's recommendations, supported in such a way that they are carried on cross members cantilevered from a vertical support so that cables do not have to be threaded between the supports. Trays on walls are either to be carried horizontally on right angled brackets or fixed vertically to the wall. All hardware, support brackets, etc., shall be hot-dip galvanized. Support brackets shall be spaced so that a sag of 1/200 is not exceeded with the tray fully loaded. Further, the maximum spacing limit specified above shall not be exceeded.

Where trays are likely to be damaged because of their proximity to a working area and could therefore be stepped on or similar abused, they are, if at all possible, to be installed out of the way of such abuse. Where this is not possible, only heavy duty tray shall be used and additional longitudinal support in the way of angle iron of suitable size is to be installed.

Where the width of cable trays is unspecified elsewhere in this Specification, they shall be sized to accommodate 20% more cables than the number presently to be installed on the basis that the future cables shall be of the same average size.

Unless otherwise specified, all cables over 16mm<sup>2</sup> shall be spaced at least 12mm apart. Where cables are laid flat on trays, fixing is required for all cables larger than 16mm<sup>2</sup> using heavy duty nylon cable ties. Where fixed in the vertical plane, all cables shall be strapped to the trays using stainless steel strapping applied with an approved tool. This also applies to single cables fixed to trusses or other parts of the structure and to all cables fixed to cable trays in a physically vulnerable situation.

## PH 18 CABLE JOINTS AND TERMINATIONS

### PH 18.1 General

Cable jointing and termination shall be carried out by a qualified cable jointer using only approved standard methods for the particular type of cable. Proof of his training may be required.

Joints in all cables shall only be made at full drum length intervals, but where necessary and when approved by the Engineer cable through joints may be used in other approved positions.

Where a cable has steel wire armouring, all strands of armouring shall be jointed through.

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Cable connections shall be made by means of crimped or sweated lugs, firmly bolted, one plain and one lock washer being placed under the nut, so that the plain washer is against the lug and there shall be no washer between the lug and the terminal. A plain washer is also required under the bolt head. Alternatively, sweated stems fitting into clamp connections will be acceptable.

Crimped lugs up to 70mm<sup>2</sup> shall be fitted using manual tools and hydraulic tools from this size upwards. Approved tools shall be used in both cases. A hydraulic tool shall be used on all sizes of aluminium cable. Where a single point hydraulic crimping tool is used, the lug shall be crimped in three places. Where a hexagonal die is used, this shall extend the full length of the lug.

Where aluminium cored cables shall be connected to circuit breakers, the aluminium cable lug shall be bolted to a copper tag or tail which shall be connected to the circuit breaker. The Contractor shall ensure that sufficient Denzel paste is installed on the faces of the lugs.

Where an aluminium cable is to connect to copper, the lug shall be a bi-metal type lug with a copper spade and an aluminium ferrule friction welded to the spade.

Cable connections shall be made using brass bolts, nuts and washers, together with a star lock washer, on all kiosks, fused feeder panels and mini-sub and with cadmium plated steel bolts and nuts on all indoor equipment. All bolted joints shall be taped with self-vulcanising (not adhesive) tape.

Where cable connections are required to the HV and LV terminals of transformers, these shall be made off as follows:

- Red Phase to Terminal A
- White Phase to Terminal B
- Blue Phase to Terminal C

All transformer connections shall be kept in strict phase rotation and where two or more units shall operate in parallel, the respective connections shall be checked for phase rotation and polarity. In the case of cable terminations to transformer bushings the cable itself shall be clamped substantially to a post adjacent to the transformer, connections to the bushings being puttied and taped.

All connections shall be colour coded.

## PH 18.2 LV Cable Terminations

SWA PVC cables shall be made off using adjustable mechanical glands. Care shall be taken to ensure that armour wires are correctly seated in the gland and that all parts are properly tightened. Outdoors, in damp situations and in all mini-sub and kiosks, neoprene waterproofing shrouds shall be fitted over all glands.

Where cable connections from mini-sub and kiosks to consumers and street lighting are excluded from this Contract, the Contractor shall, nevertheless, ensure that sufficient space is left on the gland plate for the future cables.

Wherever SWA PVC cables are terminated to overhead lines a suitable moulded heat shrinkable glove to affect a watertight seal at the crotch shall be used, in accordance with the manufacturer's instructions. Alternatively, a PVC cable cap may be used.

## PH 19 CABLE TESTING

On completed sections of laid, jointed and terminated HV cables, a high voltage DC test of 15 minutes' duration shall be carried out by persons qualified to execute such tests.

Contractors must note that where such tests will include sections of cable which have already been in service, the test voltages and duration shall be reduced in accordance with the Engineer's instructions.

Cable tests shall be in accordance with the following:

PILC cables	SABS 97, Annex A-3.3
XLPE cables	5000V megger test between cores and to earth unless additional tests are ordered by the Engineer, or are called for elsewhere in this Specification.
Method	SABS 0198: Part XIII

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The following table for earthed systems (based on SABS 97: Table A-2) applies for high voltage DC tests.

Type:	SWA PVC**	BELTED		SCREENED		XLPE**	
Rated voltage:	600/1,000	11,000	22,000	11,000	22,000	11,000	22,000
Between conductors - DC	3kV	31kV	60kV	-	-	18kV	36kV
Conductors to screen - DC	-	-	-	19kV	36kV	18kV	36kV
Conductors to earth - DC	3kV	19kV	35kV	19kV	36kV	18kV	36kV

\*\* Test only when specifically called for

\*\* Obtain instructions from the Engineer before testing

## PH 20

### BUSBAR TRUNKING

Busbar trunking for LV systems shall comply with SABS 784 and shall consist of metal-enclosed copper or aluminium busbars intended for use indoors at voltages not greater than 1000V.

Busbars shall be spaced apart and held in position by robust insulating material and shall be sufficiently strong to withstand the rated fault level without failure, all in accordance with the abovementioned SABS Specification.

The metal enclosure around the busbars shall be sheet metal of sufficient thickness to provide adequate rigidity and strength under fault conditions. The metal enclosure shall be treated adequately against corrosion by means of hot-dip galvanizing or enamel coatings in accordance with SABS 784. Ventilation openings shall comply with IP 3Q and with the vermin proofing requirements set out in the Project Specification.

Busbar trunking systems shall be installed strictly in accordance with the manufacturer's instructions and the relevant provisions of SABS 0142.

No protective devices shall be provided within the busbar trunking system (except as described in SABS 784) and outgoing circuits or tee-offs shall be adequately protected from over current by fuses or circuit breakers.

Expansion joints shall be purpose made and shall be installed at such intervals as recommended by the manufacturer.

Fire-resistant barriers shall be purpose made and shall be installed where busbar trunking passes through walls and floors and shall be installed strictly in accordance with the manufacturer's instructions. The opening through the wall/floor around the fire resistant unit shall be fire stopped with non-combustible/fire-retardant foam in compliance with the National Building Regulations SABS 0400.

## PH 21

### MULTI-CORE INSULATED CABLE

MCIC cable shall be installed and terminated by persons experienced in the use of this type of cable. The Engineer shall have the right to call for a demonstration to prove this experience if considered necessary.

Cable sizes shall be as specified or shown on the drawings, lighting circuits being in 1,5mm<sup>2</sup> and socket outlet circuits in 2,5mm<sup>2</sup> cable, unless specified to the contrary. Where no size is given, this shall comply with the appropriate table in the Wiring Regulations. Cable shall be 660V or 250V grade, as appropriate.

Cables shall not be bent to radii less than six times the diameter of the cable without prior consent of the Engineer. Where this consent is given, re-straightening of sharper bends will not be permitted.

All cable shall be free from kinks and dents and shall be run straightening and true. A straightening tool shall be used to prepare the cable. All cable shall be properly handled to prevent damage. All unsightly or un-workmanlike work will be rejected.

The cable shall be fixed with single or multiple heavy gauge copper saddles attached with brass screws at the following spacing. When run vertically the distance between saddles may be doubled. Plastic saddles will not be permitted. Where-PVC served cable is specified, plastic coated saddles shall be used for fixing.

The following are the maximum spacing acceptable but where neatness is of particular importance, the spacing shall be halved.

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Up to 6.6mm	600mm
From 6.7mm to 9.5mm	900mm
From 9.6mm to 12.7mm	1,200mm
From 12.8mm to 19.0mm	1,500mm
From 20.0mm upwards	1,800mm

Where cables are run on cable trays, they shall be strapped to the tray at the above spacing. In the case of single core cables these shall be in circuit groups, in trefoil formation. Both ends of such runs shall be solidly bonded and earthed across the sheaths.

Where cables shall be buried underground the trench shall not be less than 600mm deep, and the cable shall be PVC served. The cable shall be laid in sand to a depth of 50mm, both above and below the cable, and if not in a sleeve, shall be covered with concrete slabs. The installation shall otherwise comply generally with the Clauses "Cables" and "Trenching, Excavation and Compaction" elsewhere herein.

Cables shall be terminated in screw-on type pot seals using general purpose plastic sealing compound suitable for temperatures up to 150°C, unless otherwise specified. Above 80°C a silicone bonded glass cap and PTFE sleeving shall be used. The seals shall be fitted in accordance with the manufacturer's instructions using recommended crimping and compression tools. The pot seals shall be fitted into matched glands.

All glands, which shall be of the ring type, and locknuts shall be effectively fitted and tightened to obtain satisfactory earth continuity. Serrated lock washers shall be used beneath the locknuts. All tails shall be phase coloured with neoprene sleeves prior to the final connections being made. These sleeves are not to be pushed too far into the pot seal. Where PVC serving is specified, the area from which the serving is removed shall be taped from the served section back to the gland plate, including the gland, with half lapped adhesive PVC tape. A PVC shroud shall be fitted over the taped area of both sheath and gland. No through joints will be permitted.

After cutting cable all ends shall, if being left for any length of time, be temporarily re-sealed with pot seal compound. In plaster depth work all cable ends must be made prior to plastering.

When terminating at motors mounted on slide rails the cable shall be saddled to a point adjacent to the motor, where it shall be made off into a standard round conduit box, adequately supported. From a dome lid the motor shall be connected by PVC conductors and earth wire in "Kopex" flexible tubing as specified elsewhere in this Specification, or alternatively with PVC AS cable and glands. Where motors are not provided with means of altering their position, they may be connected directly with the cable, formed into an unsupported loop of 150mm minimum diameter prior to the connection to minimize vibration.

Where cable emerges from the ground, or is installed in a vulnerable position, it shall be protected by hot dip galvanized channel iron sections saddled to the wall. These sections shall be 1400mm high and must not touch the cable. Where cable shall be installed through conduit sleeves, a single lap layer of PVC tape shall be applied to the cable over the length that will be enclosed by such sleeves.

All cabling shall be tested prior to being made alive. No cable shall be tested until 24 hours after fitting of pot seals. All cables and terminations shall have an insulation resistance of infinity when tested with a 500V instrument between conductors and earth.

Where failure of a cable results from the installation carried out with incorrect tools, bad workmanship or neglecting to carry out those tests specified, the whole length shall be replaced at the Contractor's expense and he will also be responsible for the cost of making good damage to the work of other trades that may result.

## PH 22 MISCELLANEOUS ELECTRICAL CONNECTIONS

Connections shall be made to all electrical equipment as detailed elsewhere in this Specification. The following provisions shall apply in general.

Control panels supplied by others shall be installed by them and shall be complete with an integral main isolator. This Contract covers the connecting of the main supply and cable gland. Wiring from control panels to equipment is a part of this Contract, unless otherwise specified.

All motors shall be provided with an adjacent isolator where indicated on the drawings. This isolator shall be mounted on a suitable floor stand if it is not possible or practical to mount it on the machine. Final conduit connections to motors shall be through flexible conduit as specified elsewhere in this Specification, or alternatively with SWA PVC cable.

Domestic stoves shall be connected in accordance with the recommended method of the local Supply Authority for the particular area. A 1.5m length of flexible conduit as specified elsewhere in this Specification shall be allowed for the final connection between the outlets and stove. Allowance shall be made for connecting all stoves unless otherwise specified elsewhere in this Specification.

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In cold rooms the light circuit shall preferably be wired in "Surfix" but if PVC insulated wire is used, this shall be in galvanized conduit directly secured to the fitting. The point of entry shall be silicon sealed. Any thermostats, fan or other connections to be made within the cold room as specified elsewhere in this Specification, shall be made using "Surfix" run along the same general route as the refrigeration pipes and sealed as above.

#### **PH 23 HOT DIP GALVANISING**

Where hot dip galvanising is called for, it shall conform to SABS 763, the required coating thickness being in accordance with Table 1. Unless the galvanized part shall be painted, the coating shall be passivized immediately. Where later painting is required, a suitable primer shall be applied at the galvanising works.

Before galvanising, all cutting, drilling, welding, etc., shall be complete. Bolt threads shall be suitably undercut and nut threads over tapped to ensure the correct fit after galvanising.

All galvanized parts shall be stored under cover and in stacks such that no part is resting on another and there is sufficient ventilation to prevent condensation occurring. No galvanized parts shall be stored directly on the ground but on pallets or similar protection. Any damaged parts or parts attacked by white rust will be rejected.

Any galvanized surface that is subsequently damaged shall, if the Engineer does not require replacement, be touched up in the manner specified in the Clause "Painting" elsewhere in this Specification.

#### **PH 24 PAINTING**

Any metal work which is not galvanized or painted at Works shall be degreased using a solvent and thoroughly cleaned with a wire brush. If rust is present, this shall be removed by grinding. A red oxide self-etching primer shall be applied, followed by a white undercoat and thereafter a coat comprising a mixture of 50% undercoat and 50% finishing coat. The final coat shall comprise oil based outdoor type enamel.

All equipment that is delivered to site painted shall, after installation and as near as possible to handover, be lightly rubbed down, all damaged paintwork shall be touched up and thereafter the whole given one coat of oil based outdoor type enamel of the same colour as the original.

Where any galvanized or zinc coated surface has been damaged or cut, this shall be touched up using an organic zinc rich epoxy primer (containing min. 90% zinc) after thorough cleaning with a solvent and grinding away all rust. This shall be followed by a self-etching primer suitable for use on zinc coated surfaces and then an undercoat and two top coats as described above.

#### **PH 25 LABELS AND NOTICES**

The Contractor shall arrange for the labelling of all equipment, instruments, meters, relays, cables, etc., as indicated below.

Where identical items of equipment can be removed from their housings, e.g. circuit breaker carriages, plug-in relays etc., both the fixed and with draw-able portions shall be labelled identically.

All labels shall be engraved Traffolite or similar back-engraved white on black labels of the sizes indicated. They shall be located in purpose made holders or otherwise shall be screwed or riveted into position. "Dymo" tape or similar labels will not be accepted nor will labels which are glued in position only.

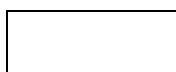
Labels on poles shall comprise an aluminium plate with the designated number. These labels shall be nailed to the pole 1,5m above ground level. Nails shall be electro-galvanized clout nails.

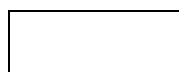
Prior to any equipment being labelled, the Contractor shall request the Engineer to provide a complete labelling schedule for all items of equipment. Under no circumstances is equipment to be labelled in accordance with the tender drawings since any description thereon is for identification purposes during construction only and is unlikely to apply to the completed Works.

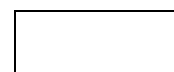
The following list indicates the general labelling requirements but does not limit the extent of labelling required, which shall encompass the full extent of the equipment supplied, or in the case of existing equipment, any such which is affected by this Contract.

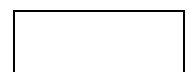
##### **PH 25.1 50mm high lettering**

Substation and mini-sub designation  
Outdoor switchgear designation  
Transformer designation

  
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**PH 25.2 20mm high lettering**

Main or sub-main board designation  
Control panel designation  
Indoor switchgear designation

**PH 25.3 12mm high lettering**

Individual switches on switchgear  
Cubicles  
Sub-distribution board designation  
Poles for OH lines  
Minisub feeder breakers and isolators  
Distribution kiosk feeder breakers and isolators  
General distribution switchgear  
Meters, instruments and relays  
Multiplying factors

**PH 25.4 3mm high lettering**

This size shall be used to designate the conductor size and number of cores of each cable installed under this Contract. In addition, all feeder cables shall be labelled to state from whence they are fed.

All switchboards shall be provided with a label in English reading "In case of leakage or accidental contact, put off main switch immediately".

All substations, mini-sub, kiosks, transformer rooms and switch rooms shall be provided with notices as required by the Occupational Health and Safety Act. All doors to such locations shall be fitted with the appropriate notices. In the case of mini-sub, these shall comprise at least two 190mm x 190mm design WW7 in accordance with SABS 1186 externally and HV and LV respectively on the inside of all doors, while kiosk doors shall meet the LV requirements only. For all other substations, enclosures etc., "Kontra" Safety Signs as supplied by Mine Safety Appliances or approved equivalent shall be provided, Nos. KM115 and K0711 being used externally and KM112, K0706 and K0710 internally.

Where more than one similar item of equipment is fed from the same board or control panel, the item itself shall be labelled, this being fixed in a permanent position, i.e. not attached to motors, pumps etc., but to bases or adjacent thereto. The lettering shall be 50mm high.

**PH 26 DISMANTLING**

Where dismantling of existing parts of the installation is called for, all components including wire, insulators, poles, cable, switchgear, transformers, etc. shall be removed and handed over to the appropriate Authority. Under no circumstances is any material or equipment to be taken over by the Contractor. In the case of reclamation of conductor, this shall be done after removing the binding wires on intermediate insulators so that full strain lengths are recovered. All such material shall be neatly coiled, packed, etc., as appropriate.

Extreme care shall be taken in dismantling all such equipment, since it will be re-used by the Employer. If, in the opinion of the Engineer, unnecessary damage is done, the cost of replacing such equipment will be debited to the Contractor's account.

A receipt detailing all equipment and materials delivered in accordance with the above must be obtained and a copy submitted to the Engineer.

**PH 27 INSPECTION, TESTING AND COMMISSIONING**

The Engineer shall have access at all reasonable times to such parts of the Works or the Contractor's premises or the premises of the manufacturer of component parts; as may be necessary for the purpose of inspecting, examining and testing the materials, workmanship and performance of any plant or equipment specified for the Works.

The Contractor shall ensure that all equipment such as switchboards, transformers, mini-sub, kiosks, etc., are inspected and tested at the manufacturer's premises, in the presence of the Engineer.

All wiring shall be subjected to a test voltage of 2kV for one minute without insulation failure. A Megger test shall

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be applied with a 500V instrument immediately thereafter to prove the insulation resistance better than 20 mega ohms. All meters shall be injection tested to ensure correct operation. All control circuits including motor overloads, relays, etc., shall be operated to ensure the correct functioning of the entire control system.

All equipment necessary to enable the tests to be carried out shall be provided and shall include, inter alia:

Phase rotation meter	500A primary injection test set
Avometer	25A secondary injection test set
500V	2kV DC test set.

After completion of manufacture, the following test certificates, signed by the Contractor and the firm executing the tests, shall be provided in duplicate:

1. Transformer test certificate to SABS.
2. Test certificate stating that all LV switchboards and control boards have been inspected and their wiring subjected to 2000V DC for 1 minute.
3. Test certificate stating that all HV switchboards have been inspected and their internal wiring subjected to 2000V DC for 1 minute and HV components to the appropriate voltage as laid down in the applicable SABS or BS Specification.
4. Any other test certificate for routine tests as laid down in relevant SABS or BS Specification or Codes of Practice applicable to the item in question.
5. Test certificate in respect of any special tests called for elsewhere herein.

The Contractor shall arrange for any Statutory Government and/or Supply Authority inspection of the installation prior to testing and final commissioning by the Engineer.

On completion of the entire installation or any particular section thereof, as may be decided by the Engineer, commissioning shall be carried out by the Contractor, and any tests the Engineer deems necessary shall be conducted. The Contractor shall supply all equipment necessary for the testing and commissioning procedures.

Prior to commissioning of any transformer, the oil shall be tested and, if necessary, shall be dried out by the Contractor. Should this be necessary, the Engineer must be advised that it is suspected the transformer is damp before any work is undertaken. Transformer wheels shall be solidly chocked. No transformer shall be commissioned without the consent of the Engineer.

During commissioning, all tap change switches shall be correctly set and locked. All wedges and packing in switches and relays shall be removed and each switch and each relay circuit operated.

All protection and small wiring shall be tested with a 500V Megger and injection currents passed through the secondaries of every circuit to check the proper operation of relays, instruments and protection.

The Contractor shall supply all equipment necessary for the testing and commissioning procedures. The test equipment required at Site shall include, inter alia:

- Phase rotation meter
- Suitable cable test set
- 22 000V phasing sticks
- 500V Megger
- 5 000V Megger
- Avometer
- Earth resistance test set
- 25A secondary injection test set.

After completion of the commissioning tests the Contractor shall provide duplicate test certificates relating to cable tests, current injection tests of all instruments, meters and relays and results of earth mat tests.

The Contractor shall give the Engineer at least 14 days' notice of the date of any testing or commissioning so that he may be present if he so wishes. Where the Engineer does not himself, or through his representative, attend to witness the tests, then the Contractor may proceed with the test, duly forwarding to the Engineer certified copies of the results obtained. In such cases, the test shall be deemed to have been made in the presence of the Engineer.

In the event of the equipment or installation not passing the tests, the Employer shall be at liberty to deduct from the Contract Price, all reasonable expense incurred by him or by the Engineer in repeating the tests.

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COMPLETION OF WORKS

Before completion of the Contract any damage which may have been done in the process of the installation shall be repaired and made good, trench or excavation work shall be left in a clean and tidy state and all accumulated debris shall be removed from the Site by the Contractor, to the satisfaction of the Employer and Engineer.

All defects found shall be rectified within one month of written notice of such defects. A penultimate certificate reducing the retention amount to that stated elsewhere in this Specification will only be issued upon submission of As-Built Drawings and Operating Manuals as called for elsewhere herein, after completion of all notified defects, and once all test certificates called for in the Clause "Inspection, Testing and Commissioning" elsewhere in this Specification have been submitted and accepted by the Engineer.

An appropriate Certificate shall acknowledge practical completion of the Works and the commencement of the period during which the Contractor shall be responsible for any defects that may become apparent, and of Maintenance as detailed under the Clause "Maintenance" in Part 1 of the Project Specification, where applicable.

The Contract will not be deemed to be finally complete until the Engineer's final payment certificate is issued.

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**Tsitsikamma Electrical Infrastructure Upgrade,  
Storms River Mouth, Tsitsikamma National Park**

**CONTRACT No. CI-GK-0130**

## **C3.5 Management**

### **C3.5.1 Particular specifications**

The Particular Specifications listed in Clause 3.6 of the Scope of Works apply to this Contract.

### **C3.5.2 Construction Programme and Methods**

The Contractor must submit a program for each works order, time related items will only be paid in correlation to the approved program.

The programme to be submitted by the Contractor in terms of the General Conditions of Contract shall be in the form of a bar chart with a horizontal time scale and shall clearly show all significant activities, the duration of all activities, the interdependencies (if any) of activities and the critical path of the overall programme, clearly related to the items or groups of items in the Bill of Quantities and indicating the quantity of work that will be completed each month and shall ideally be drawn up using a commercially available computer programme. The programme shall take account of and include -

- a) All special non-working days,
- b) Allowance for inclement weather as provided for in Clause 5.12.2.2 of Contract Data,
- c) Known physical conditions or artificial obstructions,
- d) Searching for, dealing with and carrying out alterations to existing services, and
- e) The accommodation and safeguarding of public access and traffic.

The Engineer can, in consultation with the Contractor, review and adjust the programme during the course of the contract to ensure that the annual budget is met.

### **C3.5.3 Sequence of the works**

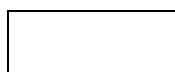
The Contractor shall include the sequence of works in the tender programme submitted with his tender offer. In determining the sequence of the works and in preparation of his Project Programme, the Contractor shall consider the following:

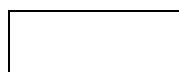
- a) Excavations shall remain open for the shortest possible time.
- b) Least disruption to vehicular traffic on the parks road network.
- c) During the December builders holiday all equipment and materials shall be removed from the work areas. The contractors camp site, unless authorized by the Engineer, during this period, shall be dismantled and removed from site for the period in question. The camp shall be re-established from the third week of January onwards. No open excavations shall be allowed during this period.
- d) The sequence of works shall be programmed to ensure that during the December builders the large influx of tourist traffic over this period is not disrupted. The maximum allowable time for a STOP/GO traffic management system will be ten (10) minutes, where it is deemed necessary.

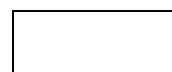
### **C3.5.4 Methods and procedures**

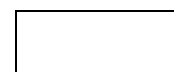
The Contractor shall advise in his tender the methods and procedures that he proposes in performing the works. These methods and procedures shall not be deemed as terms of the Contract. The Contractor is also allowed to change his methods and procedures as he sees fit subject to the change being approved by the Engineer. Methods and procedures will not vary the specification and cannot be used to provide qualifications to the proposed agreement. The intention of the method statement is to provide the Engineer and the Employer with information as to how he proposes to perform the said works.

- a) Normal working hours -  
Normal working hours shall be between 07h00 until 18h00 (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;

  
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Work on other days or at other times shall only be allowed after agreement of the Employer and written approval has been granted by the Engineer.

- b) Interference with the public -  
The Contractor shall ensure that none of his staff interfere in any way with the public visiting the park and shall be courteous at all times.
- c) The maximum speed for all vehicles in the park is 40km/h, all construction vehicles must adhere to the limit.

Any person ignoring this shall be removed permanently from site, all at the expense of the Contractor.

#### **C3.5.5 Site usage**

The Contractor's employees shall not be allowed to stay on site except for the duration of a working day. The only persons to be allowed on site for the duration of a calendar day shall be the site guard(s) or any personnel required to ensure proper traffic accommodation and control.

Access to the site will be in a controlled manner. People visiting the site will have to sign in and out on a daily basis.

#### **C3.5.6 Recording of weather**

The Contractor shall be responsible for keeping accurate records of weather conditions in the Daily Site Diary, to use as substantiation of any claim for extension of time in accordance with GCC, Clause 10.1.

The Contractor will inform the Engineer when he is unable to proceed with the works in accordance with the approved contract program. Subject to the approval of the Engineer, the rainfall and other relevant notes will be noted in the Daily Site Diary for the applicable day/s. After the event the Contractor shall provide a revised contract program motivating if the delay affects his schedule to the extent that he will need to motivate for an extension of time in accordance with the relevant GCC Clause 10.1.

The Engineer, together with the Employer, shall be responsible for granting the extension of time.

#### **C3.5.7 Management meetings**

Monthly Progress Meetings shall be held with the first meeting called the Site Handover meeting. The Contractor will be supplied with an appropriate agenda for the progress meetings and the meetings shall be chaired by the Engineer or his duly appointed representative.

The Contractor shall arrange for the Contractor's Project Manager and the Contractor's Technical Supervisor to attend these meetings when called for by the Engineer.

The Engineer or his duly appointed representative shall be responsible for issuing of the minutes.

#### **C3.5.8 Payment certificates**

The monthly payment certificate to be submitted by the Contractor in terms of the General Conditions shall be prepared by the Contractor at his own cost, strictly in accordance with the standard payment certificate prescribed by the Engineer, in digital electronic computer format. The Contractor shall, together with a copy of the digital electronic computer file of the statement, submit two (2) A4 size paper copies of the statement.

For the purposes of the Engineer's payment certificate, the Contractor shall subsequently be responsible, at his own cost, for making such adjustments to his statement as may be required by the Engineer for the purposes of accurately reflecting the actual quantities and amounts which the Engineer deems to be due and payable to the Contractor in the payment certificate.

The Contractor shall, at his own cost, make the said adjustments to the statement and return it to the Engineer within three (3) normal working days from the date on which the Engineer communicated to the Contractor the adjustments required. The Contractor shall submit to the Engineer two (2) sets of A4 size paper copies of such adjusted statement, together with a copy of the electronic digital computer file thereof.

Any delay by the Contractor in making the said adjustments and submitting to the Engineer the requisite copies of the adjusted statement for the purposes of the Engineer's payment certificate will be added to the times allowed to the Engineer in terms of the General Conditions to submit the signed payment certificate to the Employer and the Contractor and shall also be added to the period in which the Employer is required to make payment to the Contractor.

Payment for particular items scheduled shall conform to the applicable payment clauses of the Pricing Data, Project Specifications and the Particular Specifications.

Where retention money is applicable to a Contract, the retention money shall be deducted on the invoice from the

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total amount for work done and then the Value Added Tax (VAT) added to calculate the total amount payable on the invoice.

If penalties are payable, they will be deducted prior to the addition of VAT but after the calculation of retention.

### **C3.5.9 Finishing and Tidying**

As the works proceed the work areas shall be progressively and systematically finished off and tidied. Spoil, rubble and other materials shall not be allowed to accumulate.

The contractor shall recover all excess materials used in the works and remove from the park.

### **C3.5.10 Occupational Health and Safety Act**

In terms of the provisions of Section 37(2) of the Occupational Health and Safety Act, Act No. 85 of 1993 (the Act) the Contractor as an employer in its own right and in its capacity as principal contractor for the execution of the works, shall have certain obligations and the following arrangement shall apply between the Contractor and the Employer to ensure compliance by the Contractor with the provisions of the Act:

- a) The Contractor undertakes to acquaint the appropriate officials and employees of the Contractor with all relevant provisions of the Act and the Construction Regulations 2014 promulgated in terms of the Act, and
- b) The Contractor undertakes that all relevant duties, obligations and prohibitions imposed by the Act and the Construction Regulations 2014 shall be fully complied with, and
- c) 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 or Construction Regulations 2014 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, and
- d) The Contractor shall when called upon to do so, enter into and execute an agreement as provided for under Section 37(2) of the Act. The agreement in the relevant form shall be submitted to the Employer together with a letter of good standing from the Compensation Commissioner within fourteen days after receipt of the Letter of Acceptance. The site will not be handed over to the Contractor until the Employer has received the completed Agreement and the letter of good standing.

### **C3.5.11 Accommodation of Traffic**

The Contractor shall maintain close liaison with the SANParks's Addo Elephant National Park management regarding the proposed works on vehicular access on the parks road network.

It is a condition of this contract that no road closures will be allowed and that traffic is accommodated at all times and all signage for roadworks is provided, in accordance with the Drawings and the requirements of Volume 2 Chapter 13 of the June 1999 edition of the South African Road Signs Manual.

The Contractor shall make the best possible effort to minimise the extent of roadway required for construction and where a STOP/GO system is in place the maximum delay shall be 10 minutes.

During the end of year builder's break, all roads shall be opened to full width and all traffic control signage removed.

### **C3.5.12 Safety and Security**

The Contractor shall be responsible for the safety and security of his personnel, materials on site and the works in general at all times. The Contractor shall therefore acquaint himself with the current situation in the areas (by liaising with the local police if necessary), and shall provide all security measures, including the employment of accredited security services, as he deems necessary to comply with the requirements of this clause.

The Contractor shall ensure that the general public is at all times protected from the works where the normal use by the public of, and access to roadways, and all other public areas is not available due to the construction works. Adequate notices and signage of such temporary closures and alternative routes shall be provided.

### **C3.5.13 Environmental Care**

The Contractor shall refer to the SANParks Environmental Management Plan which forms part of the Contract Specifications.

The Contractor's attention is drawn to the extreme environmentally sensitive nature of the site. It is the specific requirement of this Contract that the Contractor shall at all times adhere strictly to the Environmental Management Plan that forms part of the project specification.

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No constructional activities of any kind shall be permitted without the express prior written authority of the Engineer. Such written authority shall only be given after the Contractor has provided full details and work methods of the constructional activity he proposes and his staffs have completed the awareness programme.

SANParks shall nominate an Environmental Officer for the whole or part of the contract period to monitor the Contractor's compliance with his specified obligations with regard to the Environmental Management Plan.

For viewing purposes only

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**Tsitsikamma Electrical Infrastructure Upgrade,  
Storms River Mouth, Tsitsikamma National Park**

**CONTRACT No. CI-GK-0130**

**C3.6 Annexes**

**CONTENTS**

**3.6.1 PARTICULAR SPECIFICATIONS**

ANNEXURE A - HEALTH AND SAFETY SPECIFICATIONS FOR SOUTH AFRICAN NATIONAL PARKS

ANNEXURE B - ENVIRONMENTAL MANAGEMENT PLAN

ANNEXURE C - CODE OF CONDUCT FOR WORKING IN THE SOUTH AFRICAN NATIONAL PARKS

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## Annexure A

### **Health and Safety Specifications for South African National Parks (As attached)**

For viewing purposes only

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Employer

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Employer



## HEALTH & SAFETY SPECIFICATIONS FOR

### TSITSIKAMMA ELECTRICAL INFRASTRUCTURE UPGRADE, STORMS RIVER MOUTH, TSITSIKAMMA NATIONAL PARK

**CONTRACT NO: CI- GK-0130**

**Date: November 2023**

**Contact: 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)**

## CONTENTS

1. PURPOSE OF THE HEALTH AND SAFETY SPECIFICATION
2. IMPLEMENTATION OF THE HEALTH AND SAFETY SPECIFICATION
3. APPLICATION AND INTERPRETATION
4. DEFINITIONS
5. GENERAL REQUIREMENTS
  - 5.1 Duties of Principal Contractor / Contractor in terms of Construction Regulations 2014
  - 5.2 Management and Supervision of Construction Work
  - 5.3 Notification of Intention to Commence Construction Work
  - 5.4 Construction Work Permit
  - 5.5 Assignment of Contractor's Responsible Persons to Manage Health and Safety on Site
  - 5.6 Competency for Contractor's Responsible Persons
  - 5.7 Compensation of Occupational Injuries and Diseases Act 130 of 1993 (COIDA)
  - 5.8 Occupational Health and Safety Policy
  - 5.9 Health and Safety Organogram
  - 5.10 Risk Assessments
  - 5.11 Safe Work Procedures
  - 5.12 Health and Safety Representative(s)
  - 5.13 Health and Safety Committee
  - 5.14 Medical Certificate of Fitness
  - 5.15 Health and Safety Training
    - 5.15.1 Induction
    - 5.15.2 Awareness
  - 5.16 Competency
  - 5.17 General Record Keeping
  - 5.18 General Inspection, Monitoring and Reporting
  - 5.19 Emergency Procedures
  - 5.20 First Aid Box and First Aid Equipment
  - 5.21 Accident / Incident Reporting and Investigation
  - 5.22 Hazards and Potential Situations
  - 5.23 Occupational Health and Safety Signage
  - 5.24 Management Of Contractors by Principal Contractor
  - 5.25 Stacking of Materials
  - 5.26 Housekeeping and General Safeguarding on Construction Sites
  - 5.27 Construction Vehicles and Mobile Plant
  - 5.28 Electrical Installations and Machinery on Construction Sites
  - 5.29 Use and Temporary Storage of Flammable Liquids on Construction Sites
  - 5.30 Water environments
  - 5.31 Fire precautions on Construction Sites
  - 5.32 Construction Employees' Facilities

Contractor

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Employer

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Employer

- 5.33 Fall protection
- 5.34 Temporary works
- 5.35 Excavation
- 5.36 Demolition Work
- 5.37 Tunneling
- 5.38 Scaffolding
- 5.39 Bulk mixing plant
- 5.40 Rope Access Work
- 5.41 Hazardous Chemical Substances (HCS)
- 5.42 Hazardous Biological Substances (HBS)
- 5.43 Noise Induced Hearing Loss
- 5.44 Explosives and Blasting
- 5.45 Personal Protective Equipment (PPE)
- 5.46 Asbestos
- 5.47 Lead
- 5.48 Pressure Vessels (Including Gas Bottles)
- 5.49 Fire Extinguishers and Fire Fighting Equipment
- 5.50 Lifting Machinery and Tackle
- 5.51 Ladders and Ladder work
- 5.52 General Machinery
- 5.53 Portable Electrical Tools
- 5.54 High Voltage Electrical Equipment
- 5.55 Public Health and Safety
- 5.56 Night Work
- 5.57 Lighting
- 5.58 Environmental Conditions and Flora and Fauna
- 5.59 Occupational Health
- 5.60 Suspended Platforms
- 5.61 Material Hoists
- 5.62 Explosive Actuated Fastening Device

- Activities requiring Permits
- General Arrangements
- Protection of sit against Unauthorized access by public
- Personal Protective Equipment
- Hazardous Substance

#### 8. BASELINE RISK ASSESSMENT

#### 9. HEALTH AND SAFETY SPECIFICATION ACKNOWLEDGEMENT RECEIPT

#### 6. TRAINING, INSPECTIONS & RECORDS

- Additional Requirements
- Annexure A: Task Completion Form
- Annexure B: Contractors Responsible Persons

#### 7. PROJECT DETAILS

- Project Directory
- Project Details
- Existing Environment
- Project Health and Safety Requirements
- Activities requiring approved Method Statements

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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.

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#### 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;

"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;

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"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;

"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.

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## 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 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

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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, 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

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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.

### 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:

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- 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.

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

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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 and 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 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.

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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 db; 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-

- 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;

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- 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;
- 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;

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- 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.

### 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

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- 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;
- 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.

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### 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
- 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.

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### 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.

### 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:

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- 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

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.
- 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.

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- 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

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.

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### 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:

- 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: <ul style="list-style-type: none"> <li>a) Incidents / Accidents and investigation</li> <li>b) Non conformance</li> <li>c) Health and Safety Training</li> <li>d) HIRA Updates</li> <li>e) Internal &amp; External Audits</li> </ul>
General Inspections	As per Health and Safety Specifications & OHSA	Report of Health and Safety Specifications and OHSA compliance: <ul style="list-style-type: none"> <li>a) Scaffolding</li> <li>b) Lifting Machinery</li> <li>c) Excavations</li> <li>d) Construction vehicle</li> </ul>
General Inspections	Monthly	Covering: <ul style="list-style-type: none"> <li>a) Fire Fighting Equipment</li> <li>b) Portable Electrical Equipment</li> <li>c) Hand Tools</li> <li>d) Ladders</li> </ul>
Record Keeping	On-going	Covering: <ul style="list-style-type: none"> <li>a) General Complaints</li> <li>b) Fines</li> <li>c) General Incidents</li> <li>d) MSDS</li> <li>e) Surveillance Medicals</li> <li>f) Inspection Registers</li> <li>g) Department of Labour Notices</li> </ul>

  
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**ANNEXURE A**

The contractor shall submit the info below in an Annexure 2 prior to construction commencement. Annexure 1 of Electrical Installation Regulation Certificate of Compliance will be a requirement after all testing and commissions and any other required certificates as per the project specification.

Item No.	Health and Safety Specification Requirement	OHS Act 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 Electrical Works 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:	<b>SANParks</b> 643 Leyds Street, Muckleneuk, PRETORIA, 0001  Contact: Ms A van Wyk	Tel: (012) 426 5126  email: antionet.vanwyk@sanparks.org
Client Agent	<b>Technical Services</b> <b>Tsitsikamma National Park</b>  Contact: Mr Cornie Jonker	Cell: 082 673 3061  E-mail: corni.jonker@sanparks.org

**PROJECT DETAILS:**

<b>Description of Works</b> Tsitsikamma electrical infrastructure upgrade, Storms river mouth, in the Tsitsikamma National Park for a period of seven (07) Months:
<b>Anticipated Construction Duration</b> 7 Months Contract
<b>Provisional Start Date</b> June 2024
<b>Provisional Completion Date</b> December 2024

**EXISTING ENVIRONMENT:**

<b>Hazards particular to this project by virtue of location:</b> <b>Wild Animals:</b> The site is located in the Tsitsikamma National Park. 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 the public from any dangers associated with the construction works being undertaken.
<b>Public Roads:</b> The use of the roads network to be carefully planned to accommodate public, tenants and traffic.
<b>Overhead, Above Ground and Underground Services crossing the site:</b> <b>Overhead:</b> Applicable. <b>Underground:</b> Applicable <b>Ground Level:</b> Not Applicable <b>Services Drawings available:</b> Not applicable <b>Way leaves required:</b> Applicable <b>Permits required:</b> Applicable <b>Isolation required:</b> 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 road - Workshops / Electrical Sub-station / Service Roads
<b>Existing ground conditions and ground survey report:</b> No Geo Tech report available.
<b>Existing Traffic Systems:</b> <b>Conditions:</b> Gravel / Tar Roads <b>Restrictions to access:</b> Applicable <b>Speed restrictions:</b> 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, ie. 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**


Eskom - Electrical shut down and change over.  
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>	Yes – for Eskom related work
<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**


**Restrictions on times:** Monday - Friday 08:00 to 17:00 Saturday 08:00-13:00




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<b>Access to site by Construction Vehicles:</b>	Yes, principal contractor to manage.
<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 adverse weather conditions on site activities 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 UNAUTHORISED 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.

##### General Fencing of Site:

Note that construction site must be **clearly demarcated** and have controlled access point.

##### 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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**BASELINE RISK ASSESSMENT (As attached)**

For viewing purposes only

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**PROJECT: The Upgrade of Bulk Electrical Infrastructure Upgrade, Storms River Mouth - Tsitsikamma National Park – Contract No: CI-GK-0130**

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 8 is deemed Tolerable, between 9 and 15 is deemed Medium Risk and above 20 is deemed High Risk**

Steps in Operation	Ref No.	Hazard	Risk	Risk Rating			Controls Measures	Action to Mitigate
				P	F	S		
<b>General Onsite Activities</b>	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

  
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Steps in Operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action to Mitigate
			Pedestrian collision	3	4	18	Construction Regulation 23(2)(c)	Pedestrians Walkways
	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
	A12	Adverse storms	Struck by lightning	2	5	19	Induction Training Safe Operation Procedure	Proper warning system

  
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Steps in Operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action to Mitigate
	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
	A16	Fire prevention	Pollution of area	3	2	8	Construction Regulation 27(e)	Proper waste bins and waste removal
			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 including 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
			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

  
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Steps in Operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action to Mitigate
			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
			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

  
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Steps in Operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action to Mitigate
	C3	Towing a Trailer	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, struck by flying debris	4	3	17	Safe Operation Procedure	Supervision PPE
	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
	D4	Other electrical portable hand tools	Electrocution	3	5	22	Electrical Machinery Regulations 10(1)(a)(b)	Tool inspection register, site inspection and monitoring
			Exposure to noise	3	3	13	Noise Induced Hearing Loss Regulations(7)(1)(a)(b)(c)(d)	Training and PPE
			Vibration	2	2	5	Safe Operation Procedures (SOP) toolbox tool talks	Safe Operation procedure, Toolbox talks
			Accidental Injury	4	3	17	Safe Operation Procedures (SOP) toolbox tool talks	On site supervision
			Shaving flying into eyes	3	3	13	Safe Operation procedure	PPE, Supervision
	D5	Explosive actuated fastening device	Malfunction of equipment causing injury/damage	3	3	13	Explosive Regulations 15(a)(b)	Tool inspection register, inspect extension cord

  
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Steps in Operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action to Mitigate
Site Clearance			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
	E2	Tree felling	Electrical cables and other services in way of work area	3	4	17	Construction Regulation 24(c)	Properly mark & demarcate existing services
			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
	E3	Removal of rubble/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/ Removal of overhead electrical cables not needed	Structure/or unwanted cables / 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 or dangerous bulbs or electrical tubes	2	4	14	Lead Regulations (3)	PPE, Induction Training

  
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Steps in Operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action to Mitigate
			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
	F2	Machine Digging of holes/trenches	Injury due to improper work method	4	3	18		Induction training, supervision
			Trip/fall into holes	3	3	13		Demarcate area, induction training,
			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
	F3	Tipping of material	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
			Unnecessary Damage to environment	3	2	9	SANParks Environmental Management Plan	Induction Training, designated work area
			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

  
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Steps in Operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action to Mitigate
Installation of cables & Equipment			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	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,
			Dangerous / unsafe cable Joints	3	3	13	Electrical Installation Regulations(5)(1)(2)	Competent installer
	G2	Installation of electrical cables or tubing	Cable handling / lifting resulting in injury	3	3	13	Electrical Installation Regulations(2)(1)	Induction training, PPE,
	G3	MV & HV reticulation	Discharge of cable	3	5	22	Electrical Installation Regulations 9(1) General Machinery Regulations 2(1)(2)(3)(i)	Correct measuring equipment
			Electrocution	3	5	22	Construction Regulation 24(a)(b)(c) Electrical Installation Regulations 5 (3)(4)(5)	Competent person to do installation & inspection
			Dangerous/unsafe cable Joints	3	3	13	Construction Regulation 24(d)(e) and Electrical Installation Regulations 5(3)(4)(5)	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
	G4	Mini-Substation with main unit installation	Person encountering chemical agents	3	2	8	Safe Work Procedure Hazardous Biological Agents Regulation 10(1)(a)(b); 2(a)(b)(c)	PPE
			Explosion due to electrical connection to distributor or transformer supply.	3	2	8	Electrical Installation Regulations 5 (1-7)	PPE, Induction Training
			Connect cable for emergency purpose i.e., generator.	3	2	8		
			Electrocution	3	5	22	Construction Regulation 24(a)(b)(c) Electrical Installation Regulations 5 (3)(4)(5)	Competent person to do installation & inspection

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Steps in Operation	Ref No.	Hazard	Risk	P	F	S	Controls Measures	Action to Mitigate
<b>Temporary Works</b>	H1	Stop & Go Procedures - Moving Vehicles	Injuries to employees involved in an accident 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 accident - in the midst of Stop/Go activity	4	4	21		
			Injuries to road users involved in an accident - approaching a Stop/Go activity	4	4	21		PPE, Competent person conduct work.
			Injury during assembly/dismantling	3	3	13	Construction Regulation 12(3)(a)	Induction Training, PPE, Supervision
<b>Metalwork</b>	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		Firefighting equipment

  
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LIKELIHOOD RATING (L)		DESCRIPTION	FREQUENCY
5	Almost certain	Expected to occur in most circumstances.	Recurring event e.g. More than once per month.
4	Likely	The event will probably occur.	Event that may occur frequently once a year.
3	Possible	Might occur occasionally.	Event that may occur. Once in 3 years.
2	Unlikely	Could happen sometime.	Event that is unlikely to occur. Once in 10 years.
1	Rare	May happen only in exceptional circumstances.	Event that is very unlikely to occur.

IMPACTS					
CONSEQUENCE RATING (C)		ENVIRONMENTAL	SAFETY	HEALTH	FINANCIAL IMPACT
5	Critical	Permanent environmental damage to an extensive area.	Fatality. Permanent disabling injuries.	Life threatening or permanently disabling illness.	> R500,000
4	Major	long term environmental damage extending to a large area requiring high level intervention.	Severe irreversible damage to one or more persons. Lost time injury greater than 10 days.	Severe and irreversible health effects or disabling illness.	R100,000 - R499,000
3	Moderate	Short term environmental damage requiring some intervention.	Reversible injury or moderate irreversible impairment. Less than 10 days lost time.	Severe but reversible health effects. Results in lost time of less than 10 days.	R10,000 - R99,999
2	Minor	Short term environmental damage affecting a small area easily remediated.	Medically treated injury Does not lead to restricted duties.	Reversible health effects of concern that results in medical treatment but does not lead to restricted duties.	R1,000 - R9,999
1	Insignificant	Minimal environmental damage affecting a very small area immediately remediated.	Single minor injury to one person. First aid or no treatment required. No lost time.	Reversible health effects of minor concern only requiring minor medical treatment.	R0 - R999

  
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LIKELIHOOD							
CONSEQUENCE			1	2	3	4	5
			RARE	UNLIKELY	POSSIBLE	LIKELY	ALMOST CERTAIN
	1	INSIGNIFICANT	1	2	3	4	5
	2	MINOR	2	4	6	8	10
	3	MODERATE	3	6	9	12	15
	4	MAJOR	4	8	12	16	20
	5	CRITICAL	5	10	15	20	25

RISK RATING	RISK MAGNITUDE	RESPONSE
16 - 25	High	Immediate action required to reduce risk. Introduce hard barriers and adequate controls to reduce risk. Control hazards/ Monitor regularly. Ensure the risk has been eliminated so far as is reasonably practicable
9 - 15	Moderate	Urgent attention to improve controls & reduce inherent risks. Monitor systems controls, implement controls, or minimised in accordance with the hierarchy of controls so far as is to reduce the risk.
0 - 8	Low	Tolerable risk level. Carry out activity following review and implementation of effective risk controls in accordance with the hierarchy of controls. Ongoing monitoring and management required by employees and line supervisors to use safe working procedure

  
Contractor

  
Witness for Contractor

  
Employer

  
Witness for Employer

DEFINITIONS				Probability (1 - 5)		Determining your prioritisation rating (AP)			
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	

  
Contractor

  
Witness for  
Contractor

  
Employer

  
Witness for  
Employer

INITIALS	SURNAME	DESIGNATION	CONTACT DETAILS	HIRA TRAINING	SIGNATURE	DATE
C	Jones	Regional: Project Manager	076 684 3072	Yes		26 January 2024
C	Jonker	Senior Manager: Technical Services	012 426 5303	Yes		26 January 2024
Z	Mkhonza	CHSO: Coordinator Compliance	012 426 5199	Yes		26 January 2024

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

**Tsitsikamma Electrical Infrastructure Upgrade,  
Storms River Mouth, Tsitsikamma National Park**

**CONTRACT No. CI-GK-0130**

**10. 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 have made the relevant provision under  
my Preliminary & General Section 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 this documents, our safety documentation and  
health and safety legislation.

\_\_\_\_\_  
Signature of Contractor

\_\_\_\_\_  
Date

Comments:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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Contractor

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Witness for  
Contractor

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Employer

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Witness for  
Employer

**Annexure B**

**Environmental Management Plan**

For viewing purposes only

Contractor

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Contractor

Employer

Witness for  
Employer

# Environmental Management Plan

## General Construction Activities in Parks

**Park:** TSITSIKAMMA NATIONAL PARK

**Project:** Tsitsikamma Electrical Infrastructure Upgrade,  
Storms River Mouth, Tsitsikamma National Park

CONTRACT No. CI-GK-0130

Prepared by:



South African  
NATIONAL PARKS

**South African National Parks**  
P.O. Box 787  
PRETORIA  
0001

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

**Part****1****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, that 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.

 Contractor

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Contractor

 Employer

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### 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.

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.

Contractor

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- **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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Employer

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Employer

## 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
Prior to the commencement of construction, the proposed site/s and roads, must be inspected by SANParks Scientific Services (where necessary), in order to: <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
In known archaeological sensitive areas the South African Heritage Resources Agency (SAHRA) must inspect all above-mentioned contract areas, in order to: <ul style="list-style-type: none"> <li>• Confirm the absence of archaeological sites and/or artefacts;</li> </ul>	SANParks, ECO & Contractor

  
Contractor

  
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Employer

  
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- 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
- Point out and/or demarcate all archaeologically "sensitive" areas to the contractors.

### 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 commencement of construction, preferably within already disturbed areas. After completion of the contract, these areas will be required to be rehabilitated.	ECO & Contractor
<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> </ul>	ECO & Contractor

 Contractor

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Contractor

 Employer

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Employer

Mitigation / Management Action	Responsible Agent
<ul style="list-style-type: none"> <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>	
<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 or cleared. A firebreak shall be cleared and maintained around the perimeter of the site camp/s and office sites where necessary.	ECO & Contractor
<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
<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	ECO & Contractor

  
Contractor

  
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Employer

  
Witness for Employer

Mitigation / Management Action	Responsible Agent
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.	
<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-aways 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

Contractor

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Contractor

Employer

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**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> <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>	ECO & Contractor
<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 artefact on site is uncovered, work in the immediate vicinity shall be stopped immediately. The Contractor shall take reasonable precautions to	ECO & Contractor

 Contractor

 Witness for  
Contractor

 Employer

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Employer

Mitigation / Management Action	Responsible Agent
<p>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.</p> <p>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.</p>	

## 2.2.6

## SOIL MANAGEMENT

Mitigation / Management Action	Responsible Agent
<p><b>Topsoil:</b></p> <p>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 &amp; conditions.</p> <p>Topsoil must be stockpiled for later use.</p>	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
<p><b>Spoil Material:</b></p> <p>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.</p>	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
<p>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:</p> <ul style="list-style-type: none"> <li>• Vegetation,</li> <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>	ECO & Contractor

  
Contractor

  
Witness for Contractor

  
Employer

  
Witness for Employer

Storm water drainage measures are required on site to control runoff and prevent erosion.	ECO & Contractor
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## 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

  
Contractor

  
Witness for Contractor

  
Employer

  
Witness for Employer

Mitigation / Management Action	Responsible Agent
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
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	ECO &

  
Contractor

  
Witness for Contractor

  
Employer

  
Witness for Employer

site.	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 (bundled / 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
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 bundled 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

 Contractor

 Witness for  
Contractor

 Employer

 Witness for  
Employer

The contractor will maintain 'good housekeeping' practises as ensure that all work sites and construction camp are kept tidy and litter free.	ECO & Contractor
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## 2.2.15 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

## 2.2.16 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

  
Contractor

  
Witness for Contractor

  
Employer

  
Witness for Employer

**2.2.17 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 / Contractor
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 / Contractor

**2.2.18 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 / Contractor
Gas and liquid fuel may not be stored in the same storage area.	ECO / Contractor
The Contractor must ensure that there is adequate fire-fighting equipment at the fuel stores.	ECO / Contractor
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 fire fighting 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 / Contractor

**2.2.19 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 / Contractor

**2.2.20 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

 Contractor

 Witness for Contractor

 Employer

 Witness for Employer

**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 / Contractor
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 / Contractor
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 / Contractor
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 / Contractor
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 / Contractor

**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.

**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.

 Contractor

 Witness for Contractor

 Employer

 Witness for Employer

The following Monitoring Form may serve as an **example** or point of departure.

<b>Name:</b> Ref: _____ Date: _____	
<b>Project:</b> _____	

ENVIRONMENTAL MONITORING CHECKLIST (NC = NON-COMPLIANCE, C = COMPLIANCE, NA = NOT APPLICABLE)					
Item No.		Rating	Item No.		Rating
1.	Vehicular access and movement of construction vehicles		12.	Sand extraction	
2.	Movement of construction personnel, labourers and equipment		13.	Stockpiling, handling and storage of building materials	
3.	Vegetation clearing		14.	Servicing and re-fuelling of construction equipment	
4.	Protection of fauna		15.	Liquid waste management	
5.	Cultural and/or archaeological sites		16.	Hazardous materials	
6.	Soil management		17.	Run-off from construction camps	
7.	Erosion control		18.	Fire	
8.	Slope protection		19.	Dust	
9.	Access roads		20.	Noise	
10.	Excavation, backfilling and trenching		21.	Visual	
11.	Levelling		22.	Site clean-up and rehabilitation	
A.	<u>Others</u>				

**Remedial Action on Non-compliance: (Action and Time Plan)**

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<b>Close out:</b> Environmental Control Officer  Name _____  Date _____	<b>Response required by:</b> Contractor  Name _____  Date _____
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Comments:

Records:

☐ PARK MANAGER
 ☐ CONTRACTOR
 ☐ PROJECT MANAGER

Contractor	Witness for Contractor	Employer	Witness for Employer

**Annexure C**

**Code of Conduct for working in the  
South African National Parks**

For viewing purposes only

Contractor

Witness for  
Contractor

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**

Contractor

Witness for  
Contractor

Employer

Witness for  
Employer

## 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 endeavour 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 resident 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 authorised 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;
  - 2.2.3 Hunt or kill an animal, collect, damage or destroy a bird's nest or it's eggs;
  - 2.2.4 Purposely or negligently cause a veld fire or damage any object of geological, archaeological, historical, ethnological or of any other scientific value to SANParks;
  - 2.2.5 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;
  - 2.2.6 Remove any animal (dead or alive) or parts thereof from the park (unless lawfully brought into the park);
  - 2.2.7 Cut down trees or remove plants from a park or in any way damage any tree, plant or seeds;
  - 2.2.8 Feed animals in national parks;
  - 2.2.9 Drive a vehicle without a licence or allow a minor to drive a vehicle under his control;

 Contractor

 Witness for  
Contractor

 Employer

 Witness for  
Employer

- 2.2.10 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;
- 2.2.11 Enter a national park in an:
- Unlicensed (or unregistered) vehicles;
  - Enter or use any closed road (no entry);
- 2.2.12 Vehicles may not be driven recklessly or negligently in a national park.
- 2.2.13 All drivers must consider other drivers and all animals.
- 2.2.14 No person under the influence of alcohol or drugs may drive a vehicle in a national park or be in the driver's seat of a vehicle with the engine running.
- 2.2.15 Without special permission, no person may organize or perform public entertainment or fund-raising campaigns.
- 2.2.16 Angling in rivers or dams is prohibited.
- 2.2.17 Angling, where permitted, is only allowed from sunrise to sunset.
- 2.2.18 Swimming is prohibited at designated angling areas.
- 2.2.19 No person may damage property or endanger property belonging to SANParks.
- 2.2.20 No person may use a radio or musical instruments in such a way as to cause a disturbance to others.
- 2.2.21 No person may dispose of any article or rubble other than in containers provided by SANParks.
- 2.2.22 No person may remove sand, stone or wood without the permission of SANParks.
- 2.2.23 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.
- 2.2.24 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.
- 3.1 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.
- 3.2 Stone, sand and/or soil may not be remove 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.
- 3.3 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.
- 3.4 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.
- 3.5 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.
- 3.6 No animals may be killed in the park.
- 3.7 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.

 Contractor

 Witness for  
Contractor

 Employer

 Witness for  
Employer

**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.

#### 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

8.1 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.

8.2 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 50 km/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 50 km/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.

 Contractor

 Witness for  
Contractor

 Employer

 Witness for  
Employer

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 REST CAMP 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 any one 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;
- 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 authorised 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.

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- 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.

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**TSITSIKAMMA ELECTRICAL INFRASTRUCTURE UPGRADE,  
STORMS RIVER MOUTH, TSITSIKAMMA NATIONAL PARK**

**CONTRACT No. CI-GK-0130**

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**Part C4: Site Information**

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## Tsitsikamma Electrical Infrastructure Upgrade, Storms River Mouth, Tsitsikamma National Park

**CONTRACT No. CI-GK-0130**

### C4. Site Information

#### C4.1 DESCRIPTION OF THE SITE AND ACCESS

The Tsitsikamma National Park is situated in the Eastern Cape, with the park's entrance gate near the Storms River Village. The entrance to the Main Rest Camp is situated off the N2 road, between Plettenberg Bay and Humansdorp.

The image below provides an aerial map of the location of the Park.



#### C4.2 CLIMATE AND WORKING CONDITIONS

Tsitsikamma National Park receives an average rainfall of less than 450mm per year. Rainfall is relatively evenly distributed throughout the year, but there are two peaks: in February-March and October-November. Tsitsikamma receives the lowest rainfall in July and the highest in March.

The winter months are very cold at night and in the early morning.

Summer has more comfortable temperatures and a bit more rainfall. Some days might be cloudy, and occasional rainstorms occur, but mostly it is sunny.

The average daily maximum midday temperatures for Tsitsikamma range from 20.7°C in July to 48°C in February. The minimum temperatures can fall to just above 0°C in the winter.

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**Tsitsikamma Electrical Infrastructure Upgrade,  
Storms River Mouth, Tsitsikamma National Park**

**CONTRACT No. CI-GK-0130**

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**Part C5: Drawings**

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For viewing purposes only

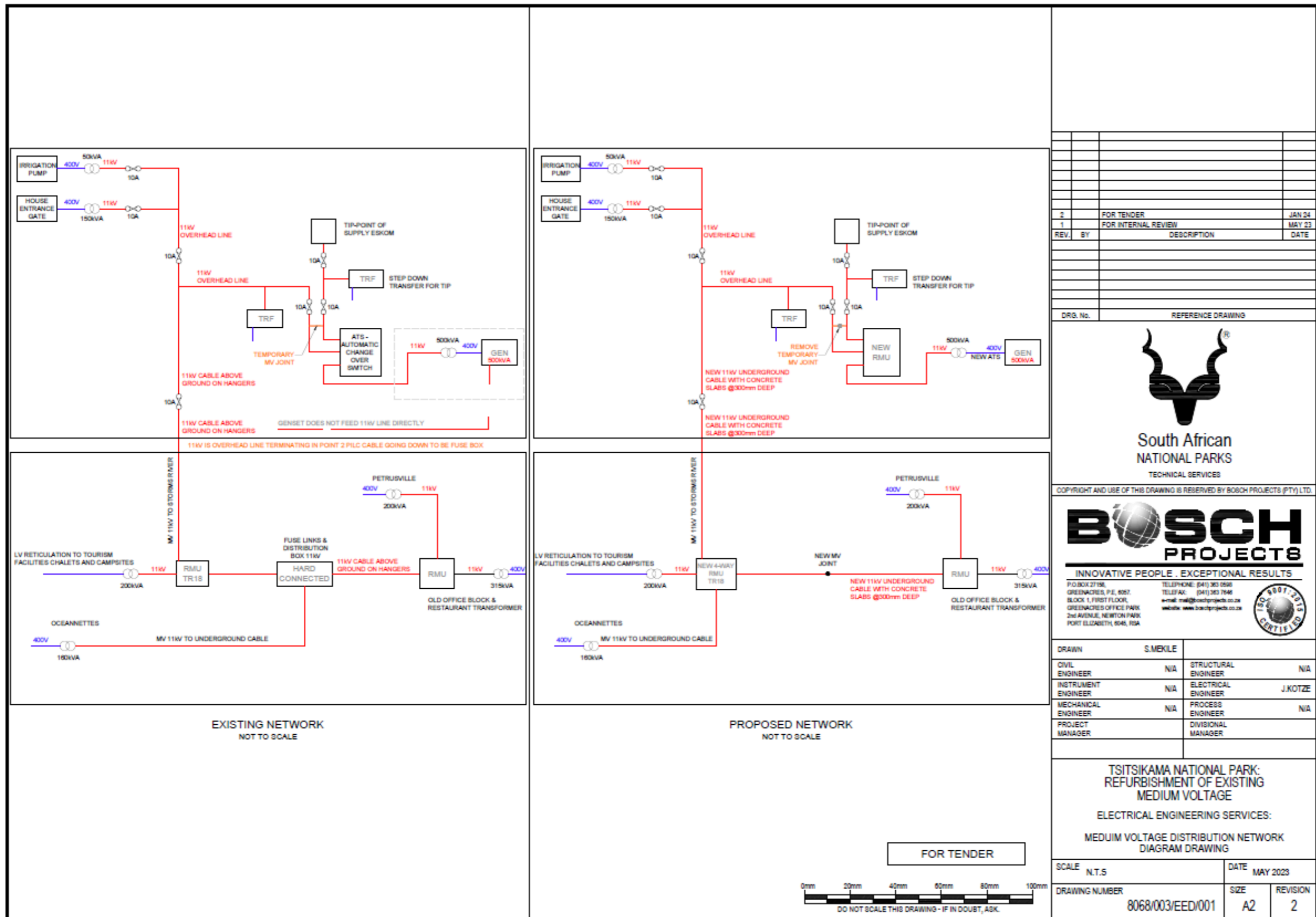
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Employer

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Employer

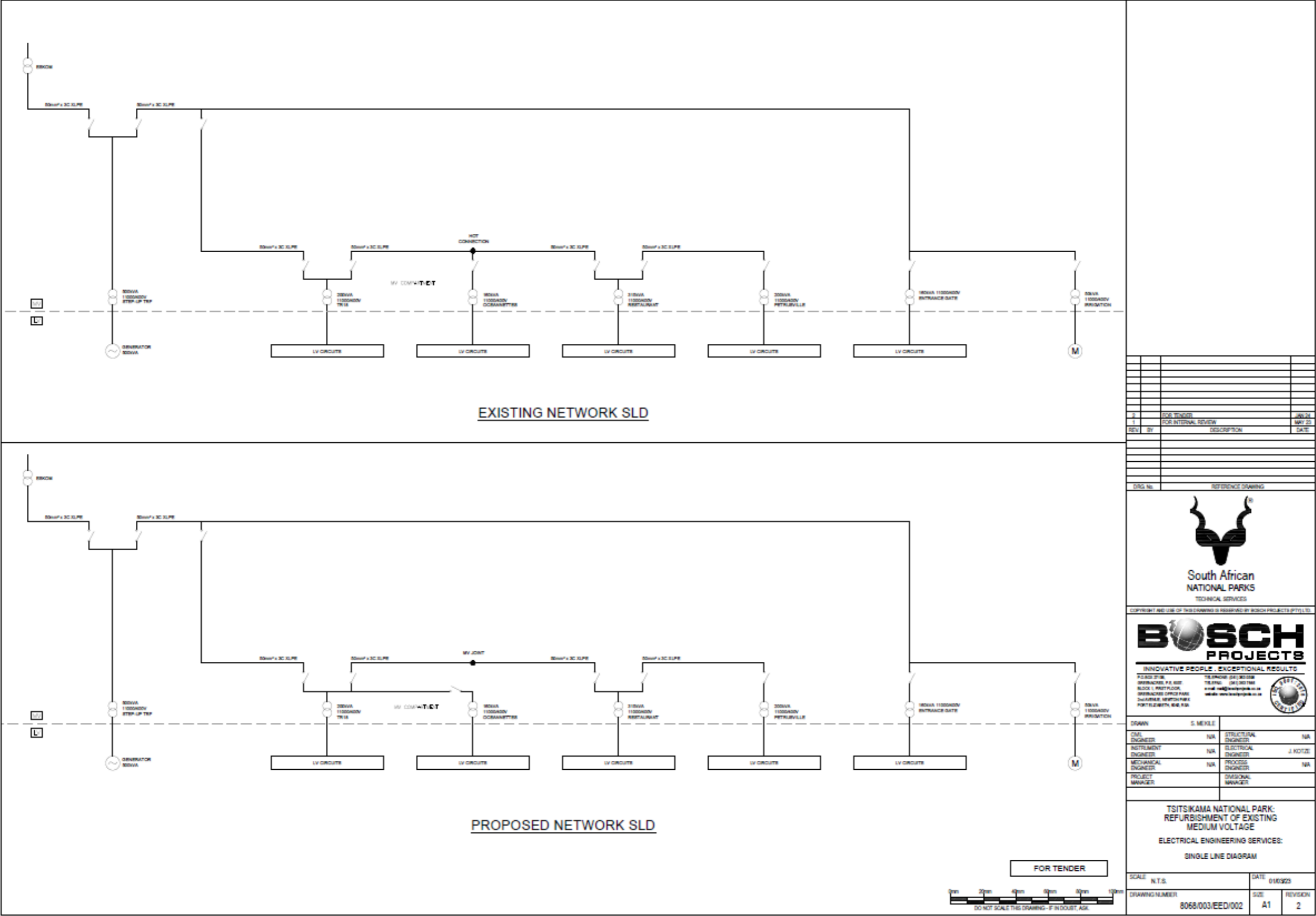


Contractor

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Employer

Witness for Employer



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## **Annexure D**

### **List of Projects related to Electrical Infrastructure and of value >R4 Million completed**

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**Annexure D:**

List of Projects related to **Electrical Infrastructure** and of value **>R4 Million** completed and submitted for FUNCTIONALITY EVALUATION in table below.

Project		Contract amount	Reference / Contact person	Contact Tel. Number
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				

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**Annexure E**  
**Key Personnel**

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**Annexure E:**

List of Key Personnel to be deployed on this project submitted for FUNCTIONALITY EVALUATION in table below.

<b>1. CONTRACTS MANAGER</b>				
<b>Name &amp; Surname:</b>				
<b>Mandatory Requirement:</b>		<b>Registered as:</b>	Installation Electrician <u>or</u> Master Electrician *	
		<b>Institution:</b>		
		<b>Cert. No:</b>		
<b>1.a)</b>	<b>Qualification:</b>			
	<b>Professional Registration:</b>	<b>Institution:</b>		
		<b>Cert. No:</b>		
	<b>ORHVS:</b>	<b>Institution:</b>		
		<b>Cert. No:</b>		
	<b>1.b) Experience as:</b>		<b>1.) Installation Electrician (years):</b>	
		<b>2.) Master Electrician (years):</b>		
<b>2. CONSTRUCTION MANAGER (Site Agent)</b>				
<b>Name &amp; Surname:</b>				
<b>Mandatory Requirement:</b>		<b>Registered as :</b>	Installation Electrician <u>or</u> Master Electrician *	
		<b>Institution:</b>		
		<b>Cert. No:</b>		
<b>2.a)</b>	<b>Qualification:</b>			
	<b>Professional Registration:</b>	<b>Institution:</b>		
		<b>Cert. No:</b>		
	<b>ORHVS:</b>	<b>Institution:</b>		
		<b>Cert. No:</b>		
	<b>1.b) Experience as:</b>		<b>1.) Installation Electrician (years):</b>	
		<b>2.) Master Electrician (years):</b>		
<b>Note:</b> * Circle or mark applicable				

Contractor

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Contractor

Employer

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Employer

**Annexure F**  
**GOOGLE Earth Coordinates**

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Contractor

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Contractor

Employer

Witness for  
Employer

**Annexure F:**



Tenderer: GOOGLE Earth Coordinates

°	'	"	S
°	'	"	E

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Witness for Contractor

Employer

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