

# **TRANSMISSION SERVICES**

## **DRAFT ENVIRONMENTAL MANAGEMENT PLAN**

**PROJECT NAME : ESKOM HENDRINA – PRAIRIE – MARATHON TRANSMISSION LINES**  
**DATE : FEBRUARY 2008**

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## 1. INTRODUCTION

The construction and refurbishment of Transmission lines can have a major impact on the environment. It is thus imperative that better precautions be taken to ensure that environmental damage is minimised. This will take a concerted effort from the project team and proper planning is of the utmost importance.

The scope of this document is to give environmental management plan, to the Contractor constructing the transmission line, in fulfilment of ISO 14001 requirements. This document is part of the contract and supplementary to Eskom's TRMSCAAC1 REV 3. The recommendations and constraints, as set out in this document are enforceable under the general conditions of the contract.

The objective of this management plan is to ensure that:

- All anticipated environmental impacts during the construction periods are identified and mitigation measures are clearly outlined.
- All Environmental Management conditions and requirements are implemented through out the project,
- All Landowner special conditions are identified and taken into consideration as the line traverses private properties.
- Ensure that Eskom Transmission's Environmental Policy TRMPBAAX3 Rev 3 is underwritten at all times.
- Ensure that all environmental conditions as stipulated in the Record of Decision (ROD) are implemented.
- Ensure that problems and claims arising from damage are immediately resolved to ensure a smooth flow of operations.
- To preserve the natural environment by limiting destructive actions on site.
- To ensure that the completion date of the contract is not delayed due to problems with Landowners arising during the course of construction.

## **1.1. PROJECT SCOPE OF WORKS**

## **1.2. BACKGROUND INFORMATION**

### **1.2.1. Project Execution area**

Strategic Environmental Focus (Pty) Ltd, as independent environmental consultants and environmental assessment practitioners, has been appointed by Eskom Transmission to compile and submit an Environmental Management Plan (EMP) to the decision making authority; Department of Environmental Affairs and Tourism (DEAT); for the construction of the following:

- A 400 kV Transmission Line of approximately 85 km between Hendrina and Prairie substations;
- A 400 kV Transmission Line of approximately 100 km between Prairie and Marathon substations;
- Two new 400 kV substations, one each near the existing Prairie and Marathon substations; and
- Associated works to integrate the stations into the transmission grid.

The Transmission Lines and their associated substations are located in the Mpumalanga Province. The substation at Hendrina is located near the Arnot Power Station. The substation at Prairie is located at the Assmang Plant adjacent to Machadodorp. The Marathon substation is located near Nelspruit.

A new servitude of 55 m wide will have to be created to cater for the Transmission Lines. However, this report deals with the application for the construction of the two substations at Prairie and Marathon only. In this respect, it is important to note that two related EIA applications have been submitted: one for the substations (the subject of this EIA report) and another for the Transmission Lines (the subject of another EIA report). The public participation processes for these applications is being conducted as a single process, but the reporting is separated.

The underlying philosophy of this document aims to advocate a comprehensive and sustainable urban environment satisfying the needs of economic growth.

The execution area is limited to the area as demarcated by Eskom and shown on the locality plan (annexed....) and site plans (annexed...). Any area outside the Eskom servitude area, required to facilitate access, construction activities, construction camps or material storage areas, shall be negotiated with the affected Landowner and written agreements shall be obtained. All construction areas shall be cleared in accordance with the Eskom Standard for Bushclearing ESKASABG3. Any extra space to be cleared outside the servitude shall be negotiated with the relevant Landowner and approved by Eskom. All areas marked as no go areas inside the servitude shall be treated with the utmost care and responsibility.

Should water be required from sources other than Eskom supply, a written agreement shall be reached between the Contractor and the Landowner. **Should the Contractor be required to use water from a natural source, the Contractor shall supply a method statement to that effect and obtain the required permits.** Strict control shall be maintained and the ECO shall regularly inspect the abstraction point and methods used.

## **1.2.2. TECHNICAL SPECIFICATION**

### **1.2.2.1. LENGTH:**

The length of the line will be approximately **185km**.

### **1.2.2.2. CONSTRUCTION AREA:**

The servitude width is **55m**. Construction is limited to the width of the servitude in which the line will be constructed.

**1.2.2.3. TOWER PARAMETERS:**

- Tower spacing : 300m to 400m. (Average)
- Tower height : 30m to m. (Average) – Depending on the type chosen
- Tower clearance : Phase to phase clearances vary from about 5.7 to 7.5 m depending on the type of tower used for that specific Transmission line.
- 1.3.3.3. Conductor attachment height : **Depending on the type of tower chosen** m. (Average)
- 1.3.3.4. Conductor type : Tern conductor.
- 1.3.3.5 Minimum ground clearance : Minimum phase to ground clearance is about 8.1m high.

**1.2.2.4. TOWER DESIGN:**

**The following types of towers are used on this project:**

(Update list as per project requirements)

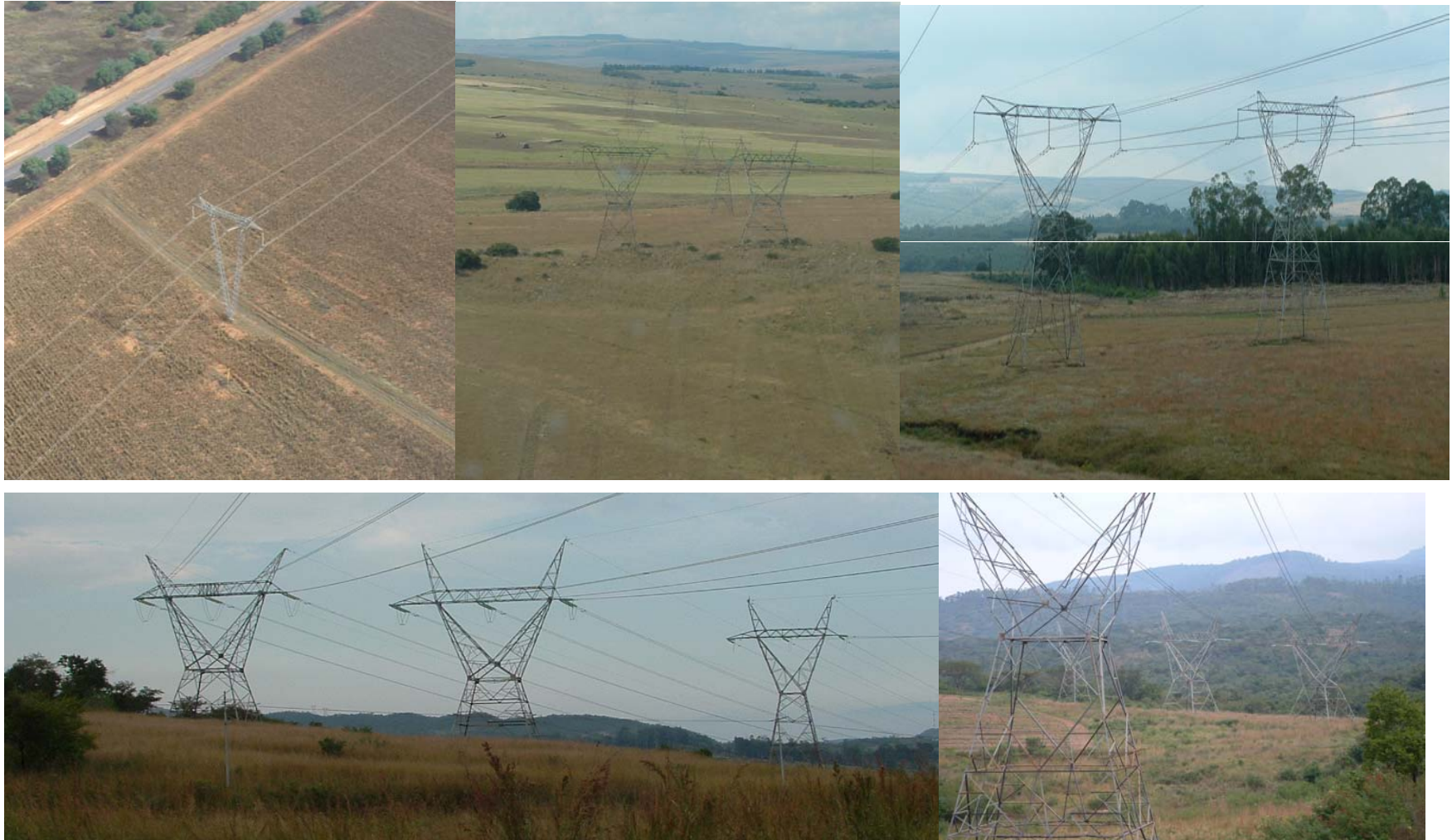
Types of Towers	Y/N
Cross rope suspension tower.	
Compact cross rope suspension tower.	
Guyed-V suspension tower.	
Self-supporting suspension tower.	
Self-supporting strain tower.	



Present Self Supporting Suspension Pylons



**Existing Transmission Lines in the study area**



### 1.2.2.5. MAJOR ACTIVITIES OF THE PROJECT

The project involves 21 major activities. These are outlined in the table below (to be provided by the project manager):

ACTIVITIES	PROPOSED PROGRAMME	
	START	FINISH
○ Environmental Impact Assessment – Refer to annexure “E” for a Copy of ROD.		
○ Negotiations for the servitude –Landowners, their contact details and their special conditions are listed under section 5 of this document .		
○ Land survey to determine the exact routing of the line and tower placement.		
○ Pegging of bend tower by a Transmission surveyor.		
○ Profiling work to produce the profiles for construction (refer to annexure “C”).		
○ Establishment of camp sites for the Contractors’ workforce. An approved (by the relevant Government authorities) site Camp EMP will be used to guide the establishment of the camp site		
○ Negotiations with landowners for access roads to the servitude.		
○ Servitude gate installation to facilitate access to the servitude.		
○ Vegetation clearing to facilitate access, construction and the safe operation of the line.		

○ Establishing of access roads on the servitude where required as per design parameters in TRMSCAAC1 rev 3.		
○ Pegging of tower positions for construction by the contractor.		
○ Transportation of equipment, materials and personnel to site and stores.		
○ Excavation and casting of concrete for foundations for the towers.		
○ Tower assembly and erection.		
○ Conductor stringing and regulation.		
○ Taking over the line from the contractor for commissioning.		
○ Final inspection of the line, commissioning and hand over to the Grid Line and Servitude Manager for operation.		
○ Rehabilitation of disturbed areas.		
○ Signing off of all Landowners upon completion of the construction and rehabilitation		
○ Handing over and taking over of the servitude by the Grid Environmental Manager.		
○ Operation and maintenance of the line by the Grid.		

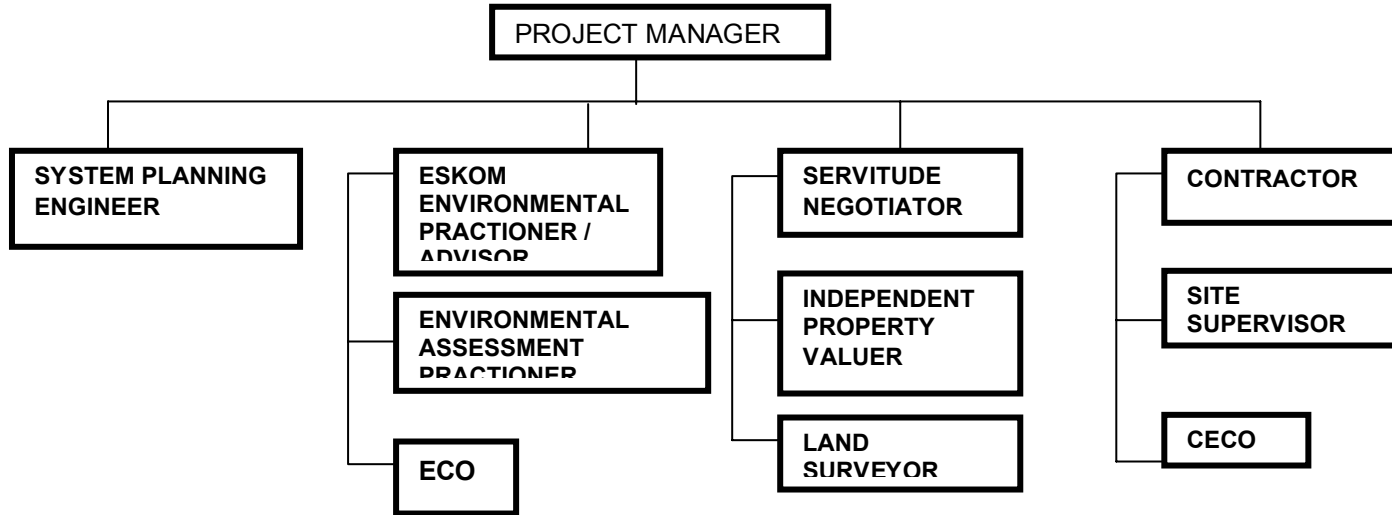
The final inspection for the release of the Contractors' guarantee takes place a year after completion of the project. The line will be in operation immediately after completion of the project and will stay operational for the lifetime of the plant.

## 2. PROJECT TEAM

Profession/Role	Name	Contact Details	Remarks
System Planning Engineer			
Eskom Environmental Practitioner / Advisor			
Servitude Negotiator			
Project Manager (PM)			
Site Manager			
ECO (Environmental Control Officer)			
Contractor			
<b>CECO (Contractor Environmental Control Officer (Dedicated person appointed by the contractor))</b>			
Grids Environmental Practitioner			
Grid Line & Servitude Manager			
Environmental Assessment Practitioner			
Authorising Department			

*This should also outline the responsible parties and reporting procedures- including progress reporting.*

## 2.1. REPORTING STRUCTURE.



## 2.2. ROLES AND RESPONSIBILITIES OF THE PROJECT TEAM

2.2.1. System Planning Engineer

2.2.2. Eskom Environmental Practitioner / Advisor (during feasibility stages & construction phases)

- To ensure that an un-biased, environmental impact assessment (EIA) with a thorough public participation is conducted for the proposed project. Such assessment to be in accordance to the latest legislation and acceptable to all interested and affected parties and to finally be approved by the relevant authority.
- To secure an uncontested Record of Decision.
- To project manage the independent Environmental Consultants through out the EIA life cycle and to ensure that a friendly, practical, environmental management plan (EMP) for the construction phase of a project is compiled and approved by the relevant and appropriate government authorities.
- To ensure that all conditions as stipulated in the ROD are met.
- To conduct spot audit during construction.

### **2.2.3. Servitude Negotiator**

- To select a route where Tx powerline will transverse, within the environmentally prescribed corridor.
- To negotiate servitude on private and public owned properties.
- To identify landowner conditions & requirements

### **2.2.4. Project Manager/ Site Manager**

- Represents and act on behalf of Eskom Transmission regarding the administration of contracts.
- In consultation with the system Planning Engineer, determines the scope of work.
- To provide scheduling, aspects of co-ordination and estimating
- Ensure implementation of the project plan within cost, time and quality constraints

- Ensure that implementation of EMP is executed as planned.
- Keep the asset owner informed of progress made during the life cycle of the project.

No work shall commence until permission is granted from the Environmental Advisor from Transmission Services and the ROD from DEAT has been obtained. The Project Manager shall ensure that all conditions in the ROD are fulfilled before the Contractor occupies the site. The Grid shall be kept informed of all developments on construction at all times. All the requirements from the Grid must be considered during the construction phase to ensure smooth transition.

#### **2.2.5. Environmental Control Officer**

The Environmental Control Officer shall convey the contents of this document, the conditions of the Record of Decision from DEAT as well as the Landowner Special conditions to the Contractor site staff and discuss the contents in detail with Eskom Project Manager and Contractor at a pre-construction meeting. This formal induction training is a requirement of ISO 14001 and shall be done with all main and sub-contractors. Record of the training date, people whom attended and discussion points shall be kept by the ECO.

The Environmental Control Officer shall make contact with the local Extension Officer of the Dept. of Agriculture and the Chairpersons of the Farmers Associations where the route traverses, as these contacts have valuable information about the area and the local farming community.

Landowners shall therefore be informed timeously of the construction programme, duration and all interference with their daily activities.

The contact numbers of the ECO and CECO shall be made available to Landowners.

ECO officer will report progress made on a monthly basis to the PM and Land & Rights EIA Manager. These reports shall be available at all times, on site or in project file and on request by auditors, DEAT and other I&APs.

ECO shall record all Non Conformances and action plans to ensure that measures are put in place to remedy possible effect.

#### **2.2.6. Contractor**

- To provide all necessary supervision during the execution of the project. He/ She should be available on site all the time.
- To appoint a competent CECO
- To implement the projects as per the approved project plan.
- To ensure that implementation is conducted in an environmentally acceptable manner.
- To fulfil all obligations as per the agreed contract.
- To comply with special conditions as stipulated by Landowners during the negotiation process.
- To inform and educate all employees about the environmental risks associated with the different activities that should be avoided during the construction process and lessen significant impacts to the environment.

#### **2.2.7. Eskom Environmental Practitioner (During Operational Stage)**

- To implement and integrate environmental management systems by ensuring compliance to ISO 14000 & monitoring performance
- Report environmental incidents
- Provides environmental training
- Ensures compliance to legislations and other legally binding documents



### 2.2.8. Environmental Consultants

- Investigate and produce assessment of impacts on the environment related to the project
- Ensure the implementation of a thorough public participation process
- Draft and submit scoping and EIR to relevant Government Departments
- Draft EMP and submit for approval to the relevant Government Departments.

### 2.2.9. Authorising Department.

To provide ROD on all applications lodged for the proposed Transmission lines, substations and related activities.

## 3. ACRONYMS

Name of Act / Eskom Specification/ Procedure	Abbreviation
Access to Farms	TRMPVACV2 REV1
Agricultural Pests Act of 1983 (Act No. 36 of 1983)	APA
Animals Protection Act of 1962 (Act No. 71 of 1962)	APA
Atmospheric Pollution Prevention Act of 1965 (Act No. 45 of 1965)	APPA
Biodiversity Act of 2004 (Act No. 10 of 2004)	BDA
Bush Clearing	ESKASABG3
Conservation of Agricultural Resources Act of 1993 (Act No. 43 of 1983)	CARA
Department of Water Affairs	DWAF
Environment Conservation Act of 1989 (Act NO. 73 of 1989)	ECA
Eskom Manual on Storage and Handling of Flammable and combustible liquids	ESKAMAAD1

Fencing Act of 1963 (Act No. 31 of 1963)	FA
Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act of 1947 (Act No. 36 of 1947)	FFASA
Game Theft Act of 1991 (Act No. 105 of 1991)	GTA
Hazardous Substances Act of 1973 (Act No. 15 of 1973)	HSA
Labour Relations Act of 1995 (Act No.66 of 1995)	LRA
Minerals Act of 1991 (Act 50 of 1991)	MA
Mountain Catchment Areas Act of 1970 (Act No. 63 of 1970)	MCAA
Mineral and Petroleum Resources Development Act of 2002 (Act No. 28 of 2002)	MPRDA
Air Quality Act of 2004 (Act No 39 of 2004)	NAQA
National Environmental Management Act of 1998 (Act No. 107 of 1998)	NEMA
National Forests Act of 1998 (Act No. 84 of 1998)	NFA
Natural Heritage Resources Act of 1999 (Act No. 25 of 1999)	NHRA
National Veld and Forest Fire Act 1998 (Act No. 101 of 1998)	NVFFA
National Water Act of 1998 (Act No. 36 of 1998)	NWA
Occupational Health and Safety Act of 1993 (Act No. 85 of 1993)	OHSA
Protected Areas Act of 2003 (Act No. 57 of 2003)	PAA
Protected Areas Amendment Act of 2004 (Act 31 of 2004)	PAAA
Skills Development Act of 1998 (Act No. 97 of 1998)	SDA
Transmission Line Towers and Line Construction	TRMSCAAC1 REV3
World Heritage Convention Act of 1999 (Act No. 49 of 1999)	WHCA
Water Services Act of 1997 (Act 108 of 1997)	WSA

#### 4. ENVISAGED ACTIVITY SCHEDULE AND ASSOCIATED IMPACTS

The key environmental issues that are identified have been based on the experience of the EAP (on similar developments which entail environmental scoping and public participation processes) as well as information obtained from the site visit. The Integration Meeting of specialists as well as consultation with I&APs had also contributed to the identification of key environmental issues related to the proposed development.

The potential impacts and key issues identified include:

- Loss of soils with high agricultural potential;
  - Suitability of geological and soil conditions for construction of the proposed infrastructure;
  - Soil and water (surface and groundwater) contamination;
  - Soil erosion and pollution;
  - Catchment processes in terms of wetlands and watercourses;
  - Destruction of flora and displacement of fauna;
  - Impacts of the infrastructure / equipment on the bird life;
  - Visual impacts;
  - Impacts of features with historical and cultural value;
  - Socio-economic and tourism impact;
  - Noise impacts during construction phase; and
  - Safety and security of the substations.
- 
- The manner in which these issues can affect the environment is briefly outlined as follows:
  - Contamination of groundwater as a result of deposition of contaminants during the construction phase;
  - Contamination of surface water as a result of siltation caused by increased erosion, during the construction phase. Increased erosion could be caused by the creation of preferred drainage lines;

- Increased erosion and surface water runoff from hydrological systems in close proximity to the substation as a result of vegetation clearing mainly during the construction phase;
- Visual intrusion as a result of the building and operation of the substations;
- Noise impacts from construction vehicles and other heavy-duty equipment used during the construction and operational phases of the substations;
- Floral destruction through vegetation clearing and earthworks during the construction phase, and maintenance activities during the operational phase;
- Loss of high potential arable land as a result of the construction of the proposed substations on current farm lands;
- Habitat destruction as a result of vegetation clearing and other pre-construction activities;
- Faunal destruction and displacement as a result of migration and competition from introduced species, the most significant being the impacts on bird life;
- Impact on safety and security, as a result of construction and operational activities of the proposed substations;
- Destruction of heritage / historical sites, through excavation works for the construction of the substations; and
- Impacts related to the social environment and impact on tourism e.g. farm owners, game reserves and other I&APs.
- Loss of soils with high agricultural potential;
- Suitability of geological and soil conditions for construction of the proposed infrastructure;
- Soil and water (surface and groundwater) contamination;
- Soil erosion and pollution;
- Catchment processes in terms of wetlands and watercourses;
- Destruction of flora and displacement of fauna;
- Impacts of the infrastructure / equipment on the bird life;
- Visual impacts;
- Impacts of features with historical and cultural value;
- Socio-economic and tourism impact;
- Noise impacts during construction phase; and
- Safety and security of the substations.

### Pre-Construction

<b>Phase of development</b>	<b>PRE-CONSTRUCTION (PLANNING)</b>
<b>Impact / issue</b>	<b>GENERAL</b>

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p><b>Project contract and programme</b></p> <p>The EMP must be included as part of the tender documentation thereby making it part of the enquiry document to make the recommendations and constraints, as set out in this document, enforceable under the general conditions of contract.</p> <p>A copy of this EMP must be available on site. The Contractor shall ensure that all the personnel on site, sub-contractors and their team, suppliers, etc. are familiar with and understand the specifications contained in the EMP.</p>	<ul style="list-style-type: none"> <li>• Contingencies for minimising negative impacts anticipated to occur during the construction phase</li> <li>• Ensure environmental awareness and formalise environmental responsibilities and implementation</li> </ul>	<ul style="list-style-type: none"> <li>• Contract records</li> <li>• Signed declaration pro forma's</li> </ul>	Project team	-

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p><b>Appointments and duties of project team</b></p> <p>The contact details for the ECO, RE, EO, Contractor and ESO shall be completed on the attached proforma and a copy kept on site (As applicable).</p> <p>Before construction activities commence, role players must have a clear indication as to their role in the implementation of this EMP as indicated in 2.1 Table 1.</p> <p>Subcontractor(s) contracts with the principle contractor must contain a clause to the effect that the disposal of all construction-generated refuse / waste to an officially approved dumping site is the responsibility of the subcontractor in question and that the subcontractors are bound to the management activities stipulated in this EMP.</p>	<ul style="list-style-type: none"> <li>Contingencies for minimising negative impacts anticipated to occur during the construction phase</li> </ul>	<ul style="list-style-type: none"> <li>Contract records</li> <li>Signed declaration pro forma's</li> </ul>	Project team	As and when required
<p><b>Method statements</b></p> <p>All activities which require method statements may only commence once the method statements have been approved by the engineer and/or ECO.</p> <p>Where applicable, the contractor shall provide job-specific training on an <i>ad hoc</i> basis when workers are engaged in activities, which require method statements.</p> <p>It must be ensured that Eskom policies, guidelines and standards are consulted to ensure that method statements meet requirements as set out in these documents.</p>	<ul style="list-style-type: none"> <li>Contingencies for minimising negative impacts anticipated to occur during the construction phase</li> </ul>	<ul style="list-style-type: none"> <li>Approved method statements and relevant pro forma documents</li> <li>Training records</li> </ul>	Contractor, Engineer	As and when required

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p><b>Site demarcation and development</b></p> <p>The site must be completely and clearly demarcated and fenced before the contractors set up their crew camps or begin construction.</p> <p>All 'general' and 'specific' conditions contained in the RoD must be adhered to and considered when site demarcation and development takes place.</p> <p>No activities will be allowed outside the demarcated area.</p>	<ul style="list-style-type: none"> <li>Contingencies for minimising negative impacts anticipated to occur during the construction phase</li> </ul>	<ul style="list-style-type: none"> <li>Demarcated area's</li> <li>Filled in section of this document</li> </ul>	<p>Engineer, contractor</p>	<p>As and when required</p>
<p><b>Emergencies, non-compliance and communication</b></p> <p>The contractor must provide method statements on the protocols to be followed, and contingencies to be put in place for the following potential incidents before construction may begin: Contamination of natural water resources from spills; contamination of soils from spills; and fire.</p> <p>The contractor must ensure that all the contact details and telephone numbers of health personnel, fire fighters and decision making authorities are noticeable on site in case of an emergency.</p>	<ul style="list-style-type: none"> <li>Contingencies for minimising negative impacts anticipated to occur during the construction phase</li> </ul>	<ul style="list-style-type: none"> <li>Method statements</li> </ul>	<p>Contractor, Engineer</p>	<p>As and when required</p>

**Table 1: Construction Phase**

<b>Phase of development</b>	<b>CONSTRUCTION</b>
<b>Impact / issue</b>	<b>Materials</b>

<b>MITIGATION MEASURE</b>	<b>MANAGEMENT OBJECTIVES</b>	<b>MEASURABLE TARGETS</b>	<b>RESPONSIBLE PARTY</b>	<b>FREQUENCY OF ACTION</b>
<b>Handling</b>				
<p><b>Oil and chemicals</b></p> <p>The contractor must provide method statements for the “handling &amp; storage of oils and chemicals”, “fire”, and “emergency spills procedures”.</p> <p>These substances must be confined to specific and secured areas within the contractor’s site, and in a way that does not pose a danger of pollution even during times of high rainfall.</p>	<ul style="list-style-type: none"> <li>• Prevention of pollution of the environment</li> <li>• Minimise chances of transgression of the acts controlling pollution</li> </ul>	<ul style="list-style-type: none"> <li>• No pollution of the environment</li> <li>• No litigation due to transgression of pollution control acts</li> <li>• No complaints from I &amp; AP’s</li> <li>• Method statements</li> </ul>	Contractor	Daily



MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p>These areas must be imperviously banded with adequate containment (at least 1.5 times the volume of the fuel) for potential spills or leaks</p> <p>Drip trays (minimum of 10cm deep) must be placed under all vehicles that stand for more than 24 hours. Vehicles suspected of leaking must not be left unattended, drip trays must be utilised.</p> <p>The surface area of the drip trays will be dependent on the vehicle and must be large enough to catch any hydrocarbons that may leak from the vehicle while standing.</p> <p>All spilled hazardous substances must be contained in impermeable containers for removal to a licensed hazardous waste site, (this includes contaminated soils, and drenched spill kit material).</p>				

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p><b>Stockpiles</b></p> <p>All stockpiled material must be easily accessible without any environmental damage.</p> <p>All temporarily stockpiled material must be stockpiled in such a way that the spread of materials are minimised.</p> <p>The stockpiles may only be placed within the demarcated areas the location of which must be approved by the RE, EO or ECO (As applicable).</p> <p>The contractor must avoid vegetated areas that will not be cleared.</p> <p>No plant, workforce or any construction related activities may be allowed onto the topsoil stockpiles.</p> <p>Stock piles must not be higher than 2m to avoid compaction thereby maintaining the soil integrity and chemical composition.</p>	<ul style="list-style-type: none"> <li>• Minimise scaring of the soil surface and land features</li> <li>• Minimise disturbance and loss of soil</li> <li>• Minimise construction footprint</li> <li>• Minimise sedimentation of nearby drainage lines</li> <li>• Maintain the integrity of topsoil's for landscaping and rehabilitation</li> <li>• Containment of invasive plant growth</li> <li>• Minimise contamination of storm water run-off</li> </ul>	<ul style="list-style-type: none"> <li>• No visible erosion scars once construction is completed</li> <li>• The footprint has not exceeded the agreed site in terms of EA etc.</li> <li>• Minimal invasive weed growth</li> <li>• No signs of sedimentation and erosion</li> </ul>	Contractor	Daily

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p>Cement</p> <p><b>The contractors must provide and maintain a method statement for “cement and concrete batching”. The method statement must provide information on proposed storage, washing &amp; disposal of cement, packaging, tools and plant storage.</b></p> <p><b>The mixing of concrete shall only be done at specifically selected sites on mortar boards or similar structures to contain run-off into, drainage lines, streams and natural vegetation.</b></p> <p><b>Cleaning of cement mixing and handling equipment shall be done using proper cleaning trays.</b></p> <p><b>All empty containers must be stored in a dedicated area and later removed from the site for appropriate disposal at a licensed commercial facility.</b></p> <p>Any spillage that may occur must be investigated and immediate remedial action shall be taken.</p>	<ul style="list-style-type: none"> <li>• Minimise the possibility of cement residue entering into the surrounding environment</li> <li>• Minimise pollution of soil, surface and ground water resources</li> </ul>	<ul style="list-style-type: none"> <li>• No evidence of contaminated soil on the construction site</li> <li>• No evidence of contaminated water resources</li> <li>• Method statement</li> </ul>	Contractor	Monitored daily

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p>The visible remains of concrete, either solid, or from washings, shall be physically removed immediately and disposed of as waste to a registered landfill site.</p> <p>Cement batching areas must be located in consultation with the RE to ensure residues are contained and that the proposed location does not fall within sensitive areas such as drainage lines, storm water channels, etc.</p>				
<p>DANGEROUS AND TOXIC MATERIALS</p> <p>Provision of storage facilities</p> <p><b>Materials such as fuel, oil, paint, herbicide and insecticides must be sealed and stored in bermed areas or under lock and key, as appropriate, in well-ventilated areas.</b></p>	<p>Prevention of pollution of soil, surface and ground water resources in the immediate and surrounding environments</p>	<p>No visible signs of pollution</p> <p>No litigation due to transgression of pollution control acts</p>	<p><b>Contractor</b></p>	<p><b>Monitor daily</b></p>

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p><b>Sufficient care must be taken when handling these materials to prevent pollution. Training on the handling of dangerous and toxic materials must be conducted for all staff prior to the commencement of construction.</b></p> <p><b>In the case of pollution of any surface or groundwater, the Regional Representative of the Department of Water Affairs and Forestry (DWAF) must be informed immediately.</b></p> <p>Storage areas shall display the required safety signs depicting “no smoking”, No Naked lights” and “Danger” containers shall be clearly marked to indicate contents as well as safety requirements.</p> <p><b>The contractor shall supply a method statement for the storage of hazardous materials at tender stage.</b></p> <p><b>Material Safety Data Sheets (MSDS) must be prepared for all hazardous substances on site and supplied by the supplier where relevant. MSDS’s must be updated as required.</b></p>	<p>Minimise chances of transgression of the acts controlling pollution</p>			

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p>Where Polycarbonate Biphenyls (PCB) is required to be used it is imperative that Eskom policy document <i>ESKASAAC2</i> is consulted.</p>				
<p>Fuel storage and oils</p> <p><b>The contractors must provide and maintain a method statement for “fuel tanks and refuelling procedures”.</b></p> <p>Fuel storage tanks on the site shall be on an impervious surface that is bunded and able to contain at least 110% of the volume of the tanks. The filler tap must be inside the bunded area where possible and the bund wall must not have a tap or valve.</p> <p>A Flammable Liquid License must be obtained for diesel volumes greater than 200 litres.</p> <p>Environmental Authorisation is required for volumes greater than 30 000 litres</p> <p>Fuel storage should be covered during the rainy season.</p>	<ul style="list-style-type: none"> <li>• Prevention of pollution of soil, surface and ground water resources in the immediate and surrounding environments</li> <li>• Minimise chances of transgression of the acts controlling pollution</li> </ul>	<ul style="list-style-type: none"> <li>• No visible signs of pollution</li> <li>• No litigation due to transgression of pollution control acts</li> <li>• Method statement</li> </ul>	<p><b>Contractor</b></p>	<p><b>Once off, as required</b></p>

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p>Use of dangerous and toxic materials</p> <p><b><i>Eskom Ref: ESKASAAC2</i></b></p> <p><b>The contractor shall keep the necessary materials and equipment on site to deal with spills/ fire of the materials present should they occur.</b></p> <p><b>The contractor shall set up a procedure for dealing with spills / fire, which will include notifying the ECO and or RE and the relevant authorities prior to commencing with construction. These procedures must be developed with consultation and approval by the appointed EO, ECO or RE as applicable.</b></p> <p><b>A record must be kept of all spills and the corrective action taken.</b></p>	<ul style="list-style-type: none"> <li>• Prevention of pollution of soil, surface and ground water resources in the immediate and surrounding environments</li> <li>• Minimise chances of transgression of the acts controlling pollution</li> </ul>	<ul style="list-style-type: none"> <li>• No pollution of the environment</li> <li>• No litigation due to transgression of pollution control acts</li> </ul>	<p><b>Contractor</b></p>	<p><b>As required</b></p>

<b>Phase of development</b>	<b>CONSTRUCTION</b>
<b>Impact / issue</b>	<b>PLANT</b>

<b>MITIGATION MEASURE</b>	<b>MANAGEMENT OBJECTIVES</b>	<b>MEASURABLE TARGETS</b>	<b>RESPONSIBLE PARTY</b>	<b>FREQUENCY OF ACTION</b>
<p><b>Eating areas</b></p> <p><b>The Contractor shall, in conjunction with the EO, ECO or RE designate restricted eating areas for eating during normal working hours. Adequate closed refuse bins must be provided and cleaned on a daily basis.</b></p> <p>No fires are to be lit outside of a facility designed to contain fires. The adequacy and positioning of these structures must be determined in consultation with the EO, ECO or EO.</p> <p>The feeding, or leaving of food, for stray or other animals in</p>	<ul style="list-style-type: none"> <li>• Control potential influx of vermin and flies</li> <li>• Neat work place and hygienic environment</li> </ul>	<ul style="list-style-type: none"> <li>• No visual sign of vermin and flies</li> <li>• No complaints from I &amp; AP's</li> </ul>	Contractor, EO	monitor daily



MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p>the area is strictly prohibited.</p> <p>Litter (even if originating outside the camp) and concrete bags etc. must be picked up daily and put into suitably closed bins.</p>				

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p><b>Toilets and ablution facilities</b></p> <p>The contractor will be responsible for providing all sanitary arrangements for his and the sub-contractors team. A minimum of one chemical toilet shall be provided per 15 persons.</p> <p>Sanitary arrangements shall be to the satisfaction of the ECO, EO or RE and the local authority. Toilets shall be of the chemical type. The contractor shall keep the toilets in a clean, neat and hygienic condition. The contractor shall supply toilet paper at all toilets at all times. Toilet paper dispensers shall be provided in all toilets.</p> <p>Toilets provided by the contractor must be easily accessible and a maximum of 50m from the works area to ensure they</p>	<ul style="list-style-type: none"> <li>• Ensure proper sanitation is achieved which will encourage the workforce to utilise toilets provided and not the surrounding habitat</li> <li>• Minimise potential of diseases on site</li> <li>• Minimise potential to pollute soils, water resources and natural habitats</li> </ul>	<ul style="list-style-type: none"> <li>• Workforce use toilets provided</li> <li>• No complaints received from I &amp; AP's as well as members of the workforce</li> <li>• No visible or measurable signs pollution of the environment (soils, ground and surface water)</li> </ul>	<p>Contractor, RE or EO</p>	<p>As and when required</p>

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p>are utilised. All toilets will be located within the contractor's camp. Should toilets be needed elsewhere, their location must first be approved by the RE, EO or ECO (As applicable).</p> <p>The contractor (who must use reputable toilet-servicing company) shall be responsible for the cleaning, maintenance and servicing of the toilets. The contractor (using reputable toilet-servicing company) shall ensure that all toilets are cleaned and emptied before the builders' or other public holidays.</p> <p>Placements of toilets should avoid the possibility of the area surrounding the toilets becoming flooded.</p> <p>The toilet facilities provided must be used at all times</p> <p>The ablution facility must not be reflective to pose a visual</p>				

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
impact.				

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p><b>Waste management</b></p> <p>The contractors must provide and maintain a method statement for “solid waste management”. The method statement must provide information on proposed licensed facility to be utilised and details of proposed record keeping for auditing purposes.</p> <p>Waste shall be separated into recyclable and non-recyclable waste, and shall be separated as follows:</p> <ul style="list-style-type: none"> <li>· Hazardous waste: including (but not limited to) old oil, paint, etc,</li> <li>· General waste: including (but not limited to) construction rubble, Reusable construction material.</li> <li>· Recyclable waste shall preferably be deposited in separate bins.</li> </ul> <p>The contractor is advised that “Collect-a-Can” collect tins, including paint tins, chemical tins, etc. and “Consol” collect glass for recycling.</p> <p>Any illegal dumping of waste will not be tolerated, this action will result in a fine, and if required further legal action will be</p>	<ul style="list-style-type: none"> <li>• Sustainable management of waste by recycling</li> <li>• To keep the site neat and tidy</li> <li>• Minimise litigation and complaints by I&amp;AP’s</li> <li>• Reduce visual impact</li> <li>• Control potential influx of vermin and flies thereby minimising the potential of diseases on site and the surrounding environment</li> <li>• Minimise potential to pollute soils and natural habitats</li> </ul>	<ul style="list-style-type: none"> <li>• Disposal of rubble and refuse in an appropriate manner with no rubble and refuse lying on site</li> <li>• Site is neat and tidy</li> <li>• No complaints from surrounding residents and businesses</li> <li>• Sufficient containers available on site</li> <li>• No visible or measurable signs of pollution of the environment (soils, ground and surface water)</li> <li>• A skip, with a cover, must be used to contain refuse from campsite bins, rubble and other construction material</li> <li>• Method statement</li> </ul>	Contractor, EO	Daily

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p><b>Dust</b></p> <p>The contractor must provide and maintain a method statement for “dust control”. The method statement must provide information on the proposed source of water to be utilised and the details of the licenses acquired for such usage.</p> <p>Potable water can not be used as a means of dust suppression, alternative measures must be sourced. The use of ‘grey’ water must be investigated as an alternative. The contractor will be responsible to source this water and obtain the required approvals to utilise this water for the purpose of dust suppression.</p> <p>Dust production must be controlled by regular watering of roads and works area, should the need arise. <b>(NB:</b> Concrete dust is toxic and damages soil properties. Therefore watering</p>	<ul style="list-style-type: none"> <li>• Reduce dust</li> <li>• Reduce visual impact</li> <li>• Minimise loss of valuable soil material</li> </ul>	<ul style="list-style-type: none"> <li>• No visible signs of dust</li> <li>• No complaints from interested and Affected parties</li> <li>• No incidences reported to ECO</li> <li>• No visible evidence of dust contamination on the surrounding environment</li> <li>• Method statement</li> <li>• Baseline targets not exceeded during regular monitoring of dust counts</li> </ul>	RE, Contractor,  EO	Monitored daily

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p>to prevent dust spread must not be done where concrete dust has fallen or it will infiltrate into the soil. Concrete bags must not be allowed to blow around the site and spread cement dust).</p> <p>In addition to the standard dust suppression measures and where these measures are not sufficient, main access roads and the site must be surfaced with a temporary surface such as gravel to assist with dust suppression.</p> <p>At the end of construction, the site must be fully rehabilitated by removing the temporary surface, ripping the area to loosen the soil and the area must be re-vegetated with locally indigenous vegetation only, according to the landscape development plan for the project.</p> <p>All vehicles transporting material that can be blown off (e.g.</p>				

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p>soil, rubble etc.) must be covered with a tarpaulin, and speed limits of 20 km/h must be adhered to.</p> <p>Excessive dust conditions shall be reported to the ECO.</p> <p>Regular monitoring of dust fallout must be carried out and the records kept on site. Baseline dust measures must be sampled and approved by the RE and ECO prior to the commencement of construction activities.</p> <p>All forms of dust pollution must be managed in terms of the Atmospheric Pollution Prevention Act, 1965 (<b>Act No. 45</b> of 1965)</p>				



MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p><b>Workshop equipment, maintenance and storage</b></p> <p><b>Leaking equipment shall be repaired immediately or be removed from site to facilitate repair. All potentially hazardous and non-degradable waste shall be collected and removed to a registered waste site.</b></p> <p>Cleaning and remediation must be done with products that are in line with best environmental practice e.g. Sunsoorb</p> <p><i>A method statement is required from the Contractor, tendering for the project to show procedures for dealing with possible emergencies that can occur, such as fire and accidental leaks and spillage.</i></p> <p>The Contractor shall be in possession of an emergency spill kit that must be complete and available at all times on site. The Contractor must ensure that senior and the other relevant members of the workforce are trained in dealing with spills by using emergency spill kits.</p> <p><u>The following shall apply:</u></p> <p>All contaminated soil / yard stone shall be removed and disposed of as hazardous waste at a registered facility or placed in containers to be taken to one central point where bio-remediation can be done. (Bio-remediation should only be an option if an Environmental Authorisation has been issued)</p> <p>A specialist Contractor shall be used for the bio-remediation of contaminated soil where the required remediation material and expertise is not available on site.</p> <p>All spills of hazardous substances must be reported to the ESO, EO, RE or ECO.</p> <p>The contractor must comply with the regulations of the Occupational Health and Safety Act, 1993 (Act No. 85 of</p>	<ul style="list-style-type: none"> <li>• Prevent pollution of the environment</li> <li>• Minimise chance of transgression of the acts controlling pollution</li> <li>• Disposal of hazardous substances in an appropriate manner</li> </ul>	<ul style="list-style-type: none"> <li>• No pollution of the environment</li> <li>• No litigation due to transgression of pollution control acts</li> <li>• Method statement</li> </ul>	<p>RE, Contractor, EO</p>	<p>Monitor daily</p>

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p><b>Noise</b></p> <p>Prior to the commencement of any construction activities, a baseline ambient noise survey must be carried out. Equivalent continuous rating levels must be recorded for day-time (06:00 to 22:00) and night-time (22:00 to 06:00). These records must be kept on site.</p> <p>In terms of noise impact for various increases over the ambient, the National Noise Regulations define an increase of 7dB as “disturbing”. Noise levels during construction must therefore be kept within 7dB of the baseline data.</p> <p>Regular monitoring of noise levels must be conducted during construction and the records kept on site.</p> <p>All construction vehicles must be in a good working order to reduce possible noise pollution.</p> <p>Work hours during the construction phase shall be strictly enforced unless permission is given. Permission shall not be granted without consultation with the local residents and businesses by the EO.</p> <p><b>Noise reduction is essential and Contractors shall endeavour to limit unnecessary noise, especially loud talking, shouting or whistling, radios, sirens or hooters,</b></p>	<ul style="list-style-type: none"> <li>• Maintain noise levels below “disturbing” as defined in the National Noise Regulations</li> <li>• Minimise the nuisance factor of the development</li> </ul>	<ul style="list-style-type: none"> <li>• No complaints from surrounding landowners or I&amp;APs</li> </ul>	Contractor, EO	As and when required

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p>motor revving, etc. The use of silent compressors is a specific requirement.</p> <p>Noisy activities shall take place only during working hours. The EO must inform surrounding landowners in writing 24 hours prior to any planned activities that will be unusually noisy or any other activities that could reasonably have an impact on the adjacent sites. These activities could include, but are not limited to, blasting, piling, use of pneumatic jack-hammers and compressors.</p>				

<b>Phase of development</b>	<b>CONSTRUCTION</b>
<b>Impact / issue</b>	<b>CONSTRUCTION</b>

<b>MITIGATION MEASURE</b>	<b>MANAGEMENT OBJECTIVES</b>	<b>MEASURABLE TARGETS</b>	<b>RESPONSIBLE PARTY</b>	<b>FREQUENCY OF ACTION</b>
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MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p><b>Crew camps</b></p> <p><b>The contractors must provide and maintain a method statement for “Crew camps and construction laydown areas”.</b></p> <p>Accommodation for members of the workforce will not be permitted on site unless authorisation has been given in terms of the Environmental Authorisation issued for the site.</p> <p><b>Dedicated wash areas must be situated away from watercourses and drainage lines.</b></p> <p>The contractor’s camp shall be monitored for dust fallout and dust suppression applied as required. This may include the laying of gravel, the use of grey water can be considered as an option if the required permits have been acquired.</p> <p>The contractor’s camp, offices and storage facilities shall be located within the site boundaries. No person shall be allowed to stay on neighbouring sites, unless it is cleared with the owner. In such an event all requirements contained herein for the contractor’s camps will apply.</p> <p>The contractor shall provide labourers to clean up the contractor’s camp and construction site on a daily basis. These areas shall then be inspected by the contractor or his/her ESO to ensure compliance with this requirement.</p> <p>The contractor shall be responsible for cleaning the contractor’s camp and construction site of all structures, equipment, residual litter and building materials at the end of the construction period.</p> <p>The crew camp building materials must not be reflective to pose visual impacts.</p>	<ul style="list-style-type: none"> <li>• Minimise water pollution</li> <li>• Minimise dust fallout</li> <li>• Minimise unwarranted environmental damage outside the footprint</li> <li>• Maintain a clean and healthy working environment</li> <li>• Minimise impact to surrounding environment</li> <li>• Minimise visual impacts</li> </ul>	<ul style="list-style-type: none"> <li>• No signs of water or soil pollution</li> <li>• No complaints from surrounding landowners or I&amp;APs</li> <li>• No visible signs of litter</li> <li>• Method statements</li> </ul>	<p>Contractor, EO, ESO</p>	<p>Monitor daily</p>

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p><b>Fires</b>  <i>Eskom ref: TRMSCAAC1 Rev 3 section 4.1.2</i>  <b>The contractors must provide and maintain a method statement for “fires”, clearly indicating where and for what fires will be utilised plus details on the fuel to be utilised</b></p> <p>Absolutely no burning of waste is permitted.  Fires will only be allowed in <b>facilities especially constructed for this purpose</b> within fenced Contractor’s camps. Wood, charcoal or anthracite are the only fuels permitted to be used for fires. The contractor must provide sufficient wood (fuel) for this purpose.  Fires within the designated areas must be small in scale so as to prevent excessive smoke being released into the air.  Heavy smoke may not be released into the air.  No wood is to be collected, chopped or felled for fires from private or public property as well as from no-go or sensitive areas within the site and any surrounding natural vegetation.  The contractor should ensure that fire-fighting equipment is available on site.  A designated smoking area must be demarcated, away from hazardous substance storage areas.</p>	<ul style="list-style-type: none"> <li>• Minimise risk of veld fires</li> <li>• Minimise destruction of natural fauna and flora</li> <li>• Maintain safety on site</li> <li>• Compensate for the outbreak of fires originating from the site where work is undertaken</li> </ul>	<ul style="list-style-type: none"> <li>• No veldt fires started by the contractor’ s workforce</li> <li>• No claims from landowners for damages due to veld fires</li> <li>• Method statement</li> </ul>	<p>Contractor, EO, ESO</p>	<p>Monitor daily</p>
<p><b>Erosion and sedimentation</b></p> <p>All slopes that are disturbed during construction shall immediately be stabilised to prevent erosion. Where re-</p>	<ul style="list-style-type: none"> <li>• Minimise erosion damage</li> <li>• Minimise impeding the</li> </ul>	<ul style="list-style-type: none"> <li>• No erosion scars</li> <li>• No loss of topsoil</li> <li>• No interference</li> </ul>	<p>Contractor, EO, ESO</p>	<p>As and when required</p>

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p>vegetation of slopes is undertaken, this shall be done in accordance with the landscape architect (or appointed landscaper).</p> <p>To reduce the loss of material by erosion, the contractor shall ensure that disturbance on site is kept to a minimum. The contractor shall be responsible for rehabilitating all eroded areas in such a way that the erosion potential is minimised after construction has been completed.</p> <p>All disturbed areas will require rehabilitation must be mulched to encourage vegetation re-growth. Mulch used must be free from alien seed.</p> <p>These areas must be cordoned off so that vehicles or construction personnel cannot gain access to these areas.</p>	<p>natural flow of water</p> <ul style="list-style-type: none"> <li>• Minimise scarring of the soil surface and land features</li> <li>• Minimise disturbance and loss of topsoil</li> <li>• Re-growth of disturbed areas.</li> </ul>	<p>with the natural flow of water</p> <ul style="list-style-type: none"> <li>• No visible erosion scars once construction is completed</li> <li>• The footprint has not exceeded the agreed boundaries</li> <li>• All damaged areas successfully rehabilitated</li> </ul>		

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p><b>Fauna</b></p> <p><u>All activities on site must comply with:</u></p> <p>The regulations of the Animal Protection Act, 1962 (Act No. 71 of 1962); and Marine Living Resources Act, 1998 (Act No. 18 of 1998).</p> <p>All construction workers must be informed that the intentional killing of any animal is not permitted as faunal species are a benefit to society. Poaching is illegal and it must be a condition of employment that any employee caught poaching will be dismissed. Employees must be trained on how to deal with fauna species as intentional killing will not be tolerated. In the case of a problem animal e.g. a large snake a specialist must be called in to safely relocate the animal if the EO or ECO is not able to.</p> <p>Environmental induction training must include safety with wild animals into the talk to all workers on site. Focus on animals such as snakes and other reptiles that often generate fear by telling the labour force how to move safely away and to whom to report the sighting. The labourforce should also be informed where snakes most often hide so that they can be vigilant when lifting stones etc</p>	<ul style="list-style-type: none"> <li>• Minimise disturbance to animals</li> <li>• Minimise interruption of breeding patterns of birds</li> <li>• Minimise destruction of habitat</li> </ul>	<ul style="list-style-type: none"> <li>• No complaints from Nature Conservation</li> <li>• No litigation concerning applicable animal protection acts</li> <li>• No measurable or visible signs of habitat destruction</li> </ul>	<p>RE, Contractor, EO, ESO</p>	<p>Monitor daily</p>



MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p><b>Flora</b></p> <p>Any corridors to surrounding natural areas must be maintained and protected; these must be demarcated as no-go areas.</p> <p>Locally indigenous plants must be used in the landscaping of the site. Plants that are proclaimed as problem plants or noxious weeds must be excluded from the landscaping plan and these must be removed immediately, should they occur on site. These plants, as well as any other problem plants within a specific region as stipulated by a qualified and experienced botanist, must be included in an alien management programme for the site. Eradication must occur every 6 months.</p> <p>A search and rescue operation must take place at the discretion of the ECO prior to site clearance activities. A nursery must be established should the need arise.</p> <p>The contractor must rehabilitate the construction camp and any other disturbed areas once construction activities have terminated. Compacted areas will be ripped and mulched in order to ensure recovery of the natural vegetation cover. A method statement must be provided and maintained by the contractor.</p> <p>Once construction is complete, rehabilitation of un-built areas must be undertaken in order to restore the aesthetic &amp; ecological value of the area. It is recommended that a qualified landscape architect, qualified botanist and the ECO be consulted with regard to the most appropriate rehabilitation vegetation and structures. Active re-vegetation must take place with locally indigenous vegetation under the supervision of the ECO.</p>	<ul style="list-style-type: none"> <li>• Minimal disturbance to vegetation where such vegetation does not interfere with construction in terms of approvals from the relevant authority</li> <li>• Prevent litigation concerning removal of vegetation</li> <li>• Encourage natural habitat fauna</li> <li>• Minimise scarring of the soil surface and land features</li> <li>• Minimise disturbance and loss of topsoil</li> <li>• Minimise risk of veldt fires</li> <li>• Minimise risk of fauna and flora destruction</li> </ul>	<ul style="list-style-type: none"> <li>• No litigation due to removal of vegetation without necessary permission</li> <li>• No exotic plants used for landscaping</li> <li>• No visible erosion scars once construction is completed</li> <li>• The footprint has not exceeded the agreed boundaries</li> <li>• All damaged areas successfully rehabilitated</li> <li>• No veldt fires started by contractors work force</li> <li>• No claims from landowners for damages due to veldt fires</li> <li>• Method statement</li> </ul>	<p>Contractor, EO, ESO, Landscape Architect</p>	<p>As and when required</p>

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p>No open fires shall be allowed on site under any circumstances, fires will only be permitted in adequate facility within the crew camp.</p>				
<p><b>Heritage</b></p> <p>In terms of the National Heritage Act, 1999 (Act No. 25 of 1999), construction personnel must be alert and must inform the local Council should they come across any findings of heritage resources within 24 hours if the area has been removed.</p> <p>Should any archaeological artefacts be exposed during construction activities, work on the area where the artefacts were found shall cease immediately and the South African Heritage Resources Agency shall be notified within 24 hours.</p> <p>Under no circumstances shall archaeological artefacts be removed, destroyed or interfered.</p> <p>Any archaeological sites exposed during demolition or construction activities must not be disturbed prior to authorisation by the South African Heritage Resources Agency on the appropriate provincial heritage resource agency.</p>	<ul style="list-style-type: none"> <li>• Limit the destruction of the country's heritage resources</li> <li>• The preservation and appropriate management of new archaeological finds should these be discovered during construction.</li> </ul>	<ul style="list-style-type: none"> <li>• No destruction of or damage to known archaeological sites</li> </ul>	<p>Contractor, EO, RE, ESO</p>	<p>Monitor Daily</p>

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p><b>No-go / sensitive areas</b></p> <p><i>Eskom Ref: TRMSCAAC1 Rev 3 regarding “no entry”</i></p> <p>All construction activities must remain within the boundaries of the development area, as demarcated at the start of construction.</p> <p>The construction footprint must be kept to a minimum by constructing boundaries and demarcated around areas not to be distributed thus reducing the infringement of the development on natural habitat.</p> <p>No-go areas must be demarcated with fencing/warning tape and signs before any construction activities commence.</p> <p>Vehicles are only to access the site via the approved access road. No vehicular movement is permitted outside of the substation designated area.</p>	<ul style="list-style-type: none"> <li>• Minimise the potential for the spread of the of the construction footprint</li> <li>• Reduce loss of fauna and flora habitat</li> <li>• Minimise the potential for loss of protected and or endangered fauna and flora species</li> </ul>	<ul style="list-style-type: none"> <li>• No sign of movement through “no go” areas.</li> <li>• Containment of footprint</li> </ul>	<p>RE, Contractor, ESO, EO</p>	<p>Monitor daily</p>

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p><b>Access route/haul roads</b></p> <p><i>Eskom Ref: TRMSCAAC1 Rev 3 regarding “no entry” and sections 4.4 and 4.6 regarding new access roads ad diversion berms.</i></p> <p>Planning of any new access routes must be done in conjunction between the contractor, Eskom and the land owner.</p> <p>Existing roads and services must be utilised as far as possible.</p> <p>No unauthorised access is permitted.</p> <p>Any damage or degradation will be investigated and fines issued, the affected areas must be immediately rehabilitated.</p> <p>No driving off from the marked roads is permitted and designated parking areas must be identified and demarcated with applicable signage.</p> <p>Any work or access near or in a permanent drainage system may have implications in terms of the National Water Act, 1998 (Act No. 36 of 1998), and therefore may well require application for a water use licence.</p>	<ul style="list-style-type: none"> <li>• Minimise loss of topsoil and enhancement of erosion</li> <li>• Minimise fauna and flora displacement by destruction of natural habitats</li> </ul>	<ul style="list-style-type: none"> <li>• No erosion on access roads after completion of construction</li> <li>• No loss of topsoil due to runoff water on access roads</li> </ul>	<p>Contractor, RE or EO</p>	<p>As required, monitor daily</p>

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p><b>Crime, safety and security</b> (Eskom ref: TPL 41-142 safety earthing of capacitor banks)</p> <p>Construction procedures must make provision for earthing requirements</p> <p>No site staff, other than security personnel and skeleton staff shall be housed on site unless otherwise stipulated in the Environmental authorisation. Security personnel and skeleton staff shall be supplied with adequate protective clothing, ablution facilities, water and refuse collection facilities, facilities for cooking and heating so that open fires are not necessary.</p> <p>A boundary fence will serve to prevent access to the site, for public safety and security reasons. The access to the site must be controlled so as to restrict unauthorised personnel from entering the site. The workers on site must retain some means of identification. The ESO and the contractor are responsible for ensuring that only authorised personnel are on site at all times.</p> <p>The site and crew are to be managed in strict accordance with the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) and the National Building Regulations. (Eskom ref: TSP 41-691, page 2 of 77 and EPL 32-94).</p> <p>The contractor shall ensure that all emergency procedures are in place prior to commencing work. Emergency procedures shall include (but not be limited to) fire, spills, contamination of the ground, accidents to employees, use of hazardous substances and materials, etc.</p> <p>The contractor shall ensure that lists of all emergency telephone numbers / contact persons are kept up to date and</p>	<ul style="list-style-type: none"> <li>• Reduce the risk of potential incidences</li> <li>• Minimise the potential impact on the environment</li> </ul>	<ul style="list-style-type: none"> <li>• No incidences reported</li> </ul>	RE, Contractor, ESO, EO	Monitor daily

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p>that all numbers and names are posted at relevant locations throughout the construction site.</p> <p>The nearest emergency service provider must be identified during all phases of the project as well as its capacity and the magnitude of accidents it will be able to handle. The contact details of this emergency centre, as well as the police and ambulance services must be available at prominent locations around the construction site and the construction crew camps.</p>				

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p><b>Geotechnical</b></p> <p>All trenches and excavation works must be properly backfilled and compacted according to specifications given in sub-clause 5.2.4. Of SABS 1200DA.</p> <p>In terms of the geotechnical investigation that was undertaken it is required that a competent concrete design and well controlled construction take place due to the soils being classified as mildly aggressive towards concrete with leaching being the dominant mode of attack.</p>	<ul style="list-style-type: none"> <li>• Minimise potential structural faults</li> <li>• Minimise trench collapse</li> </ul>	<ul style="list-style-type: none"> <li>• No visible signs of backfill deterioration or trench collapse</li> </ul>	<p>Geotechnical Engineer, Structural Engineer, Geologist, RE, Contractor</p>	<p>As and when required</p>

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p><b>Hydrology</b></p> <p>The RE or the ECO must assess whether regular water sampling of surface and /or ground water resources within the immediate and/or surrounding environment are necessary. Should this be the case, baseline data from sampling should be obtained relevant to the activity and sensitivity of the area. Regular sampling must be carried out to determine deviations from the baseline data.</p> <p>Increased run-off during construction must be managed using berms and other suitable structures as required to ensure flow velocities are reduced. Storm water, wherever possible, should be allowed to soak into the land in the area on which the water fell.</p> <p>In the event of pollution caused as a result of construction activities, the contractor, according to section 20 of the National Water Act, 1998 (Act No. 36 of 1998) shall be responsible for all costs incurred by organisations called to assist in pollution control and/or to clean up polluted areas.</p> <p>Approval must be obtained from DWAF for any activities that require authorisation in terms of Section 39 of the National Water Act, 1998 (Act No. 36 of 1998).</p> <p>A relevant specialist must be consulted prior to the demarcation of drainage lines and wetlands.</p> <p>No vehicular access is allowed in permanently wet areas.</p> <p>No equipment shall be used which may cause irreparable damage to wet areas. The contractor shall use alternative methods of construction in such areas.</p> <p><b>“NO ENTRY”</b> signs must be strategically placed along rivers, streams and other natural or man-made drainage lines which</p>	<ul style="list-style-type: none"> <li>• Minimise pollution of soil, surface and ground water resources in the immediate and surrounding environments</li> <li>• Minimise impeding the natural flow of water</li> <li>• Minimise the impact on natural water flow dynamics</li> <li>• Minimise scarring of the soil surface and land features</li> <li>• Minimise damage to river and stream embankments</li> </ul>	<ul style="list-style-type: none"> <li>• No visible signs of pollution</li> <li>• No signs of siltation of water courses</li> <li>• No visible erosion scarring once construction is completed</li> <li>• Minimum loss of topsoil</li> <li>• No access roads through river and stream banks</li> <li>• No visible erosion scars on embankments once construction is completed</li> <li>• No erosion or siltation downstream</li> <li>• No deviation from baseline data during regular sampling</li> </ul>	<p>RE, Contractor, EO</p>	<p>As and when required, monitor daily</p>



<b>MITIGATION MEASURE</b>	<b>MANAGEMENT OBJECTIVES</b>	<b>MEASURABLE TARGETS</b>	<b>RESPONSIBLE PARTY</b>	<b>FREQUENCY OF ACTION</b>
are in close proximity to access routes.				

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p><b>Soil</b>  <b>The contractor must provide and maintain a method statement for “management of topsoil”.</b></p> <p>Topsoil must be stripped from all areas that are to be utilized during the construction period and where permanent structures and access is required. These areas will include comprising the permanent works, stockpiles, access roads, construction camps and laydown areas. Topsoil shall be stripped after search and rescue (Fauna and Flora) has been conducted and clearing of woody vegetation and before excavation or construction commences.</p> <p>Topsoil must be deemed to be the top layer of soil containing organic material, nutrients and plant grass seed. For this reason it is an extremely valuable resource for the rehabilitation and vegetation of disturbed areas.</p> <p>Ripping shall be done to a depth of 250 mm in two directions at right angles. Topsoil shall be placed in the same soil zone from which it had been stripped.</p> <p>At the beginning of the construction phase, topsoil removed for vegetation clearance must be stripped to a minimum depth of 150 mm and stockpiled on the demarcated topsoil stockpile areas.</p> <p>All topsoil must be removed and stockpiled on the site.</p> <p>However, the use of topsoil for rehabilitation contaminated by the seed of alien vegetation (e.g. blackjacks, etc.) must not be permitted unless a programme to germinate the seed and eradicate the seedlings is drawn up and approved, or some other mitigatory feature is found. This must be approved by the ECO.</p> <p>Single handling is recommended. Stock piles must not be higher than 2m to avoid compaction.</p> <p>Dust suppression is necessary for stockpiles older than a month – with either water or a biodegradable chemical binding agent.</p> <p>Backfill will require contouring to ensure that it blends in with the surrounding environment.</p> <p>Remediated slopes should be graded to preferably 1:2</p>	<ul style="list-style-type: none"> <li>• Minimise scaring of the soil surface and land features</li> <li>• Minimise disturbance and loss of soil</li> <li>• Minimise construction footprint</li> <li>• Minimise sedimentation of nearby drainage lines</li> <li>• Maintain the integrity of topsoil's for future landscaping and rehabilitation</li> <li>• Containment of invasive plant growth</li> </ul>	<ul style="list-style-type: none"> <li>• No visible erosion scars once construction is completed</li> <li>• The footprint has not exceeded the agreed site in terms of EA etc.</li> <li>• Minimal invasive weed growth</li> <li>• No signs of sedimentation and erosion</li> <li>• Disturbed surfaces to be rehabilitated must be ripped and the area must be backfilled with excavated material from the site.</li> <li>• Method statement</li> </ul>	Contractor	Daily

**Table 2: Operational Phase**

<b>Phase of development</b>	<b>OPERATIONAL</b>
<b>Impact / issue</b>	<b>General</b>

<b>MITIGATION MEASURE</b>	<b>MANAGEMENT OBJECTIVES</b>	<b>MEASURABLE TARGETS</b>	<b>RESPONSIBLE PARTY</b>	<b>FREQUENCY OF ACTION</b>
<p><b>Storm water Management</b></p> <p>Storm water, wherever possible, must be allowed to soak into the land in the area on which the water has been discharged.</p> <p>The storm water system, especially the discharge points, must be inspected and damaged areas must be repaired if required.</p> <p>Where vegetation has been utilised as part of the storm water management system, it is important to ensure that the vegetation is maintained and does not die, as this is essential for effective infiltration.</p> <p>For all maintenance undertaken reference must be made to recommendations in the engineer's reports and or the approved storm water management plan.</p> <p>All maintenance activities must be monitored to ensure that no environmental damage occurs. All damage must be mitigated immediately.</p>	<ul style="list-style-type: none"> <li>• Minimise pollution of soil, surface and ground water resources</li> <li>• Minimise the potential loss of topsoil</li> <li>• Minimise the potential of flooding of the development, or its neighbouring properties</li> </ul>	<ul style="list-style-type: none"> <li>• No evidence of pollution at the discharge points</li> <li>• No evidence of silt build-up at the discharge points</li> <li>• No complaints from I &amp; AP's</li> </ul>	<p>Management body,</p> <p>maintenance crew: <i>'to be announced'</i></p>	<p>As and when required</p> <p>Monitor seasonally</p>

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p><b>ATMOSPHERIC POLLUTION</b></p> <p><b>Air pollution</b></p> <p>All forms of dust/air pollution must be managed in terms of the Atmospheric Pollution Prevention Act, 1965 (Act No. 45 of 1965), this includes the control of noxious and offensive gases, smoke, dust and vehicular emissions</p> <p>Under no circumstances may heavy smoke be released into the air.</p> <p><b>Light pollution</b></p> <p>Night time light sources must be directed away from, conservation areas, naturally vegetated areas, as this may be the cause of ecological disturbance.</p> <p><b>Noise pollution</b></p> <p>Noise levels shall be kept within acceptable limits, these are determined in terms of the relevant local by laws.</p>	<p>Reduce visual impact</p> <p>Minimise chances of transgression of the acts controlling pollution</p>	<p>No complaints from surrounding residents and businesses</p>	<p>Management body: <i>'to be announced'</i></p>	<p>Monitor daily</p>

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
<p><b>Safety and Security</b></p> <p>Boundary wall if present must be regularly inspected and maintained to prevent any damage.</p> <p>All fencing on site must be managed in terms of the <b>Fence Act No. 31 of 1963</b></p> <p>All maintenance and repair work must be done in accordance with <b>National Building Regulations and Standards Act 103 of 1977</b></p> <p>Maintenance work must not be the cause of environmental damage. Any environmental damage caused must be investigated and mitigated immediately.</p> <p>Where Electric fences are installed, these must be monitored to ensure that animals have not been trapped. If animal fatalities have occurred these must be investigated and the services of a qualified specialist (bird, reptile...) must be employed to implement the correct management action to prevent further fatalities.</p> <p>An emergency plan (including fire management) must be developed and implemented; the relevant authority must approve this plan. Ensure that all fire extinguishers are replaced on or before their expiry dates. Ensure that pump devices are in good working order.</p>	<ul style="list-style-type: none"> <li>• Reduce the risk of potential incidences</li> <li>• Minimise litigation and complaints by I&amp;AP's</li> </ul>	<ul style="list-style-type: none"> <li>• No complaints from surrounding residents and businesses</li> </ul>	<p><b>Contractor</b></p>	<p><b>As and when required</b></p>
<p>Traffic management</p> <p>Access to and from the capacitor banks will take place strictly</p>	<ul style="list-style-type: none"> <li>• Maintenance of Access road</li> </ul>	<p>No complaints from</p>	<p><b>Land Owner</b></p>	<p><b>Monitored continually</b></p>

MITIGATION MEASURE	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS	RESPONSIBLE PARTY	FREQUENCY OF ACTION
along the service road.		surrounding residents and businesses		
<p>Landscape maintenance</p> <p><b>All alien invasive plant species must be removed for disposal at a registered organic waste transfer facility.</b></p>	Reduce visual impact	EMP pro forma documentation	<b>Land owner Management body: 'to be announced'</b>	<b>required Monitor seasonally</b>
<p>Infrastructure maintenance</p> <p><b>Eskom ref: TSP 41-691; TPL 41-142</b></p> <p><b>The Capacitor must be maintained in accordance with engineer's specifications.</b></p>	<ul style="list-style-type: none"> <li>• Reduce visual impact</li> <li>• Minimise pollution of soil, surface and ground water resources</li> </ul>	<ul style="list-style-type: none"> <li>• No complaints from surrounding residents and businesses</li> <li>• No pollution of the environment</li> </ul>	<b>Management body</b>	<p><b>As and when required</b></p> <p><b>Monitor as part of a monthly maintenance inspection/schedule</b></p>

All environmentally sensitive areas are indicated on the profiles and the Project Manager and Contractor shall take note of these. **The Contractor (TRMSCAAC1 REV 3 section 4.1.2) shall take all the necessary precautions against damage.**

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#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
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1. SITE ESTABLISHMENT								
<b>1.1 Set up living quarters, site office, assembly area and workshops</b>	<ul style="list-style-type: none"> <li>Bush clearing and levelling,</li> <li>Install Concrete floor,</li> <li>Install Waste Collection Area,</li> <li>Cast concrete slabs for buildings &amp; concrete bundled area for servicing vehicles</li> <li>Appointment of contractors labourers</li> </ul>	<ul style="list-style-type: none"> <li>Damage to protected / endangered vegetation</li> <li>Damage to topsoil / waste concrete</li> <li>Compacting of ground</li> <li>Employment and skills development</li> </ul>	NEMA BDA CARA LRA SDA	<b>Objective:</b> <ul style="list-style-type: none"> <li>Topsoil must be conserved and stockpiled for rehabilitation</li> <li>Minimise scarring of the soil surface and land features</li> <li>Minimise disturbance and loss of topsoil</li> <li>Rehabilitate all disturbed areas along the servitude</li> <li>Avoid wet areas</li> <li>Minimise damage to vegetation</li> <li>Minimise possibility of erosion due to removal of vegetation</li> <li>Minimise removal of plant material on river and stream embankments</li> <li>Local labourers should be used wherever possible</li> <li>Improve local skills wherever possible</li> </ul> <b>Mechanisms:</b>	<ul style="list-style-type: none"> <li>Written agreement between Land Owner and Contract regarding occupation of site.</li> <li>No visible erosion scars once construction is completed</li> <li>No claims regarding damage leading to litigation due to unauthorised removal of vegetation</li> <li>All damaged areas successfully rehabilitated one year after completion</li> <li>No damage to wet areas</li> <li>Only 8m vegetation cleared along the centre of the servitude for access purposes</li> <li>No vegetation</li> </ul>	Report on all NCRs identified  Perform Spot Audits regularly  Conduct final audit before site handover to the asset owner		ECO  Eskom Envir. Practitioner / Advisor  Eskom Envir. Practitioner / Advisor



#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				<ul style="list-style-type: none"> <li>• Site establishment shall take place in an orderly manner and all amenities shall be installed at Camp sites before the main workforce move onto site.</li> <li>• The Contractor camp shall have the necessary ablution facilities with chemical toilets where such facilities are not available at commencement of construction.</li> <li>• The Contractor shall supply a wastewater management system that will comply with legal requirements and be acceptable to Eskom.</li> <li>• Location of construction camp will be negotiated with the affected landowner prior to occupation.</li> <li>• Camp site will be fenced off and kept locked at all times</li> <li>• Compacted ground shall</li> </ul>	<p>interfering with structures and statutory safety requirements upon completion of the contract</p> <ul style="list-style-type: none"> <li>• No de-stumping of vegetation on river and stream embankments</li> <li>• All alien invaders and densifiers removed to limit the fire hazard</li> <li>• No visible herbicide damage to the vegetation along the servitude one year after completion of the contract due to incorrect herbicide use</li> </ul>			

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				be rehabilitated by ripping to a minimum depth of 600mm				
<b>1.3 Use of ablution facilities and kitchen facilities</b>	Install drainage system for toilets, waste water, water supply	Ground water pollution and impact on vegetation  Pollution of ground water and soil	NWA  OHSA  NEMA  TRMSCAAC 1 REV 3	<b>Objective:</b> To ensure proper sanitation is achieved and minimise the spread of diseases  <b>Machanism:</b> <ul style="list-style-type: none"> <li>The Contractor shall install mobile chemical toilets on site</li> <li>Staff shall be sensitised to the fact that they should use these toilets at all times</li> <li>No use of the veld shall be allowed, as this always create problems with the landowners and lead to claims for problems with stock diseases</li> <li>Toilet paper is also a source of littering in the veld, and the Contractor shall be forced to clean</li> </ul>	No complaints received from landowners regarding sanitation	A record shall be kept of drugs administered and the dates when this was done. This should be available on site.		
	Use veld for toilet	Health risk / spreading of diseases	OHSA					

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				<p>up any litter</p> <ul style="list-style-type: none"> <li>The Contractor shall take all the necessary precautions against the spreading of disease, especially under livestock.</li> </ul>				
<p><b>1.4 Set up batching plant</b></p>	<p>Negotiate the site for batching plant.</p>	<p>Damage to top soil</p>	<p>TRMSCAAC 1 REV 3</p>	<p><b>objective:</b></p> <ul style="list-style-type: none"> <li>To ensure all agreements with Landowners are adhered to</li> <li>Prevention of complaints from Landowners</li> <li>Successful rehabilitation of disturbed areas</li> </ul> <p><b>Mechanisms:</b></p> <p>The siting of batching plants shall be done in conjunction with the landowner and ecologist/botanist and archaeologist</p> <ul style="list-style-type: none"> <li>The batching plant area shall be operated in such a way as to prevent contaminated water to run off the site and polluting nearby streams or water bodies. To this effect diversion berms can be</li> </ul>	<ul style="list-style-type: none"> <li>No Complaints from Land Owners</li> <li>All disturbed areas to be rehabilitated successfully, three months after construction</li> </ul>	<p>Landowner to sign off after completion of project.</p>		

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				installed to direct all wastewater to a catchment area.				
<b>1.5 Set up store area</b>	<ul style="list-style-type: none"> <li>Install fencing &amp; Digging holes,</li> <li>Insert Poles &amp; concrete, Erect fence, grading and clearing the area</li> <li>Create fire breaks</li> <li>Storage of hazardous Substanc</li> </ul>	<ul style="list-style-type: none"> <li>Disturban ce of topsoil</li> <li>Waste concrete</li> <li>Damage to protected / endanger ed vegetation</li> <li>Wire offcuts</li> <li>Fire risks Spillages</li> </ul>	CARA NEMA ECA BDA HSA FA TRMSCAAC 1 REV 3	<p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>To prevent fire breakout</li> <li>To prevent soil pollution</li> </ul> <p><b>Mechanisms:</b></p> <ul style="list-style-type: none"> <li>Fencing in of the storage areas for drums on site is also proposed, as this will keep out animals and prevent injury. Should the Contractor want to leave guards on site, this should be discussed and negotiated with the Landowner. Proper facilities must be provided to ensure sanitation standards are met.</li> <li>Mobile chemical toilets shall be installed at such sites where a large number of the workforce is</li> </ul>	<ul style="list-style-type: none"> <li>No incidents recorded</li> <li>No complaints from Landowners</li> <li>Certificate of treatment of soil</li> <li>Aspects and impacts register</li> <li>A register on all substances available on site</li> <li>All spills rehabilitated.</li> <li>All spills to be cleaned and rehabilitated</li> </ul>	<ul style="list-style-type: none"> <li>The Environm ental Control Officer shall approve gate positions.</li> <li>ECO to report NCRs</li> <li>Regular monitorin g and recording of spills</li> </ul>	Monthly  Monthly	ECO  ECO  ECO

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
	es			<p>concentrated.</p> <ul style="list-style-type: none"> <li>• The contractor is referred to FA.</li> <li>• All gates installed in electrified fencing shall be re-electrified. All gate positions shall be three (3) metres off centre to allow for continued access when stringing takes place</li> <li>• All storage tanks to be protected underneath by a plastic sheeting and trench or bund wall around them to avoid ground pollution</li> <li>• Contractor to remove all polluted soil to an approved toxic site or to be treated chemically.</li> <li>• All spills to be cleaned and rehabilitated immediately</li> <li>• All hazardous substances shall be stored in suitable containers and storage areas shall be bunded. This includes all carbon substances like fuel and oil as well as herbicides and battery acid.</li> </ul>	<p>immediately</p> <ul style="list-style-type: none"> <li>• A register shall be kept on all substances and be available for inspection at all times</li> <li>• Areas shall be monitored for spills and any spills shall be contained, cleaned and rehabilitated immediately</li> </ul>	<p>on the register</p> <p>Monitor register</p>		

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				<ul style="list-style-type: none"> <li>• Areas shall be monitored for spills and any spills shall be contained, cleaned and rehabilitated immediately.</li> <li>• Any leaking containers shall be repaired or removed from site.</li> </ul>				
1.6 Set Up Batching plant	Dust and Noise Management during site establishment	Dust nuisance from the excavated and stockpiled material		<p><b>Objectives:</b> To avoid dust nuisance from excavated material And avoid noise nuisance from operating construction equipment</p> <p><b>Mechanism:</b></p> <ul style="list-style-type: none"> <li>• Implement dust suppression measures e.g. regular watering</li> <li>• Concrete mixing to be carried out away from sensitive areas</li> <li>• Develop and implement dust monitoring programme</li> <li>• Limit working hours of noisy equipment to daylight hours</li> </ul>				

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				<ul style="list-style-type: none"> <li>Fit silencers to equipments</li> </ul>				
1.7 Use of vehicles for material, equipment and personnel transportation	<ul style="list-style-type: none"> <li>Trucks delivering material to store area</li> <li>Servicing vehicles resulting in draining oil and removing filters &amp; Emergency repairs due to breakages</li> <li>Transport of personnel and material to site</li> </ul>	<ul style="list-style-type: none"> <li>Oil, lubricants or fuel spills</li> <li>Waste material containers / packaging</li> </ul>	<ul style="list-style-type: none"> <li>NWA</li> <li>ECA</li> <li>NEMA</li> <li>HSA</li> </ul>	<p><b>Objectives:</b> To prevent and minimise pollution to the environment. Prevent transgressing acts that governs pollution</p> <p><b>Mechanisms:</b></p> <ul style="list-style-type: none"> <li>Where possible and practical all maintenance of vehicles and equipment shall take place in the workshop area.</li> <li>During servicing of vehicles or equipment, a suitable drip tray shall be used to prevent spills onto the soil, especially where emergency repairs are effected outside the workshop area.</li> <li>Leaking equipment shall be repaired immediately or be removed from site to facilitate repair.</li> <li>All potentially hazardous and non-degradable waste shall be collected</li> </ul>	<ul style="list-style-type: none"> <li>No oil spills</li> <li>A register shall be kept on all substances and be available for inspection at all times.</li> <li>Areas shall be monitored for spills and any spills shall be recorded rehabilitated immediately</li> </ul>	Monitor register	Daily	Contractor CECO

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				<p>and removed to a registered waste site.</p> <ul style="list-style-type: none"> <li>• A <b>certificate of disposal</b> shall be obtained by the Contractor and kept on file</li> <li>• Workshop areas shall be monitored for oil and fuel spills and such spills shall be cleaned and re-mediated to the satisfaction of the ECO.</li> <li>• The Contractor shall be in possession of an emergency spill kit that must be complete and available at all times on site,</li> <li>• All hazardous substances shall be stored in suitable containers and storage areas shall be bunded. This includes all carbon substances like fuel and oil as well as herbicides and battery acid..</li> <li>• Any leaking containers shall be repaired or removed from site (See</li> </ul>				



**4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)**

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				above actions for spills).				
<b>1.8 Tower Pegging</b>	Vehicle driving in veld	<ul style="list-style-type: none"> <li>• Damage to protected / endangered vegetation</li> <li>• Damage to heritage sites</li> <li>• Oil Spills</li> </ul>	BDA NHRA NWA CARA					

**Objective:** To minimise environmental impact

**Mechanisms:**  
 Re-seeding shall be done on disturbed areas as directed by the Environmental Control Officer. In accordance with the Conservation of Slopes in

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				on tower sites. The type of soil shall also be taken into consideration.				
	Surveyor pegging towers	Littering of packaging & pegging materials	NEMA ECA	Refer to littering under site establishment.				
<b>1.9 Bush clearing</b>	<ul style="list-style-type: none"> <li>• People cutting vegetation by hand</li> <li>• Bulldozer clearing vegetation</li> </ul>	<ul style="list-style-type: none"> <li>• Damage to protected / endangered vegetation</li> <li>• Disturbance of topsoil Damage to heritage sites</li> </ul>	BDA NHRA	<p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>• Minimise damage to vegetation</li> <li>• Keep servitude as natural looking as possible</li> <li>• Minimise interference by vegetation to flow of electricity</li> <li>• Minimise possibility of erosion due to removal of vegetation</li> <li>• Minimise removal of plant material on river and stream embankments</li> <li>• Eradication of alien invader and densifier species that cause a fire hazard</li> </ul> <p><b>Mechanisms:</b></p> <ul style="list-style-type: none"> <li>• Protected or endangered species of plants shall not</li> </ul>	<ul style="list-style-type: none"> <li>• Only 8m vegetation cleared along the centre of the servitude for access purposes</li> <li>• No vegetation interfering with structures and statutory safety requirements upon completion of the contract</li> <li>• No de-stumping of vegetation on river and stream embankments</li> <li>• All alien invaders and densifiers removed to limit fire hazard</li> <li>• No visible herbicide damage to the vegetation along the</li> </ul>			

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				<p>be removed unless they are interfering with a structure.</p> <ul style="list-style-type: none"> <li>Where such species have to be removed due to interference with a structure, the necessary permission and permits shall be obtained from Provincial Nature Conservation.</li> <li>All protected species not to be removed must be clearly marked and such areas fenced off if required.</li> <li>No vegetation clearing in the form of de-stumping, scalping or uprooting shall be allowed on river- and stream banks. Vegetation shall only be cut to allow for the passage of the pilot-cables and headboard.</li> </ul> <p><b>Contractor requirements:</b></p> <ul style="list-style-type: none"> <li>Contractor must be in possession of a valid herbicide applicators</li> </ul>	<p>servitude one year after completion of the contract due to incorrect herbicide use</p> <ul style="list-style-type: none"> <li>No litigation due to unauthorised removal of vegetation</li> </ul>			

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				licence <ul style="list-style-type: none"> <li>Contractor to have necessary knowledge to identify protected species as well as species not interfering with operation of the line due to their height and growth rate</li> <li>Contractor to be able to identify all declared weeds &amp; alien species that can be totally eradicated.</li> </ul>				
	<ul style="list-style-type: none"> <li>Clearing of vegetation on river banks</li> <li>Excessive clearing of servitude</li> </ul>	Erosion and invader plants  Damage to protected / endangered vegetation	CARA  BDA  NWA	<b>Objectives:</b> <ul style="list-style-type: none"> <li>Minimise erosion damage on donga crossings</li> <li>Minimise impeding the natural flow of water</li> <li>Minimise initiation of erosion through donga embankments</li> <li>Minimise damage to river and stream embankments</li> <li>Minimise erosion of embankments and subsequent siltation of rivers, streams and dams</li> <li>Minimise erosion damage on donga crossings</li> </ul>	<ul style="list-style-type: none"> <li>No interference to dongas embarkment</li> <li>No erosion visible to donga embankment due to construction activities</li> <li>No interference with natural flow of water</li> <li>No disturbance to donga embankments</li> <li>No erosion visible on donga embankments due to construction activities</li> <li>No interference with the natural flow of</li> </ul>			

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				<ul style="list-style-type: none"> <li>Minimise impeding the natural flow of water</li> </ul> <p><b>Mechanisms:</b> No vegetation clearing shall be allowed across ravines and gullies, as this vegetation will very rarely interfere with the clearance to the strung conductor</p>	<ul style="list-style-type: none"> <li>water</li> <li>Licence requirement to be met where applicable.</li> </ul>			
<b>1.10 Gate installation</b>	<ul style="list-style-type: none"> <li>Flattening of fences to gain access</li> <li>Tying off fence and straining fence wires</li> </ul>	<ul style="list-style-type: none"> <li>Damage to fences</li> <li>Damage to electrical fencing</li> <li>Wire off cuts and broken fences</li> </ul>	FA TRMPVACV2 REV1 TRMSCAAC 1 REV 3	<p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>To install gates to allow access for construction</li> <li>Minimise damage to existing fences and gates</li> <li>To limit access to Eskom &amp; contractor employees by using keys</li> <li>All fences properly tied off to the gate posts</li> <li>All fences properly and neatly installed according to specifications</li> </ul> <p><b>Mechanisms:</b></p> <ul style="list-style-type: none"> <li>The Landowners shall be kept abreast of all</li> </ul>	<ul style="list-style-type: none"> <li>No Transgression of the fence act and therefore no litigation</li> <li>No damage to the fence and no complaints from land owner</li> <li>All gates to be kept locked at all times to limit access to keyholders</li> <li>No complaints and claims due to unclosed gates</li> </ul>			

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				<p>developments and shall be kept informed about the progress and phases of the contract.</p> <ul style="list-style-type: none"> <li>• All gates shall be fitted with locks and be kept locked at all times during the construction phase.</li> <li>• Gates shall only be left open on request of the Landowner if he accepts partial responsibility for such gates in writing, once the Contractor have left site and the gates are fitted with Eskom locks.</li> <li>• Such gates shall be clearly marked by painting the posts green.</li> <li>• All claims arising from gates left open shall be investigated and settled in full by the Contractor.</li> <li>• If any fencing interferes with the construction process, such fencing shall be deviated / protected until construction is completed.</li> </ul>				

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				<ul style="list-style-type: none"> <li>• Game gates, drawing 0.00/10280 Rev 0, shall be installed where necessary.</li> <li>• All gates installed in electrified fencing shall be re-electrified.</li> <li>• The Environmental Control Officer shall approve gate positions.</li> <li>• All gate positions shall be three (3) metres off centre to allow for continued access when stringing takes place.</li> </ul>				
	Dig holes	Disturbance of topsoil	CARA	<p><b>Mechanisms:</b></p> <ul style="list-style-type: none"> <li>• At any gate poles where conventional foundations are installed, the Contractor shall remove the topsoil separately and store it for later use during rehabilitation.</li> <li>• During backfilling operations, the Contractor shall take care not to dump the topsoil in the bottom of the foundation</li> </ul>				

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				and then put spoil on top of that				
	<ul style="list-style-type: none"> <li>Insert gate and pour concrete</li> <li>Installation of concrete sill in Vermin proof fence</li> </ul>	Waste concrete	NEMA ECA	<p><b>Objective:</b></p> <p><b>Mechanisms:</b></p> <ul style="list-style-type: none"> <li>No waste material shall be left on site that may harm man or animals.</li> <li>Surplus concrete may not be dumped indiscriminately on site, but shall be disposed of in designated areas as agreed by the Landowner.</li> <li>Concrete trucks shall not be washed on site after depositing concrete into foundations. Any spilled concrete shall be cleaned up immediately</li> <li></li> </ul>				
<b>2. ACCESS ROADS CONSTRUCTION</b>								
	<ul style="list-style-type: none"> <li>Mark access</li> </ul>	<ul style="list-style-type: none"> <li>Damage to</li> </ul>	BDA	<p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>Minimise damage to river</li> </ul>	<ul style="list-style-type: none"> <li>Access plan approved by ECO</li> </ul>			



#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
	<ul style="list-style-type: none"> <li>roads</li> <li>• Vehicles driving off servitude road</li> <li>• Illegal use of private roads</li> </ul>	<ul style="list-style-type: none"> <li>protected / endangered vegetation</li> <li>• Damage to drifts and bridges &amp; irrigation lines</li> </ul>		<ul style="list-style-type: none"> <li>and stream embankments</li> <li>• Minimise erosion of embankments and subsequent siltation of rivers, streams and dams</li> </ul> <p><b>Mechanisms:</b></p> <ul style="list-style-type: none"> <li>• A physical access plan along the servitude shall be compiled and the Contractor shall adhere to this plan at all times.</li> <li>• Proper planning when the physical access plan is drawn up by the ECO in conjunction with the Contractor shall be necessary to ensure access to all tower sites.</li> <li>• All access roads will be marked</li> <li>• Agreed on Access to be used at all times.</li> <li>• No illegal use of private roads during construction due to damage anticipated as a result of heavy vehicles and equipment</li> </ul>	<ul style="list-style-type: none"> <li>• All access roads will be marked</li> <li>• No complaints from residents and landowners</li> <li>• No access roads through river and stream banks</li> <li>• No visible erosion scars on embankments once construction is completed</li> </ul>			

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				<ul style="list-style-type: none"> <li>• All existing private access roads used for construction purposes, shall be maintained at all times to ensure that the local people have free access to and from their properties.</li> <li>• Speed limits shall be enforced in such areas and all drivers shall be sensitised to this effect.</li> <li>• Upon completion of the project all roads shall be repaired to their original state.</li> <li>• No roads shall be cut through river- and stream banks as this may lead to erosion causing siltation of streams and downstream dams.</li> <li>• Existing drifts and bridges may be used if the Landowner gives his consent. Such structures shall then be thoroughly examined for strength and durability before they are</li> </ul>				

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				<p>used. New drifts and bridges shall only be constructed with the approval of Eskom and the Landowner and at the discretion of the Environmental Control Officer.</p> <ul style="list-style-type: none"> <li>• All structures constructed for access purposes shall be properly designed and drawings of such structures shall be available for record purposes.</li> <li>• Permanently wet areas are shown on the profiles. No vehicular traffic shall be allowed in such areas. Only existing roads through such areas may be used with the approval of Eskom and the Landowner.</li> <li>• No equipment shall be used which may cause irreparable damage to wet areas. The contractor shall use alternative methods of construction</li> </ul>				

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				in such areas.				
	Bulldozer blading access roads	<ul style="list-style-type: none"> <li>• Damage to protected / endangered vegetation</li> <li>• Damage to heritage sites, Damage to private roads</li> </ul>	BDA NHRA	<p><b>Objectives:</b></p> <p><b>Mechanisms:</b></p> <ul style="list-style-type: none"> <li>• No scalping shall be allowed on any part of the servitude road unless absolutely necessary.</li> <li>• The removal of all economically valuable trees or vegetation shall be negotiated with the Landowner before such vegetation is removed.</li> <li>• All trees and vegetation cleared from the site shall be cut into manageable lengths and neatly stacked at regular intervals along the line.</li> <li>• No vegetation shall be pushed into heaps or left lying all over the servitude.</li> <li>• Protected or endangered species of plants shall not be removed unless they</li> </ul>				

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				<p>are interfering with a structure.</p> <ul style="list-style-type: none"> <li>Where such species have to be removed due to interference with a structure, the necessary permission and permits shall be obtained from Provincial Nature Conservation</li> </ul>				
	Blading of access roads through dongas	Causing erodable areas, Erosion and loss of topsoil	CARA	<ul style="list-style-type: none"> <li>Vegetation clearing must be kept to a minimum.</li> <li>Big trees with large root systems shall be cut manually and removed, as the use of a bulldozer will cause major damage to the soil when the root systems are removed.</li> <li>Stumps shall be treated with herbicide.</li> <li>Smaller vegetation can be flattened with a machine, but the blade should be kept above ground level to</li> </ul>	<ul style="list-style-type: none"> <li>Only 8m vegetation cleared along the centre of the servitude for access purposes</li> <li>No vegetation interfering with structures and statutory safety requirements upon completion of the contract</li> <li>No de-stumping of vegetation on river and stream embankments</li> <li>All alien invaders and densifiers removed to limit the fire hazard</li> </ul>			

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				prevent scalping. Any vegetation cleared shall be removed or flattened and not be pushed to form an embankment.	<ul style="list-style-type: none"> <li>No visible herbicide damage to the vegetation along the servitude one year after completion of the contract due to incorrect herbicide use</li> <li>No litigation due to unauthorised removal of vegetation</li> <li>No litigation due to unauthorised removal of vegetation</li> </ul>			
<b>3. TOWER CONSTRUCTION</b>								
	Excavation of foundation	Disturbance of topsoil and vegetation Loss of topsoil with seedbank	CARA TRMSCAAC 1 REV 3	<b>Objectives:</b>  <b>Mechanisms:</b>  Disturbance of topsoil on tower sites with severe slopes shall be minimised at all costs. <ul style="list-style-type: none"> <li>At any tower sites where conventional foundations are installed, the Contractor shall remove the topsoil separately and</li> </ul>				

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ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				<p>store it for later use during rehabilitation of such tower sites.</p> <ul style="list-style-type: none"> <li>• During backfilling operations, the Contractor shall take care not to dump the topsoil in the bottom of the foundation and then put spoil on top of that</li> <li>• Re-seeding shall be done on disturbed areas as directed by the Environmental Control Officer.</li> <li>• Slopes in excess of 2% must be contoured and slopes in excess of 12% must be terraced. Other methods of rehabilitation of tower sites may also be used at the discretion of the Environmental Control Officer, e.g. stone pitching, logging, etc.</li> <li>• Contour banks shall be spaced according to the slope on tower sites. The type of soil shall also be taken into consideration.</li> </ul>				

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
		Damage to heritage sites	NHRA					
	Drilling of foundation	Noise and dust pollution	NEMA ECA	<p><b>Objectives:</b> To avoid dust nuisance from excavated material And avoid noise nuisance from operating construction equipment</p> <p><b>Mechanism:</b></p> <ul style="list-style-type: none"> <li>• Implement dust suppression measures e.g. regular watering</li> <li>• Develop and implement dust monitoring programme</li> <li>• Limit working hours of noisy equipment to daylight hours</li> <li>• Fit silencers to equipments</li> </ul>				
	Installation of steel reinforcing	Waste material	NEMA ECA	<p><b>Objectives:</b></p> <p><b>Mechanisms:</b></p> <ul style="list-style-type: none"> <li>• No waste material shall be left on site that may harm man or animals.</li> </ul>				



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ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				<ul style="list-style-type: none"> <li>Any broken insulators shall be removed and all shards picked up.</li> <li>Broken, damaged and unused nuts, bolts and washers shall be picked up and removed from site.</li> </ul>				
	<ul style="list-style-type: none"> <li>Casting of concrete &amp; washing of concrete truck on site</li> </ul>	Waste concrete	NEMA ECA	<p><b>Objectives:</b></p> <p><b>Mechanisms:</b></p> <ul style="list-style-type: none"> <li>Surplus concrete may not be dumped indiscriminately on site, but shall be disposed of in designated areas as agreed by the Landowner.</li> <li>Concrete trucks shall not be washed on site after depositing concrete into foundations.</li> <li>Any spilled concrete shall be cleaned up immediately</li> <li>Surplus concrete may not be dumped indiscriminately on site, but shall be disposed of in designated areas as</li> </ul>				

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ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				agreed by the Landowner				
	<ul style="list-style-type: none"> <li>Assembling of towers</li> <li>Dressing of towers with hardware and insulators</li> </ul>	<ul style="list-style-type: none"> <li>Waste bolts and nuts</li> <li>Insulator breakage littering glass shards in veld</li> </ul>	NEMA ECA	<p><b>Objectives:</b></p> <p><b>Mechanisms:</b></p> <ul style="list-style-type: none"> <li>No waste material shall be left on site that may harm man or animals.</li> <li>Any broken insulators shall be removed and all shards picked up.</li> <li>Broken, damaged and unused nuts, bolts and washers shall be picked up and removed from site.</li> </ul>				
	Punching and painting of nuts	Paint spillages	National Water Act, 1998	Rehabilitation of soil				
	Erection of towers with crane	Trucks / crane breaking and spilling oil / lubricants Fuel spillages	Water Act	How to rehabilitate oil and prevention				

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
		during re-fuelling						
	Erection of towers with helicopter	Noise and dust pollution	NEMA ECA	<p><b>Objectives:</b> To avoid dust nuisance from excavated material And avoid noise nuisance from operating construction equipment</p> <p><b>Mechanism:</b></p> <ul style="list-style-type: none"> <li>• Implement dust suppression measures e.g. regular watering</li> <li>• Develop and implement dust monitoring programme</li> <li>• Limit working hours of noisy equipment to daylight hours</li> <li>• Fit silencers to equipments</li> </ul>				
	Discarding packaging material on site	Waste material littering in veld	NEMA & Env Cons Act					

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
<b>4. STRINGING OPERATIONS</b>								
	<b>Installation of phase and earth conductors</b>	Damage to structures and agricultural crops	TRMSCAAC 1 REV 3	<p><b>Objective:</b></p> <ul style="list-style-type: none"> <li>• Prevent damage to expensive structures and crops,</li> <li>• Prevent disruption of services</li> </ul> <p><b>Mechanisms:</b></p> <ul style="list-style-type: none"> <li>• The necessary scaffolding / protection measures must be installed to prevent damage to structures supporting certain high yield agricultural crops, such as vineyards, orchards, nurseries, etc., as well as the crops itself</li> <li>• All structures supplying services such as telephone and smaller power lines, as well as main and farm roads, shall be safeguarded by</li> </ul>	<ul style="list-style-type: none"> <li>• No claims emanating from damage to supporting structures and crops</li> <li>• No complaints or claims arising from disruption of services</li> </ul>			

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				<p>measures to prevent disruption of services</p> <ul style="list-style-type: none"> <li>Use of “rugby” posts to protect roads and telephone lines are sufficient.</li> </ul>				
	<ul style="list-style-type: none"> <li>Clearing of drum, tensioner and winch stations</li> <li>Creating fire breaks around drum stations</li> </ul>	Damage to protected / endangered vegetation	BDA	<p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>Minimise damage to vegetation</li> <li>Minimise damage to topsoil</li> <li>Successful rehabilitation of barren areas</li> </ul> <p><b>Mechanisms:</b></p> <ul style="list-style-type: none"> <li>The siting of winch and tensioner stations shall be done in conjunction with the landowner and ecologist/botanist and archaeologist that participated in the compilation of the EMP where necessary.</li> <li>Specifications require the protection of Eskom supplied material on site, especially conductor</li> </ul>	<ul style="list-style-type: none"> <li>No damage to vegetation outside the servitude</li> <li>No visible erosion three months after completion of the contract</li> <li>No loss of topsoil</li> </ul>			

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				<p>drums.</p> <ul style="list-style-type: none"> <li>This normally means that a firebreak is bladed around a drum station in the veld. These areas are left to rehabilitate on their own which could be disastrous. Once the stringing of conductor has been completed in a certain area, the winch- and tensioner stations shall be rehabilitated where necessary. If the area was badly damaged, re-seeding shall be done and fencing in of the area shall be considered and carried out.</li> </ul>				
	Using bulldozer for tension purposes	Damage to heritage sites, Disturbance of topsoil and vegetation	NHRA BDA CARA	<p><b>Objectives:</b></p> <ul style="list-style-type: none"> <li>Protection of archaeological sites and land considered to be of cultural value</li> <li>Protection of known sites against vandalism, destruction and theft</li> <li>The preservation and appropriate management</li> </ul>	<ul style="list-style-type: none"> <li>No destruction of or damage to known archaeological sites</li> <li>Management of existing sites and new discoveries in accordance with the recommendations of the Archaeologists</li> </ul>			

**4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)**

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				<p>of new archaeological finds should these be discovered during construction</p> <ul style="list-style-type: none"> <li>• Protection of sites and land considered to be of cultural value</li> <li>• Protection of known sites against vandalism, destruction and theft</li> <li>• The preservation and appropriate management of new finds should these be discovered during construction</li> </ul> <p><b>Mechanisms:</b></p> <ul style="list-style-type: none"> <li>• The position of known sites will be shown on the final profiles. Such areas shall be marked as no go areas.</li> <li>• Artefacts shall not be removed under any circumstances.</li> <li>• Any destruction of a site can only be allowed once a permit is obtained and the site has been mapped</li> </ul>	<ul style="list-style-type: none"> <li>• No litigation due to destruction of sites</li> </ul>			

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				<p>and noted.</p> <ul style="list-style-type: none"> <li>• Permits shall be obtained from the South African Heritage Resources Association (SAHRA) should the proposed line affect any world heritage sites or if any sites are to be destroyed or altered.</li> <li>• No dolomite, breccia or stromatolites may be removed or disturbed without the required permits from SAHRA.</li> <li>• All monuments, heritage sites and historical sites shall be treated with the utmost respect.</li> <li>• Any graves shall be clearly marked and treated as no go areas.</li> <li>• No destruction of any site shall be allowed.</li> <li>• Should it be necessary to remove any graves, the necessary procedures shall be followed and permits obtained.</li> </ul>				



#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
	<ul style="list-style-type: none"> <li>Jointing and crimping of conductors</li> <li>Discarding wooden cable drum material on site</li> </ul>	Waste material littering in veld	NEMA ECA	<p><b>Objective:</b></p> <p><b>Mechanisms:</b> Any broken insulators shall be removed and all shards picked up. Broken, damaged and unused nuts, bolts and washers shall be picked up and removed from site.</p>	No waste material shall be left on site that may harm man or animals.			
	No protection for fences during stringing	Damage to fences	FA	<p><b>Objectives:</b> No damage to fences</p> <p><b>Mechanisms:</b></p> <ul style="list-style-type: none"> <li>All fences shall be protected against damage during stringing operations.</li> <li>All damage to be repaired immediately and to the satisfaction of the landowner.</li> </ul>				
	Tractor pulling out pilot wire	Damage to protected / endangered vegetation	BDA					

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
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#### 5. REHABILITATION OF SERVITUDE

	Installation of diversion berms	Prevention of erosion	CARA	4.6, 5.1, 5.2, 5.4, <b>Where are these?</b>				
	Fixing of fences	Waste material littering in veld	NEMA ECA					
	Re-seeding of barren areas	Wrong seed used	BDA FA TRMSCAAC 1 REV 3	<p><b>Objective</b></p> <ul style="list-style-type: none"> <li>Minimise damage to topsoil and environment at tower positions</li> <li>Successful rehabilitation of all damaged areas</li> <li>Prevention of erosion</li> </ul> <p><b>Mechanisms:</b></p> <ul style="list-style-type: none"> <li>Re-seeding shall be done on disturbed areas as directed by the Environmental Control Officer.</li> <li>Slopes in excess of 2%</li> </ul>	<ul style="list-style-type: none"> <li>No loss of topsoil due to construction activities</li> <li>No loss of topsoil due to construction activities</li> <li>All disturbed areas successfully rehabilitated within three months of completion of the contract.</li> <li>No visible erosion scars three months after completion of</li> </ul>			

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				<p>must be contoured and slopes in excess of 12% must be terraced.</p> <ul style="list-style-type: none"> <li>• Other methods of rehabilitation of tower sites may also be used at the discretion of the Environmental Control Officer, e.g. stone pitching, logging, etc. Contour banks shall be spaced according to the slope on tower sites.</li> <li>• The type of soil shall also be taken into consideration.</li> <li>• A mixture of seed can be used provided the mixture is carefully selected to ensure the following:               <ul style="list-style-type: none"> <li>○ Annual and perennial plants are chosen</li> <li>○ Pioneer species are included</li> <li>○ All the plants shall not be edible</li> <li>○ Species chosen will grow in the</li> </ul> </li> </ul>	<p>the contract</p> <ul style="list-style-type: none"> <li>• No open fires shall be allowed on site under any circumstance</li> </ul>			

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				<p>area without many problems.</p> <ul style="list-style-type: none"> <li>○ Root systems must have a binding effect on the soil.</li> <li>○ The final product should not cause an ecological imbalance in the area.</li> </ul> <ul style="list-style-type: none"> <li>• To get the best results in a specific area, it is a good idea to consult with a vegetation specialist or the local extension officer of the Dept of Agriculture.</li> <li>• Seed distributors can also give valuable advice as to the mixtures and amount of seed necessary to seed a certain area.</li> <li>• Re-seeding, as well as fencing in of badly damaged areas, will always be at the discretion of the ECO, unless specifically requested by a Landowner (Specifics</li> </ul>				

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				about the project, special tower positions, helicopter construction, etc.)				
	Picking up all rubble and litter	Servitude left clean and neat	NEMA ECA HSA	The Contractor shall dispose of all excess material on site in an appropriate manner and at a designated place. All packaging material shall be removed from site and disposed of and not burned on site. No landfill may be used without the consent from the Landowner. Should a landfill be used for biodegradable materials only, the rubble shall be compacted and at least 1m of soil shall cover the waste material. No hazardous material, e.g. oil or diesel fuel shall be disposed of in any unregistered waste site.				

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
	<ul style="list-style-type: none"> <li>Settling of all outstanding claims</li> <li>Signing off all landowners</li> </ul>	Landowners happy Servitude ready for handover to Grid		<p><b>Objectives:</b> Minimize claims and litigation from landowners</p> <p><b>Mechanisms:</b></p> <ul style="list-style-type: none"> <li>All anticipated crop damage shall be noted while access negotiations are underway.</li> <li>All damage to commercial crops shall be recorded immediately.</li> <li>The ECO</li> <li>The date, time of damage, type of damage and reason for the damage shall be</li> </ul>	<ul style="list-style-type: none"> <li>Successful completion of the contract with all landowners signing the release form six months after completion of the project</li> <li>All claims investigated and dealt with in one month</li> <li>No litigation due to unsettled claims</li> </ul>			

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				<p>recorded in full to ensure the responsible party is held liable.</p> <ul style="list-style-type: none"> <li>• All claims for compensation emanating from crop damage should be directed to the ECO for appraisal.</li> <li>• The Contractor shall be held liable for all unnecessary damage to the environment and crops.</li> <li>• A register shall be kept of all complaints from Landowners.</li> <li>• All claims shall be handled immediately to ensure timeous rectification / payment.</li> </ul>				
Fire control	Making fires in winter due to cold weather Cooking food on site / smoking	Veld fires	NVFFA FA	<p><b>Objective:</b></p> <p><b>Mechanisms</b></p> <ul style="list-style-type: none"> <li>• No open fires shall be allowed on site under any circumstance</li> <li>• The Contractor shall have fire-fighting equipment</li> </ul>	The Contractor shall have fire-fighting equipment available on all vehicles working on site, especially during the winter months			

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				available on all vehicles working on site, especially during the winter months.				
Use veld for toilet		Health risk / spreading of measles	OHSA TRMSCAAC 1 REV 3	<ul style="list-style-type: none"> <li>The Contractor shall install mobile chemical toilets on site.</li> <li>Staff shall be sensitised to the fact that they should use these toilets at all times. No use of the veld shall be allowed, as this always create problems with the landowners and lead to claims for problems with stock diseases. Toilet paper is also a source of littering in the veld, and the Contractor shall be forced to clean up any litter. Applicable where the transmission line traverses land where stock (cattle and sheep) and game farming is practised.</li> </ul>				



#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
		Unauthorised access		No camping shall be allowed on any private property. If the Contractor wants to leave guards on site, it shall only be done with the written consent of the Landowners involved				
Transportation of personnel and material to site		Trucks breaking and spilling oil	NWA ECA HSA					
<b>5. WASTE MANAGEMENT</b>								

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
	<ul style="list-style-type: none"> <li>Erect temporary houses and tents,</li> <li>Erect store for oil, lubricants and parts</li> <li>Install waste collection bins</li> </ul>	<p>Waste material / littering</p> <p>Waste foodstuff and food containers</p>	<p>NEMA WMB TRMSCAAC 1 REV 3</p>	<p><b>Objective:</b></p> <ul style="list-style-type: none"> <li>To avoid pollution of environment with solid wastes</li> <li>To keep the servitude neat and clean</li> <li>Disposal of rubble and refuse in an appropriate manner</li> <li>To avoid water contaminations and soil pollution caused by oil spills</li> </ul> <p><b>Mechanisms:</b></p> <ul style="list-style-type: none"> <li>No material shall be left on site that may harm man or animals.</li> <li>Littering by the employees of the Contractor shall not be allowed</li> <li>The Contractor shall collect all litter and dispose thereof in a suitable manner.</li> <li>Where a registered waste site is not available close to the construction site,</li> </ul>	<ul style="list-style-type: none"> <li>No solid waste stored on site</li> <li>No incidents recorded</li> <li>No complaints from Landowner</li> <li>No litigation cases</li> <li>No visible spillages of oil or concrete</li> <li>No rubble or refuse lying around on site</li> <li>No incidents of litigation</li> <li>No complaints from Landowners</li> </ul>	<ul style="list-style-type: none"> <li>The ECO shall monitor the neatness of the work sites as well as the campsite.</li> <li>ECO to record all incidents and report same to Project Manager</li> <li>ECO to recommend corrective action</li> </ul>		

#### 4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
				<p>the Contractor shall provide a method statement with regard to waste management</p> <ul style="list-style-type: none"> <li>• Under no circumstances may solid waste be burned on site unless burned off-site in a registered incinerator.</li> </ul>				
<b>6. SOCIO-ECONOMIC ISSUES</b>								
1. Landowner relations				<p><b>Objectives:</b> Maintain good relations with Landowners</p> <p><b>Mechanisms:</b></p>	<ul style="list-style-type: none"> <li>• No delays in the project due to Landowner interference</li> <li>• No Claims or litigations from landowner</li> <li>• Landowner signs final release form</li> </ul>			

**4.1 ACTIVITY AND ASSOCIATED IMPACTS DURING CONSTRUCTION PHASE (EXAMPLE)**

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY

**4.2 ACTIVITY AND ASSOCIATED IMPACTS DURING OPERATION PHASE (EXAMPLE)**

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
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Maintenance	Removal of alien vegetation  Access Roads- what is the activity  Bush Clearing  Grass Cutting  Wild Life Interaction , cattle, game, birds, protected species Herbicides	Hardware Servitude  Erosion						
	Waste							

#### 4.2 ACTIVITY AND ASSOCIATED IMPACTS DURING OPERATION PHASE (EXAMPLE)

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
Projects	Grass Cutting							
	Bush Clearing							
Line Patrol	Foot Patrols							
	Vehicle Patrol							
	Helicopter Patrol							
Rehabilitation	Servitude rehabilitation Hardware Rehabilitation OPGW							
Building development	Farm dwelling Rural dev Urban dev Industrial dev							
Land Owner Interaction								

**4.2 ACTIVITY AND ASSOCIATED IMPACTS DURING OPERATION PHASE (EXAMPLE)**

ACTIVITY / ISSUE	ASPECTS	POSSIBLE IMPACTS	RELEVANT LEGISLATION/ ESKOM SPEC	MITIGATION MEASURES	PERFORMANCE INDICATORS	MONITORING METHOD	SCHEDULE/ FREQUENCY	RESPONSIBLE PARTY
Agricultural Activities	Forestry							
	Maize/ Beans							
	Cane							
	Grazing							
	Citrus/Nuts/ Fruits							
Fire Management	Vineyards Game Farm							

#### **4. OUTLINE OF ROD CONDITIONS**



## 5. SUMMARY OF LAND OWNER DETAILS & CONDITIONS

The successful completion of the project depends a lot on the good relations with the Landowner. It is therefore required that the Contractor will supply one person to be the liaison officer (CECO) for the entire contract, and that this person shall be available to investigate all problems arising on the work sites concerning the Landowners (TRMSCAAC1 REV 3)

All negotiations for any reason shall be between Eskom, the Landowner and the Contractor. **NO** verbal agreements shall be made. All agreements shall be recorded properly and all parties shall co-sign the documentation. It is proposed that a photographic record of access roads be kept. This will then be available should any claims be instituted by any Landowners. Any claims instituted by the Landowners shall be investigated and treated promptly. Unnecessary delays should be avoided at all costs.

The Landowners shall always be kept informed about any changes to the construction programme should they be involved. If the Environmental Control Officer is not on site the Contractor's Environmental Control Officer should keep the Landowners informed. The contact numbers of the Contractor's ECO officer and the Eskom ECO shall be made available to the Landowners. This will ensure open channels of communication and prompt response to queries and claims.

All contact with the Landowners shall be courteous at all times. The rights of the Landowners shall be respected at all times and all staff shall be sensitised to the effect that we are working on private property.

Eskom shall ensure that all agreements reached with the Landowner are fulfilled, and that such areas be rehabilitated once construction is completed. Should any claim be instituted against Eskom, due to the actions of the Contractor at a batching plant site, Eskom shall hold the Contractor fully responsible for the claim until such time that the Contractor can prove otherwise with the necessary documentation.

**5.1. LIST OF LANDOWNERS, CONTACT DETAILS, CONDITIONS AND REQUIREMENTS.**

<b>PORTION NO</b>	<b>NAME OF LAND OWNER</b>	<b>LAND OWNER CONTACT DETAILS</b>	<b>LAND OWNER CONDITIONS</b>	<b>TOWERS AFFECTED</b>	<b>CO-ORDINATES</b>	<b>ENVIRONEMTAL IMPACTS ANTICIPATED TOWERS</b>	<b>REFERENCE TO PROFILES &amp; DRAWINGS</b>

**6. COST ESTIMATES FOR IMPLEMENTING THE MITIGATION MEASURES AND OPERATIONAL MAINTENANCE THEREOF (EXAMPLE).**

6.1. Environmental Cost Estimates during construction phase

<b>Construction phase Cost Estimates</b>				
<b>Categories and activities</b>	<b>Explanations</b>	<b>Examples</b>	<b>Operational costs</b>	<b>Capital costs</b>
<b>Environmental costs associated with the Transmission network</b>	Environmental impact quantification costs associated with the compilation of scoping documents, EIA's, EMP's, risk assessments and the compilation, implementation of EMP's, and EMP's for new or existing projects <b>EXCLUDING</b> internal man-hours. This would include costs associated with contractors employed to undertake EIA's and EMP's.	Environmental impact quantification costs associated with the compilation of scoping documents, EIA and EMP reports.  Costs associated with EIA, EMP reports and line modifications due to environmental reasons.		
<b>Drainage</b>	Costs associated with the construction of, modifications too, repair and maintenance of all sewerage drainage systems			
<b>Fire protection –</b>	Costs associated with the modifications of, repair and maintenance too all transformer bund walls			
	Costs associated with modifications of, repair and maintenance too all substation oil dams			
<b>Water treatment</b>	Costs associated with the,repair and maintenance of all substation water pipes and associated water infrastructure			
<b>Animal interaction.</b>	Costs associated with the installation of bird			

	diverters			
<b>Rehabilitation</b>	All costs associated with the rehabilitation of disturbed land			
<b>Internal Man-hours</b>	Environmental Cost Centres for dedicated full time Environmental Personnel. This includes man-hours and other costs incurred that are charged to the cost centre by non dedicated environmental personnel	Costs associated with actual time spent on managing, documenting, monitoring, reviewing and mitigating environmentally related impacts (air, water, waste, land)  Environmental costs associated with capital projects are capitalised (i.e. charged to one of the categories under capital expenditure) and hence are not to be included as part of the costs assigned to the environmental cost centre. Only the supply amount must be used at all times to remove the risk for double accounting.		
<b>Categories and activities</b>	<b>Explanations</b>	<b>Examples</b>	<b>Operational costs</b>	<b>Capital costs</b>
<b><u>Audits</u></b>				
<ul style="list-style-type: none"> <li>• Internal audits.</li> <li>• External audits</li> </ul>	All costs associated with environmental audits			
<b><u>Training (internal and external)</u></b>	Costs associated with environmental training, for courses attended internally and externally, including environmental related interventions for <u>non environmental practitioners</u> who are required to incorporate environmental considerations in the	Costs associated with environmental training, only for EDCO registered courses attended internally and externally by non environmental practitioners who are required to		

	performance of their duties	incorporate environmental considerations in the performance of their duties. EDCO registered environmental related courses, which support the Transmission Group's business goals and Key Performance Areas. Other adhoc courses, seminars and conferences, which are not registered on the EDCO system, will not be reported on.		
<b>Waste management</b> Costs associated with the management of domestic and hazardous waste as per the waste directive.	Costs associated with the repair and maintenance of all sewerage pipes. Costs associated with all sewerage removal contracts			
	PCB: <ul style="list-style-type: none"> <li>• Costs associated with the removal, storage and disposal of all hazardous waste</li> <li>• Costs associated with the incineration of PCB's</li> </ul>			
	Costs associated with the removal of domestic waste at Transmission business units and substations.			
	Costs associated with the replacement and			

	removal of asbestos slabs			
<b>Categories and activities</b>	<b>Explanations</b>	<b>Examples</b>	<b>Operational costs</b>	<b>Capital costs</b>
<b>Land management</b> Biodiversity and land management. Costs related to managing and maintaining servitudes and land including erosion control, firebreaks, alien plant eradication and animal interactions. All costs related to grass cutting shall not be included.	Costs associated with all erosion contracts initiated for the sole purpose of rectifying damage too the environment.			
	Rehabilitation: Costs associated with the rehabilitation of disturbed land during construction.			
	Aesthetics: Costs associated with modifications for aesthetic reasons.			
	Costs associated with the eradication of Alien / invader vegetation.			
	Projects initiated in the supply plan and fulfilling the criteria of environmental expenditure as per the definitions			

<b>Pollution</b>	All costs associated with the clean up and mitigation of oil, herbicide or hazardous substance spills.			
<b>Production equipment</b>	All assets purchased for the primary reason of sustaining, improving, rectifying damage too or protecting the environment from real or perceived impact			
<b>Other</b>	Other environmental costs costed for the sole purpose of sustaining, improving, rectifying damage too or protecting the environment from real or perceived impact			
<b>TOTALS</b>				

## 6.2. Environmental Cost Estimates during operational phase

<b>Operational Phase Cost Estimates</b>				
<b>Categories and activities</b>	<b>Explanations</b>	<b>Examples</b>	<b>Operational costs</b>	<b>Capital costs</b>
<b>Environmental costs associated with the Transmission network</b>	Environmental impact quantification costs associated with the compilation of scoping documents, EIA's, EMP's, risk assessments and the compilation, implementation of EMP's, and EMP's for new or existing projects <b>EXCLUDING</b> internal man-hours. This would include costs associated with contractors employed to undertake EIA's and EMP's.	Environmental impact quantification costs associated with the compilation of scoping documents, EIA and EMP reports.  Costs associated with EIA, EMP reports and line modifications due to environmental reasons.		R7,858,364.66



<b>Drainage</b>	Costs associated with the construction of, modifications too, repair and maintenance of all sewerage drainage systems			
<b>Fire protection –</b>	Costs associated with the modifications of, repair and maintenance too all transformer bund walls			
	Costs associated with modifications of, repair and maintenance too all substation oil dams			
<b>Water treatment</b>	Costs associated with the,repair and maintenance of all substation water pipes and associated water infrastructure			
<b>Animal interaction.</b>	Costs associated with the installation of bird diverters			
<b>Rehabilitation</b>	All costs associated with the rehabilitation of disturbed land			
<b>Internal Man-hours</b>	Environmental Cost Centres for dedicated full time Environmental Personnel. This includes man-hours and other costs incurred that are charged to the cost centre by non dedicated environmental personnel	Costs associated with actual time spent on managing, documenting, monitoring, reviewing and mitigating environmentally related impacts (air, water, waste, land)  Environmental costs associated with capital projects are capitalised (i.e. charged to one of the categories under capital expenditure) and hence are not to be included as part of the costs assigned to the environmental cost centre. Only the supply amount must be used at all times to remove the risk for double accounting.	<b>R1,044,032.76</b>	
<b>Categories and activities</b>	<b>Explanations</b>	<b>Examples</b>	<b>Operational costs</b>	<b>Capital costs</b>

<p><b><u>Audits</u></b></p> <ul style="list-style-type: none"> <li>• Internal audits.</li> <li>• External audits</li> </ul>	<p>All costs associated with environmental audits</p>			
<p><b><u>Training</u></b> <b><u>(internal and external)</u></b></p>	<p>Costs associated with environmental training, for courses attended internally and externally, including environmental related interventions <u>for non environmental practitioners</u> who are required to incorporate environmental considerations in the performance of their duties</p>	<p>Costs associated with environmental training, only for EDCO registered courses attended internally and externally by non environmental practitioners who are required to incorporate environmental considerations in the performance of their duties. EDCO registered environmental related courses, which support the Transmission Group's business goals and Key Performance Areas. Other adhoc courses, seminars and conferences, which are not registered on the EDCO system, will not be reported on.</p>	<p><b>R16,876</b></p>	
<p><b><u>Waste management</u></b> Costs associated with the management of domestic and hazardous waste as per the waste directive.</p>	<p>Costs associated with the repair and maintenance of all sewerage pipes. Costs associated with all sewerage removal contracts</p>			
	<p>PCB:</p>			

	<ul style="list-style-type: none"> <li>• Costs associated with the removal, storage and disposal of all hazardous waste</li> <li>• Costs associated with the incineration of PCB's</li> </ul>			
	Costs associated with the removal of domestic waste at Transmission business units and substations.			
	Costs associated with the replacement and removal of asbestos slabs			
<b>Categories and activities</b>	<b>Explanations</b>	<b>Examples</b>	<b>Operational costs</b>	<b>Capital costs</b>
<b>Land management</b> Biodiversity and land management. Costs related to managing and maintaining servitudes and land including erosion control, firebreaks, alien plant eradication and animal interactions. All costs related to grass cutting shall not be included.	Costs associated with all erosion contracts initiated for the sole purpose of rectifying damage too the environment.			
	Rehabilitation: Costs associated with the			

	rehabilitation of disturbed land during construction.			
	Aesthetics: Costs associated with modifications for aesthetic reasons.			
	Costs associated with the eradication of Alien / invader vegetation.			
	Projects initiated in the supply plan and fulfilling the criteria of environmental expenditure as per the definitions			
<b>Pollution</b>	All costs associated with the clean up and mitigation of oil, herbicide or hazardous substance spills.			
<b>Production equipment</b>	All assets purchased for the primary reason of sustaining, improving, rectifying damage too or protecting the environment from real or perceived impact			
<b>Other</b>	Other environmental costs costed for the sole purpose of sustaining, improving, rectifying damage too or protecting the environment from real or perceived impact			
<b>TOTALS</b>				

## **7. GENERAL**

### **7.1. PHYSICAL ACCESS PLAN**

The Contractor (CECO), in conjunction with the ECO and Landowners, shall draft a physical access plan. No decisions shall be made without the consent of the Landowner. All agreements should be in writing and well documented.

The physical access plan shall allow for the installation of concrete pipes and drifts where such structures may be needed to facilitate access. The Environmental Control Officer in conjunction with the Contract Manager shall use discretion as to what special measures will be required to ensure access (Refer also Section 10.1). The necessary agreements reached shall be implemented to the satisfaction of the landowner.

### **7.2. AWARENESS AND TRAINING OF CONTRACTOR**

### **7.3. SITE DOCUMENTATION / MONITORING**

The standard Eskom site documentation shall be used to keep records on site. All documents shall be kept on site and be available for monitoring and auditing purposes. Site inspections by an Environmental Audit Team may require access to this documentation for auditing purposes. The documentation shall be signed by all parties to ensure that such documents are legitimate. Regular monitoring of all site works by the Environmental Control Officer is imperative to ensure that all problems encountered are solved punctually and amicably. When the Environmental Control Officer is not available, the Contract Manager/Site Supervisor shall keep abreast of all works to ensure no problems arise.

**Two-weekly reports shall be forwarded to the appointed Transmission Environmental Advisor with all information relating to environmental matters.** The following **Key Performance Indicators** must be reported on a two-weekly basis:

1. Complaints received from Landowners and actions taken.
2. Environmental incidents, such as oil spills, concrete spills, etc. and actions taken (litigation excluded).
3. Incidents possibly leading to litigation and legal contravention's.
4. Environmental damage that needs rehabilitation measures to be taken.

The following documentation shall be kept on site:

- Access negotiations and physical access plan.
- Complaints register.
- Site daily dairy.
- Records of all remediation / rehabilitation activities.
- Copies of two-weekly reports to the Tx Engineering Environmental Advisor at MWP.
- Copy of the Environmental Management Programme (EMP) file.

#### **7.4. AUDITS**

During the construction period at least two (2) Environmental Audits shall be conducted to determine compliance with the recommendations of the EIA, EMP and conditions of the Record of Decision (ROD). These can be internal audits or external by DEAT or the ISO14001 auditors or combined audits.