

# KUDU 400 KV TRANSMISSION LINE

## **DRAFT PRE-AUTHORISATION CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN FOR THE PROPOSED 400 KV TRANSMISSION LINE**

**FEBRUARY 2007**

**FOR SUBMISSION TO:**



**DEPARTMENT OF ENVIRONMENTAL  
AFFAIRS AND TOURISM**

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**SCOPE**

The scope of this document is to give guidelines regarding the environment, to the Contractor constructing the Kudu 400 kV transmission line. This document shall be seen as part of the contract and supplementary to Eskom's TRMSCAAC1 REV 3, which deals with Transmission Towers and Line Construction.

**This management plan must thus be part of the enquiry document to make the recommendations and constraints, as set out in this document, enforceable under the general conditions of the contract.**

**THE MANAGEMENT PLAN HAS A LONG-TERM OBJECTIVE TO ENSURE THAT:**

- Environmental Management considerations are implemented from the start of the project,
- Precautions against damage and claims arising from damage are taken well in advance,
- The completion date of the contract is not delayed due to problems with landowners arising during the course of construction, and
- Regulatory requirements as well as the Record of Decision are adhered to.

**THIS CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP) REQUIRES A COMMITMENT FROM THE ESKOM PROJECT MANAGER AND CONTRACTOR ON THE FOLLOWING ISSUES:**

- To take into consideration the landowners as the line traverses private property.
- Always behave professionally on- and off-site.
- Ensure quality in all work done, technical and environmental.
- Resolve problems and claims arising from damage immediately to ensure the smooth flow of operations.
- To underwrite Eskom's Environmental Policy at all times.
- To use this Construction Environmental Management Plan for the benefit of all involved.
- To preserve the natural environment by avoiding destructive actions on- and off-site.

This document (hereafter referred to as the CEMP) sets the institutional framework for responsibilities and reporting of all environmental issues during the construction of the 400 kV transmission line. It is important that the contractor team and engineers are fully acquainted with the contents of this CEMP, to ensure potential negative impacts are avoided or identified in advance during construction and the appropriate mitigation measures implemented.

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**ABBREVIATIONS**

<b>C</b>	Contractor
<b>CE</b>	Consulting Engineer
<b>CEMP</b>	Construction Environmental Management Plan (this document)
<b>CM</b>	Construction Manager
<b>DWAF</b>	Department of Water Affairs and Forestry
<b>ECO</b>	Environmental Control Officer
<b>EIA</b>	Environmental Impact Assessment
<b>IEM</b>	Integrated Environmental Management
<b>PM</b>	Project Manager
<b>ROD</b>	Record of Decision
<b>EAT</b>	Environmental Audit Team

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**SECTION 1: INTRODUCTION AND BACKGROUND INFORMATION****1.1 INTRODUCTION**

Strategic Environmental Focus (Pty) Ltd (SEF), as environmental consultants, were appointed by Eskom Transmission to undertake the appropriate environmental process for the construction of the proposed Kudu 400 kV transmission line between Oranjemond substation in the Northern Cape and Juno substation in the Western Cape.

This document represents the detailed Construction Environmental Management Plan (CEMP) for the transmission line, and is compiled in accordance with the Integrated Environmental Management (IEM) philosophy (DEAT, 2004a). This philosophy aims to achieve a desirable balance between conservation and development (DEAT, 1992). IEM is a key instrument of the National Environmental Management Act [NEMA] (Act No. 107 of 1998). NEMA promotes the integrated environmental management of activities that may have a significant effect on the environment, while IEM prescribes a code of practice for ensuring that environmental management principles are fully integrated into all stages of the development process. It advocates the use of several environmental management tools that are appropriate for the various levels of decision-making. One of such tools is an Environmental Management Plan.

The IEM guidelines intend endearing a pro-active approach to sourcing, collating and presenting information in a manner that can be interpreted at all levels. This document is in line with the NEMA, which has repealed a number of the provisions of the Environmental Conservation Act, 1989 (ECA), and is focussed primarily on co-operative governance, public participation and sustainable development. The Environmental Impact Assessment Regulations, 2006 that took effect on the 3 July are meant to regulate the procedures and criteria for the submission, processing, consideration and decision of applications for environmental authorisation of listed activities. However, these regulations are not, strictly speaking, applicable to this document, since the current authorisation of this project occurred under the ECA.

**1.2 BACKGROUND**

A Scoping Phase as well as a final Environmental Impact Assessment (EIA) were conducted by Strategic Environmental Focus (Pty) Ltd during 2005-2007. The EIA was undertaken in terms of the old EIA Regulations (Government Notice No's R 1182, 1183 and 1184 of 1997) in terms of Sections 21 and 26 of the Environment Conservation Act, 1989 (Act No. 73 of 1989). Although new EIA Regulations in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) have replaced these old regulations and have been in effect since July 2006, the current EIA process was started in terms of the old regulations in May 2005, and must continue under the requirements of the old EIA Regulations.

## **CEMP layout and structure**

All environmentally sensitive areas are indicated on the profiles and the relevant environmental management strategies to minimise negative impacts on these areas will be dealt with in the “Pylon Specific CEMP” (refer to SECTION 3) once the final walk-down is completed. The “Pylon Specific CEMP” will provide site-specific mitigation measures applicable to certain pylons and or groups of pylons. The “Pylon Specific CEMP” includes mitigation on cultivated land, stock farming, ecological, hydrological and heritage features, game farms and protected areas, as well as social and avifaunal considerations. The Project Manager and Contractor must take note of these prior to the commencement of any construction activities. The “Pylon Specific CEMP” must be implemented in conjunction with the measures stated in the “Standard CEMP” found in SECTION 2 of this document.

### **1.2.1 Phases of the Project**

The process which was followed in compiling the CEMP is in accordance with Sections 24 and 24e of the National Environment Management Act, 1998 (Act No. 107 of 1998), and it applies the principles of Integrated Environmental Management (IEM). The purpose of this CEMP is to formulate mitigation measures that should be made binding on all contractors during the construction phase.

The point of departure for this CEMP is to take a pro-active route by addressing potential problems before they occur. This should limit corrective measures needed during the construction phase of the project.

The CEMP deals with the construction phase as detailed below:

#### *1.2.1.1 The Construction Phases*

The bulk of the impacts arising during this phase will have immediate effect (e.g. noise-, dust- and water pollution, disturbance of vegetation, etc.). If the site is monitored on a continual basis during the construction phase, it is possible to identify these impacts as they occur. These impacts will then be mitigated through the contingency plans identified in the EIA process, together with a commitment to sound environmental management from the project team.

This phase refers to all construction and its operation-related activities that will occur within the servitude area and along access roads until the project is completed. The construction activities will take approximately 24 months to complete and will occur in two distinct phases.

##### *1.2.1.1.1 Phase one*

The first phase involves the pre-construction activities such as:

- Negotiations for access roads to the servitude;
- Erection of campsites for the Contractors' workforce;

- Servitude gates installation to facilitate access to the servitude;
- Bush clearing to facilitate access, construction and the safe operation of the line;
- Establishing of access roads along the servitude; and
- Transportation of equipment, materials and personnel.

#### 1.2.1.1.2 Phase two

The second phase involves the actual construction activities such as:

- Installation of foundations for the towers;
- Tower assembly and erection;
- Conductor stringing and regulation;
- Site de-establishment and clean up;
- Rehabilitation of disturbed areas;
- Final inspection of the line and taking over from Contractor;
- Signing off by landowners after all rehabilitation is complete;
- Releasing the Contractor from site; and
- Handing over of the servitude from Transmission Services to the Region.

The construction phase will be treated as an integrated whole, or as two distinct phases, as dictated by the nature of the activities and impacts under discussion.

## 1.2.2 Environmental Aspects Addressed

Any corridor chosen for the proposed transmission line has the potential to substantially impact on the site and its adjoining land-use. The most significant negative impacts identified in the EIA include; increased erosion and; demarcation of the servitude and consequent loss of arable land; visual intrusion; impacts on bird life; the loss of flora and fauna and impacts on farming operations. Other negative impacts were the loss of historical land and heritage resources. The remainder of the impacts were considered to be of low significance and not detrimental to the environment.

Table 2 below lists the general scope of impacts that were identified for the construction of a transmission line during the EIA. Table 2 below does NOT include those impacts identified with the operational phase of a transmission line, such as electro magnetic fields (EMF). The relevant chapters and or page numbers for both the “Standard” and “Specific” sections of this CEMP are included for convenience.

**Table 1: List of impacts as identified during the EIA**

Aspect	Activity
Socio – Economic	Construction of the transmission line.
Agricultural Economic	Construction the transmission line.
Visual	Access roads, a cleared servitude, substations, construction camps and campsite for crew housing.
Ecological	Impacts on rare, endemic or protected species
Bird Life	Servitude clearing and construction of access roads and activities of the crew at the construction camps, bird collisions during operation.
Cultural and Heritage	Constructing the towers at a site having historical and cultural significance.
Impact on Tourism	Construction on high-potential eco-tourism or conservation land.
Impact on soils and landform	Construction on erodable sandy soils
Impact on Hydrology and Surface Water Resources	Construction in sensitive hydrological and surfaces water resources.
Health, Safety and Security Impacts	Construction activities; establishing the construction campsite for the transmission line.

### 1.2.3 Role Players and ‘Responsibility Matrix’

In order for this CEMP to be successfully implemented, all the role players involved in the project need to co-operate. For this to happen possible role players must have a clear understanding of their role in the project, must be professional, form respectful and transparent relationships, and maintain open lines of communication . These role players include Eskom Transmission, The Environmental Auditing Team (EAT), The Environmental Control Officer (ECO), Project Manager (PM), Contract Manager (CM), the Contractors (C), landowners, interested and affected parties and the relevant environmental and project specialists.

Table 3 below gives a clear indication of the functions and responsibilities of the project staff. Figure 1 below indicates the reporting channels and highlights the relationships that need to be established between these role players to ensure that the CEMP is effectively implemented.



**Table 2: Responsibility matrix**

KEY	FUNCTION	RESPONSIBILITY
<b>PM</b>	Project Manager	Overall management of project and CEMP implementation.
<b>CM</b>	Site Supervisor/ Construction Manager (Eskom)	Oversees site works, liaison with Contractor, PM and ECO. The CM must be able to fill in as liaison to landowners should the ECO not be available.
<b>ECO</b>	Environmental Control Officer (Nature Conservation Corporation)	<p>The ECO must be contracted on a full-time basis. Other than Eskom, the ECO must be the liaison between the contractor and landowners. He/she must form part of the project team and be involved in all aspects of project planning that can influence environmental conditions on the site. The ECO must attend relevant project meetings, conduct daily inspections to monitor compliance with the CEMP, and be responsible for providing feedback on potential environmental problems associated with the development. The ECO will undertake to conduct an induction and an environmental awareness training session prior to site handover to all contractors.</p> <p>The Environmental Control Officer shall make contact with the local Extension Officer of the Dept. of Agriculture, as this person has valuable information about the area and the local farming community.</p> <p>The Environmental Control Officer shall convey the contents of this document to the Contractor site staff and discuss the contents in detail with the Project Manager and Contractor.</p>
<b>C</b>	Contractor	Implementation and compliance with recommendations and conditions of the CEMP.
<b>EAT</b>	Eskom Tx and Environmental Advisors	Environmental advice and auditing.

\* To be completed upon Contract award

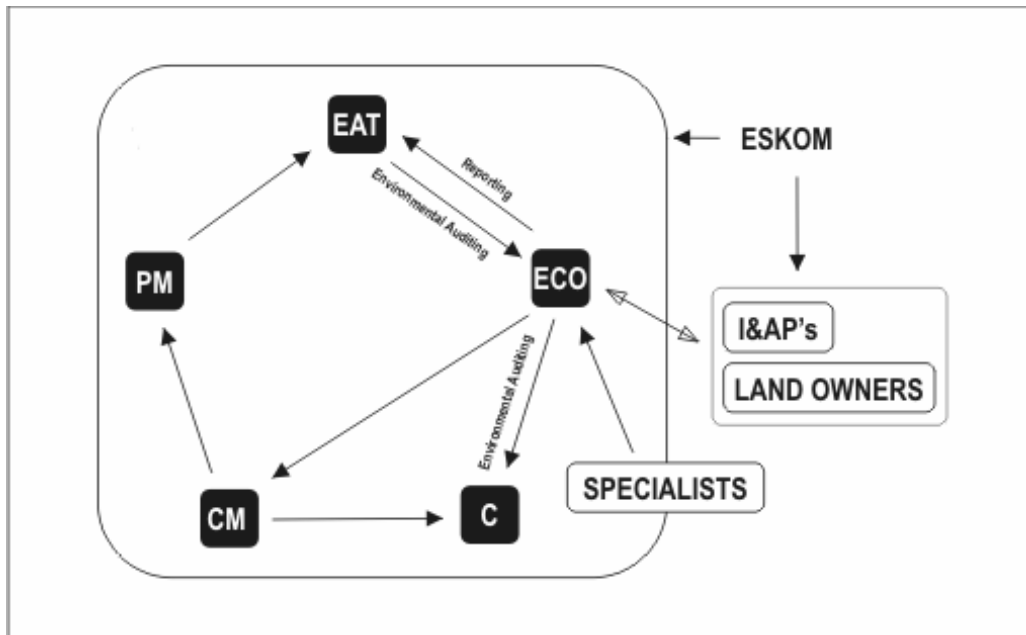


Figure 1: Reporting structure and role players involved in implementation of the CEMP.

### 1.3 MAJOR ACTIVITIES OF THE PROJECT

The project involves 19 major activities the first of which are completed. These are:

1. Drafting of site specific CEMP.

The following activities are still to be performed and will take approximately 12 months to complete:

1. Negotiations for the servitude.
2. Land survey to determine exact position of the pylons.
3. Drawing work to produce the profiles for construction – profiles included.
4. Erection of camp sites for the Contractors' workforce.
5. Negotiations for access roads to the servitude.
6. Servitude gate installation to facilitate access to the servitude.
7. Establishing of access roads on the servitude (where necessary).
8. Transportation of equipment, materials and personnel.
9. Installation of foundations for the towers.
10. Tower assembly and erection.
11. Conductor stringing and regulation.
12. Final inspection of the line and hand over to the region for operation.
13. Rehabilitation of disturbed areas.
14. Signing off landowners.
15. Handing and taking over of the servitude.

## 16. Operation and maintenance of the line.

The final inspection for the release of the Contractors' guarantee takes place one year after completion of the project. The line will be in operation immediately after completion of the project and will stay operational for the 20-40 year lifetime of the line. Subsequent maintenance and refurbishment can extend the operational lifetime of the asset substantially to 50 years.

## 1.4 TECHNICAL DETAILS OF THE KUDU 400 KV TRANSMISSION LINE

### 1.4.1 Length

The length of the line will be approximately 400 km.

### 1.4.2 Servitude width

The building restriction is 55m. Construction is limited to the servitude in which the line will be constructed. No clearance of vegetation may take place within the servitude. Where new access roads are required, jeep tracks must be created by driving over vegetation without further clearance. Only a single track may be created parallel tracks may only be created for short distances (Less than 100m) where it is necessary for vehicles to pass each other. Any extra space 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.

### 1.4.3 Tower parameters

The following towers types will be used:

- 701F self-supporting flat configuration (15-30) angle strain tower; and
- 701G self-supporting flat configuration (30-60) angle strain and 0 terminal tower.

The Kudu 400 kV line has been alternatively designed and profiled using the compact cross rope suspension tower (refer to Figure 2) in combination with the 701C Self Supporting Suspension structure where needed. The flat configuration meets the electrical requirements and complies with the constraints of the servitude provided for this line. The self-supporting angle strain 701 series have been used at the bend points or where extra support is needed.



**Figure 2: Compact cross rope suspension tower.**

**SECTION 2: CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN - CEMP****2.1 PREAMBLE**

It is clear that a development project of the nature of this power line may adversely influence the biophysical and social environments. However, with the appropriate mitigation measures and management actions, it is possible to reduce the significance of the impacts. The purpose of this CEMP is to provide management measures that must be implemented by Eskom and the contractors to ensure that the impacts of the proposed power line are minimised. This will take a concerted effort from the Contractor and proper planning is of the utmost importance.

The intention of this report is that it forms a stand-alone document, which can be used as a management tool on site during the construction phase of the development. The CEMP also forms part of compliance with the conditions of the ROD and Eskom's Environmental Management System (EMS).

**The CEMP must be maintained and upheld as a dynamic document.** In this light, the Environmental Control Officer may from time to time require additional mitigation or changes to method statements under the contract in order to practically mitigate foreseen impacts. This may only be implemented following assessment, consultation and written approval by the EAT and Eskom.

Compliance with this CEMP must be audited in accordance Section 2.3 Environmental Monitoring and Auditing.

**2.2 PROJECT EXECUTION AREA**

**The Contractor shall take all the necessary precautions against damage (TRMSCAAC1 REV 3 section 4.1.2).**

Good relations with landowners need to be established and maintained throughout the project. This will help in the solving of problems and the prevention thereof. Lines of communication between landowners and the Environmental Control Officer must always be open to ensure proper and timely reaction to complaints. The Environmental Control Officer will act as the contractor's liaison officer for the entire contract. The Project Manager must keep abreast of all aspects of the project in order to facilitate the role of liaison officer should the Environmental Control Officer not be available. The contact numbers of the ECO and Project Manager shall be made available to landowners. The reputation of both the Contractor and Eskom is at stake and should be the driver for everybody involved to perform in excellence.

Construction activities are limited to the area as demarcated by Eskom and shown on the site plans. Any area outside Eskom-owned property, required to facilitate access, for construction camps or material storage areas, shall be negotiated with the landowner and written agreements shall be obtained.

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

**No work shall commence until permission is granted by the Environmental Advisor from Transmission Engineering and the ROD for the 400 kV transmission line from DEAT has been obtained. The Project Manager shall ensure that all conditions in the ROD are fulfilled before the Contractor occupies the site.**

## 2.3 ENVIRONMENTAL MONITORING AND AUDITING

### 2.3.1 Environmental Control Officer

An Environmental Control Officer shall be appointed on a full-time basis to oversee, monitor and implement the requirements of this CEMP. The Environmental Control Officer shall make contact with the local Extension Officer of the Department of Agriculture, as this person has valuable information about the area and the local farming community.

Should construction commence at more than two points at the same time and these points are more than 200 Km apart an ECO shall be appointed for each point of construction.

The Environmental Control Officer shall conduct daily inspections to monitor compliance with the CEMP and be responsible for providing feedback on potential environmental problems associated with the development.

The Environmental Control Officer shall convey the contents of this document to the Contractor site staff and discuss the contents in detail with the Project Manager and Contractor.

### **2.3.2 Environmental Audit Team (EAT)**

It is recommended that a single Environmental Audit Team (EAT) be established for the entire project to monitor the performance of the Contractor and Environmental Control Officer. The EAT should have adequate representation from both the Eskom and TAP Environmental Advisory departments. The EAT must also serve as a platform for resolving issues and complaints that are raised by affected parties during the construction phase, and to provide the Environmental Control Officer, Project Manager and Contractor with an additional avenue for communicating construction-related information to the affected parties as and when required.

Due to the importance of establishing this EAT as soon as possible, the following list provides a starting point of relevant role players who could form part of the EAT or who could recommend suitable persons to serve on the EAT.

**Table 3: List of relevant role players who could serve on the EAT**

ESKOM REPRESENTATIVES		
<i>Name</i>	<i>Position</i>	<i>Contact Details</i>
John Geeringh	EIA Manager	083-632-7663

### 2.3.3 Monitoring and Auditing

An Environmental Audit should be conducted every two months by the EAT to determine the project's compliance with the recommendations of the EIA, EMP and conditions of the Record of Decision (ROD).

Before any construction activities commence, the Environmental Control Officer must compile, for the approval by the EAT, an audit checklist based on the contents of this CEMP and conditions of the Record of Decision (ROD). The Environmental Control Officer shall conduct bi-monthly Environmental Audits to determine the contractor's compliance with the recommendations of the EIA, EMP and conditions of the revised Record of Decision (ROD). These audit reports shall be forwarded to the EAT for review.

The following **Key Performance Indicators** must be included in the audit reports:

1. Complaints received from landowners and actions taken;
2. Environmental incidents, such as oil spills, concrete spills, ecological damage, waste management, and actions taken (litigation excluded);
3. Incidents possibly leading to litigation and legal contraventions; and
4. Environmental damage requiring rehabilitation measures to be taken.

A copy of all monitoring and audit reports must be held by the EAT and be made available to the DEAT upon request or as indicated by the conditions of the ROD.

### 2.3.4 Site Documentation

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 the ECO may require access to this documentation for auditing purposes. The documentation shall be signed by all parties to ensure that such documents are legal. Regular monitoring of 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.

**The following documentation shall be kept on site:**

1. Access negotiations and physical access plan;
2. Complaints register;



3. Site daily diary;
4. Records of all remediation / rehabilitation activities;
5. Copies of two-weekly reports to the EAT;
6. Copy of the Construction Environmental Management Programme;
7. Environmental Incident Log;
8. ECO audit reports; and
9. The revised Record of Decision issued for the project.

## **2.4 ANTICIPATED PROBLEMS ON THE PROJECT**

### **2.4.1 PRE-CONSTRUCTION**

Most landowners will see the construction period as interference with their daily activities. There will be a negative attitude towards the whole construction process. Landowners are always apprehensive toward changes they do not control. Landowners shall therefore be informed well in advance of the construction programme, duration and all interference with their daily activities. At least a week's notice must be given to landowner's before accessing a site. This is especially important in an area like Namaqualand where some farmers are remote and landowners are difficult to contact.

### **2.4.2 CONSTRUCTION**

Due to the current security situation landowners are not comfortable when strangers come on to their properties. They could look for reasons to interfere with the construction process and may therefore cause delays in the process that could be very costly to Eskom and the Contractor.

The Contractor is reminded that access shall not be continuous along the servitude and allowance must be made for the translocation of equipment around obstacles such as rivers and irrigation channels.

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.

Damage to fences, gates and other infrastructure may occur at any time. This will create problems with the landowners and should be avoided as far as possible. All damage is to be repaired immediately and to the satisfaction of the landowner.

The use of private roads for construction purposes always leads to damage due to heavy equipment and frequent use. It is foreseen that the Contractor will receive many complaints in this regard, especially during the rainy season.

### **2.4.3 POST CONSTRUCTION**

If damaged infrastructure is not repaired to the expectations of the landowners, they may refuse to sign the release forms and even engage in litigation. Outstanding claims may also result in release forms not being signed by the landowners.

## **2.5 POSSIBLE SOLUTIONS TO ANTICIPATED PROBLEMS**

- 2.5.1 Proper liaison between Eskom, the Contractor and Landowners.
- 2.5.2 A physical access plan along the servitude shall be compiled and the Contractor shall adhere to this plan at all times. Proper planning when the physical access plan is drawn up by the Environmental Control Officer in conjunction with the Contractor shall be necessary to ensure access to all pylon sites.
- 2.5.3 The landowners shall be informed well in advance of the starting date of construction as well as the phases in which the construction shall take place.
- 2.5.4 The Contractor must adhere to all conditions of the contract including this Construction Environmental Management Programme.
- 2.5.5 Proper planning of the construction process to allow for disruptions due to rain and very wet conditions.
- 2.5.6 All servitude gates on a section of the line route shall be completely installed before any construction activities are undertaken in that section.
- 2.5.7 Where existing private roads are in a bad state of repair, the conditions of these roads shall be well documented, including photographs, before they are used for construction purposes. If necessary some repairs should be done to prevent damage to equipment and plant.
- 2.5.8 All man-made structures shall be protected against damage at all times and any damage shall be rectified immediately.
- 2.5.9 Rehabilitation of the servitude roads shall be done properly to ensure all landowners sign the release forms. The Contractor shall ensure that all damaged areas are rehabilitated to the satisfaction of Eskom as well as each and every property owner. The Contractor shall further ensure that all outstanding claims are settled.
- 2.5.10 Proper site management and regular monitoring of site works.
- 2.5.11 Proper documentation and record keeping of all complaints and actions taken.
- 2.5.12 Regular site inspections and good control over the construction process throughout the construction period.
- 2.5.13 A positive attitude towards Environmental Management by all site personnel.

- 2.5.14 Appointment of a Landowner Liaison Officer on behalf of the Contractor to implement this CEMP as well as deal with all landowner related matters.
- 2.5.15 Environmental Audits by both the ECO are to be carried out during and upon completion of construction.
- 2.5.16 The Contractor shall not be released from site until all landowners have signed off the release documentation to the satisfaction of the Environmental Control Officer.

## 2.6 ACTIVITIES AND STANDARD MITIGATION

The method statements contained in Sections 2.6.1 to 2.6.4 form the core standard mitigation reference for the construction phase of this project. The method statements have been specifically compiled for Eskom power line construction and management. Following extensive environmental impact assessments of the study area, landowner consultation/negotiation, and government review, these statements contain the requirements as stipulated in the following documentation:

- Eskom Standard documentation for line construction and management;
- Conditions contained in the current ROD issued for this project;
- Landowner special conditions; and
- Special conditions recommended by specialists after a site walk through.

**NB:** Reference to relevant site-specific areas, contractor method statements and Eskom contract requirements are given where relevant.

A quick reference to the method statements is provided in table below for convenience.

**OVERVIEW: Standard CEMP Method Statements and Other Document References:**

Contractors are required to ensure that along with the site-specific mitigation measures contained in Section 3, "Pylon-specific CEMP", all the mitigation methods contained in the method statements listed below are implemented at all times.

<b><i>Contractor technical requirements and their control</i></b>		
CON-0001	Site establishment, Location and Contractor camps	Sec 2.6.1, page 20
CON-0002	Workshop and equipment storage areas	Sec 2.6.1, page 21
CON-0003	Storage areas of hazardous substances	Sec 2.6.1, page 22
CON-0004	No-go areas	Sec 2.6.1, page 23
<b><i>Physical issues and their control</i></b>		
PHY-0001	Terrain	Sec 2.6.2, page 24
PHY-0002	Wet area	Sec 2.6.2, page 25
PHY-0003	River crossings	Sec 2.6.2, page 26
PHY-0004	Eroded areas and donga crossing	Sec 2.6.2, page 27
PHY-0005	Access roads	Sec 2.6.2, page 28
PHY-0006	Rubble and refuse disposal	Sec 2.6.2, page 29
PHY-0007	Vegetation clearing	Sec 2.6.2, page 30
PHY-0008	Gate installation and gate control	Sec 2.6.2, page 31
PHY-0009	Fire prevention	Sec 2.6.2, page 32
PHY-0010	Servicing of vehicles	Sec 2.6.2, page 33
PHY-0011	Claims for damages	Sec 2.6.2, page 34
PHY-0012	Tower Positions	Sec 2.6.2, page 35
PHY-0013	Winch and tensioner station	Sec 2.6.2, page 36
PHY-0014	Batching plant	Sec 2.6.2, page 37
PHY-0015	Stringing operations and bird flappers	Sec 2.6.2, page 38
<b><i>Social issues and their control</i></b>		
SOC-0001	Sanitation	Sec 2.6.3, page 39
SOC-0002	Prevention of disease	Sec 2.6.3, page 40
SOC-0003	Interaction with landowners	Sec 2.6.3, page 41
SOC-0004	Littering control	Sec 2.6.3, page 42
<b><i>Biological Issues and their control</i></b>		
BIO-0001	Fauna	Sec 2.6.4, page 43
BIO-0002	Flora	Sec 2.6.4, page 44
BIO-0003	Herbicide use	Sec 2.6.4, page 45
<b><i>Cultural issues and their control</i></b>		
CUL-0001	Archaeological	Sec 2.6.5, page 46
CUL-0002	Monuments/Historical sites	Sec 2.6.5, page 47
CUL-0003	Farmhouses/buildings	Sec 2.6.5, page 48
CUL-0004	Infrastructure	Sec 2.6.5, page 49

**"ESKOM TRANSMISSION CONTRACT METHOD STATEMENTS"**

TRMSCAAC1	Transmission Line Towers and line Construction	APPENDIX 1
ESKASABG3	Standard for Bush Clearance and maintenance within overhead power line servitude	APPENDIX 2
EPL 32-94	Eskom's Safety, Health and Environmental Policy	APPENDIX 3

**SPECIALIST STUDIES AND ASSOCIATED MITIGATION MEASURES**

AVIF0001	Avifaunal investigation	APPENDIX 4
VIA0001	Visual Impact assessment	APPENDIX 5

**2.6.1 CONTRACTOR TECHNICAL REQUIREMENTS AND THEIR CONTROL**

CON-0001	SITE ESTABLISHMENT, LOCATION AND CONTRACTOR CAMPS	
<p>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. <b>A method statement is required from the Contractor at tender stage that includes the layout of the camps, management of ablution facilities and wastewater management.</b> (This is the contractors' method statement referred to in the box entitled "ESKOM contract reference").</p> <p><b>IMPORTANT:</b> The Environmental Control Officer (ECO) must be consulted and give approval on all proposed locations and layouts for contractor camps.</p> <p>The Contractor camps shall have the necessary ablution facilities with chemical toilets where such facilities are not available at commencement of construction. The Contractor shall supply a wastewater management system that will comply with legal requirements and be acceptable to Eskom.</p> <p>Where Eskom facilities are available the Contractor shall make use of such facilities where it is viable and possible. The Contractor shall inform all site staff to the use of supplied ablution facilities and under no circumstances shall indiscriminate excretion and urinating be allowed other than in supplied facilities.</p> <p>The Contractor shall supply covered waste collection bins and all solid waste collected shall be disposed of at a registered waste dump. A certificate of disposal shall be obtained by the Contractor and kept on file. Where a registered waste site is not available close to the construction site, <b>the Contractor shall provide a method statement with regard to waste management. Under no circumstances may solid waste be burned on site unless a suitable incinerator is available.</b></p> <p><b>Noise</b></p> <ul style="list-style-type: none"> <li>▪ Noise reduction is essential and Contractors shall endeavour to limit unnecessary noise, especially employee loud talking, shouting or whistling, radios, sirens or hooters, motor revving, etc. The use of silent compressors is a specific requirement.</li> <li>▪ All machinery and equipment to be used on site shall be properly serviced and in good working order to avoid excessive exhaust fumes and smoke.</li> </ul> <p><b>Dust/ Air Pollution</b></p> <ul style="list-style-type: none"> <li>▪ Stockpiles of soil/building rubble must be kept covered or have a suitable dust palliative applied, such as water or commercial dust suppressants</li> <li>▪ Construction activities will not be the source of dust production. Continual watering of the site should be carried out to prevent dust production during windy and dry conditions. There must be a continuous dust monitoring process throughout construction. The impact of dust emission must be minimal and must not be allowed to cause a nuisance to landowners of surrounding areas.</li> <li>▪ Contractors will commence rehabilitation of exposed soil surfaces as soon, as is practical after completion of earthworks.</li> <li>▪ Excessive dust conditions are to be reported to the ECO, who must take appropriate remedial actions.</li> <li>▪ All machinery and equipment to be used on site shall be properly serviced and in good working order to avoid excessive exhaust fumes and smoke.</li> </ul> <p><b>Light Pollution</b></p> <ul style="list-style-type: none"> <li>▪ All point sources of light must be directed away from any residences of landowners.</li> </ul> <p>The contractor must comply with the regulations of the Occupational, Health and Safety Act 1993 (Act No. 85 of 1993).</p>		
Site specific reference	Contract method Statement	Eskom contract reference
		<ul style="list-style-type: none"> <li>▪ EPL 32-94 Eskom SHE</li> <li>▪ Contractors' "Method Statement"</li> </ul>

CON-0002	WORKSHOP AND EQUIPMENT STORAGE AREAS	
<p>Where possible and practical all maintenance and washing of vehicles and equipment shall take place in the workshop area that is equipped with a bund wall and grease trap. During servicing of vehicles or equipment, a suitable drip tray shall be used to prevent spills onto the soil, especially where emergency repairs are affected outside the workshop area. 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.</p> <p>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. <b>To this end 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.</b> The Contractor shall be in possession of an emergency spill kit that must be complete and available at all times on site. The Contractor will ensure that senior and other the relevant members of the workforce are trained in dealing with spills and emergency spill kits.</p> <p><b><u>The following shall apply:</u></b></p> <ul style="list-style-type: none"> <li>• All contaminated soil / yard stone shall be removed and be placed in containers. Contaminated material can be taken to one central point where bio-remediation can be done.</li> <li>• 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.</li> <li>• All spills of hazardous substances must be reported to the ECO and appointed Transmission Engineering Environmental Advisor (<b>Tx Key Performance Indicator requirement</b>).</li> </ul> <p>The contractor must comply with the regulations of the Occupational, Health and Safety Act 1993 (Act No. 85 of 1993).</p>		
Site specific reference	Contract method Statement	Eskom contract reference
		<ul style="list-style-type: none"> <li>▪ EPL 32-94 Eskom SHE</li> <li>▪ Contractors' "Method Statement"</li> </ul>

CON-0003	STORAGE AREAS OF HAZARDOUS SUBSTANCES	
<p>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. A register shall be kept on all substances and be available for inspection at all times. Areas shall be monitored for spills and any spills shall be contained, cleaned and rehabilitated immediately. Any leaking containers shall be repaired or removed from site (See above for actions after spills).</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. <b>The contractor shall supply a method statement for the storage of hazardous materials at tender stage.</b></p> <p>The contractor must comply with the regulations of the Occupational, Health and Safety Act 1993 (Act No. 85 of 1993) as well as the Hazardous Substances Act (No. 15 of 1973).</p>		
Site specific reference	Contract method Statement	Eskom contract reference
		<ul style="list-style-type: none"> <li>▪ EPL 32-94 Eskom SHE</li> <li>▪ Contractors’ “Method Statement”</li> </ul>

CON-0004	NO-GO AREAS	
<p>No-go areas include areas indicated in Section 3, “Pylon Specific CEMP”, or by the ECO in consultation with landowners as a “no-go areas” such as rocky outcrops, wetland areas, pans quartz patches, etc. <b>No-go areas must be cordoned off prior to any access roads are constructed and or any other construction activities begin in the area.</b></p> <p>Due to the exceptionally high level of plant endemism in the project area, there must be very strict control to prevent access to and disturbance of habitats for endemic species. Quartz patches are known as areas of endemism and must be strictly avoided. The ECO must educate the contractors personnel to identify such habitats prior to the commencement of construction.</p> <p>The demarcation of these areas is to be maintained by the contractor throughout the construction phase. <b>Under no circumstances may construction activities, vehicles, contractors’ personnel and workforce enter or utilise these areas at any time.</b> Strict management of this aspect must be closely monitored by the ECO.</p> <p><b>The contractor is discouraged from using plastic warning tape unless in consultation with the ECO.</b> Warning tape is a health hazard to landowners’ livestock and becomes a litter problem if not maintained during windy conditions.</p>		
<p><b>It is preferred that brightly painted (two colours if possible) wooden stakes are utilised to demarcate no-go areas. The stakes should be spaced closely enough to clearly indicate the area to be cordoned off. The contractor must also implement signage at strategic points around no-go areas indicating “no entry” to the demarcated area.</b></p>		
<p><b>“No entry” signs must also be erected at strategic points around all pans, wetlands, streams and rivers” which are in close proximity to access roads the servitude and pylon locations.</b></p>		
Site specific reference	Contract method Statement	Eskom contract reference



## 2.6.2 PHYSICAL ISSUES AND THEIR CONTROL

PHY-0001	TERRAIN	
<p><b>CONSTRUCTION FOOTPRINT</b> The building restriction is 55m. The construction footprint <u>around the pylons and stringing locations</u> is limited to the servitude in which the line will be constructed. The ECO is to be informed well in advance as to the stringing locations in order to monitor the construction footprint in these areas. Any extra space required outside the servitude, (e.g. access problems, etc.), shall be negotiated by the ECO 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. The ECO must ensure that the contractor maintains the demarcation of the no-go areas at all times.</p> <p><b>REHABILITATION OF DISTURBED AREAS</b> Areas disturbed by construction activities, especially by compaction from construction vehicles and equipment, must be ripped to a depth of 60mm and re-seeded. Re-seeding shall be done on disturbed areas as directed by the Environmental Control Officer. In accordance with the Conservation of Agricultural Resources Act, No 43 of 1983, 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. Contour banks shall be spaced according to the slope on tower sites. The type of soil shall also be taken into consideration.</p> <p>To get the best results in a specific area, it is a good idea to consult with a specialist or the local extension officer of the Dept of Agriculture. Seed distributors can also give valuable advice as to the mixtures and amount of seed necessary to seed a certain area. Re-seeding, as well as fencing in of badly damaged areas, will always be at the discretion of the Environmental Control Officer, unless specifically requested by a landowner.</p>		
<b>Management objectives</b>		
<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>▪ Minimise Construction footprint</li> <li>▪ Rehabilitate all disturbed areas along the servitude</li> <li>▪ Control of no-go areas.</li> </ul>		
<b>Measurable targets</b>		
<ul style="list-style-type: none"> <li>▪ No visible erosion scars once construction is completed</li> <li>▪ Minimum loss of topsoil at any one site</li> <li>▪ The foot print has not exceeded 6m along the servitude or 80m around pylons and stringing areas</li> <li>▪ No barren areas visible three months after construction is completed</li> <li>▪ All damaged areas successfully rehabilitated</li> </ul>		
<b>Site specific reference</b>	<b>Contract method Statement</b>	<b>Eskom contract reference</b>
	CON-0004	

PHY-0002	WET AREAS	
<p>Permanently wet areas are shown on the profiles in SECTION 3: Pylon Specific EMP. These include streams and rivers (perennial and non-perennial), pans, seep lines, dongas and wetland areas.</p> <p>No vehicular traffic shall be allowed in such areas. Only existing roads through such areas may be used with the approval of Eskom, the ECO and the landowner. 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>NB:</b> "NO ENTRY" signs, in consultation with the ECO and landowner, must be strategically placed at all pans which are in close proximity access routes, the servitude and pylons where contractors may take short cuts across/through them. The ECO must strictly monitor this aspect as well as the maintenance of these signs for which the contractor is responsible.</p> <hr/> <p><b>References to specific wet areas along the alignment are indicated in SECTION 3, "Pylon Specific CEMP".</b></p> <hr/> <p><b>PLEASE NOTE:</b></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 the application of a Water Use License. Therefore, the contractor must in consultation with the ECO, assess all areas along the alignment well in advance in order to ensure the relevant Water Use License is applied for where required.</p>		
<b>Management objectives</b>		
<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>▪ Rehabilitate all disturbed areas along the servitude</li> </ul>		
<b>Measurable targets</b>		
<ul style="list-style-type: none"> <li>▪ No visible erosion scars once construction is completed</li> <li>▪ Minimum loss of topsoil at any one site</li> <li>▪ No barren areas visible three months after construction is completed</li> <li>▪ All damaged areas successfully rehabilitated</li> </ul>		
<b>Site specific reference</b>	<b>Contract method Statement</b>	<b>Eskom contract reference</b>
	CON-0004	TRMSCAAC1 REV 3 section 4.4.1 regarding access through seasonally wet areas.

PHY-0003	RIVER CROSSINGS	
<p>No roads shall be cut through river- and stream banks as this may lead to erosion causing siltation of streams and downstream dams. 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 used. New drifts and bridges shall only be constructed with the approval of Eskom, DWAF and the landowner and at the discretion of the Environmental Control Officer. Strict control of the footprint must be implemented especially at river crossings.</p> <p><b>NB:</b> "NO ENTRY" signs, in consultation with the ECO and landowner, must be strategically placed along rivers, streams and other natural or man made drainage lines which are in close proximity access routes, the servitude and pylons where contractors may take short cuts across/through them. The ECO must strictly monitor this aspect as well as the maintenance of these signs for which the contractor is responsible.</p> <p>The eroded area close to the Holgate river along the existing 220Kv powerline servitude must be repaired before the onset of construction.</p> <hr/> <p><b>References to specific river crossings along the alignment are indicated in SECTION 3, "Pylon Specific CEMP".</b></p> <hr/> <p><b>PLEASE NOTE:</b></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 the application of a Water Use License. Therefore, the contractor must in consultation with the ECO, assess all areas along the alignment well in advance in order to ensure the relevant Water Use License is applied for where required.</p>		
<b>Management objectives</b>		
<ul style="list-style-type: none"> <li>▪ Minimise damage to river and stream embankments</li> <li>▪ Minimise erosion of embankments and subsequent siltation of rivers and streams</li> <li>▪ Minimise the impact on natural water flow dynamics</li> </ul>		
<b>Measurable targets</b>		
<ul style="list-style-type: none"> <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> </ul>		
<b>Site specific reference</b>	<b>Contract method Statement</b>	<b>Eskom contract reference</b>
	CON-0004	TRMSCAAC1 REV 3 section 4.4.1 regarding access across running water.

PHY-0004	ERODED AREAS AND DONGA CROSSINGS	
<p>Crossing of dongas and eroded areas shall be thoroughly planned and accordance with TRMSCAAC1 REV 3 section 4.4.1. Water diversion berms shall be installed in consultation with ECO at donga crossings to ensure runoff water on the servitude does not run into dongas and cause an erosion hazard. Strict control of the footprint must be implemented especially near eroded areas and donga crossings.</p> <p><b>NB:</b> "NO ENTRY" signs, in consultation with the ECO and landowner, must be strategically placed at eroded areas or dongas which are in close proximity access routes, the servitude and pylons where contractors may take short cuts across/through them. The ECO must strictly monitor this aspect as well as the maintenance of these signs for which the contractor is responsible.</p> <p><b>PLEASE NOTE:</b> 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 the application of a Water Use License. Therefore, the contractor must in consultation with the ECO, assess all areas along the alignment well in advance in order to ensure the relevant Water Use License is applied for where required.</p>		
<b>Management 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> </ul>		
<b>Measurable targets</b>		
<ul style="list-style-type: none"> <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 water</li> </ul>		
<b>Site specific reference</b>	<b>Contract Method Statement</b>	<b>Eskom contract reference</b>
	CON-0004	TRMSCAAC1 REV 3 section 4.4.1

PHY-0005	ACCESS ROADS	
<p>Planning of access routes must be done in conjunction between the Contractor, Eskom and the landowner. All agreements reached should be documented and no verbal agreements should be made. The normal Eskom site documentation will be sufficient for this purpose. Where existing roads are to be utilised it is advised that the ECO record and document (in writing with photographs) the original condition of these roads before construction activities commence. The Contractor shall properly mark all access roads. Markers shall show the direction of travel as well as tower numbers to which the road leads. Roads not to be used shall be marked with a "NO ENTRY" sign</p> <p>Where new access roads are constructed, this must be done in accordance with TRMSCAAC1 REV 3 section 4.4. Water diversion berms shall be installed from the start of the contract in accordance with TRMSCAAC1 REV 3 section 4.6. and in consultation with the ECO. These berms shall be maintained at all times. On completion of the project, these berms must be suitably repaired and the affected area suitably rehabilitated in consultation with the ELO. Where berms are installed on severe slopes the outflow shall be suitably stone pitched to prevent erosion from starting at the berms.</p> <p>No access for a period of 24 hours is permitted on any un-tarred road following a single down pour of more than 10mm.</p> <p>No roads shall be constructed on slopes of more than 20% unless such roads follow contours. In such areas the Contractor shall only use existing roads or alternative methods of construction. The Contractor shall take such areas into consideration during the tender.</p> <p>The installation of concrete pipes and drifts, to facilitate access, shall be at the discretion of the Environmental Control Officer and with the approval of DWAF. Any dangerous crossings shall be marked as such and where necessary, speed limits shall be enforced.</p> <p><b>PLEASE NOTE:</b> 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 the application of a Water Use License. Therefore, the contractor must in consultation with the ECO, assess all areas along the alignment well in advance in order to ensure the relevant Water Use License is applied for where required.</p> <p>Where necessary a suitable mixture of grass seed shall be used to re-seed damaged areas. Badly damaged areas shall be fenced in to enhance rehabilitation. The seed mixture should comply with the parameters as set out in section 4.12 of this document.</p>		
<b>Management objectives</b>		
<ul style="list-style-type: none"> <li>▪ Minimise damage to existing access roads</li> <li>▪ Minimise damage to environment due to construction of new access roads</li> <li>▪ Minimise loss of topsoil and enhancement of erosion</li> </ul>		
<b>Measurable targets</b>		
<ul style="list-style-type: none"> <li>▪ No claims from landowners due to damage on existing access roads</li> <li>▪ No erosion visible on access roads three months after completion of construction</li> <li>▪ No loss of topsoil due to runoff water on access roads</li> </ul>		
<b>Site specific reference</b>	<b>Contract method Statement</b>	<b>Eskom contract reference</b>
	CON-0004	TRMSCAAC1 REV 3 regarding "NO ENTRY" and sections 4.4 and 4.6 regarding new access roads and diversion berms.

PHY-0006	RUBBLE AND REFUSE DISPOSAL	
<p>The Contractor shall dispose of all excess material on site in an appropriate manner and at a designated place in consultation with the ECO. All relevant aspects of the EMP apply. All packaging material shall be removed from site and disposed of and not burned or buried on site. A landfill may be used for biodegradable materials but when it is closed up, the rubble shall be compacted and there shall be at least 1m of soil covering the waste material. No landfill may be used without the consent from the landowner and ECO. No hazardous material, e.g. oil or diesel fuel shall be disposed of in any unregistered waste site.</p> <p>No material shall be left on site that may ham man or animals. All such material must be cleared and disposed of, on a daily basis, into closed containers. 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. Surplus concrete may not be dumped indiscriminately on site, but shall be disposed of in designated areas as agreed by the landowner and ECO. Concrete trucks shall not be washed on site after depositing concrete into foundations. Any spilled concrete shall be cleaned up immediately.</p>		
<p><b>Management objectives</b></p>		
<ul style="list-style-type: none"> <li>▪ To keep the servitude neat and clean</li> <li>▪ Disposal of rubble and refuse in an appropriate manner</li> <li>▪ Minimise litigation</li> <li>▪ Minimise landowner complaints</li> </ul>		
<p><b>Measurable targets</b></p>		
<ul style="list-style-type: none"> <li>▪ No rubble or refuse lying around on site</li> <li>▪ No incidents of litigation</li> <li>▪ No complaints from landowners</li> <li>▪ No visible concrete spillage on the servitude</li> </ul>		
Site specific reference	Contract method Statement	Eskom contract reference
	CON-0001	Contractor WDMP "Method Statement"

PHY-0007	VEGETATION CLEARING	
<p>The objective of vegetation clearing is to trim, cut or clear the minimum number of trees and vegetation necessary for the safe mechanical construction and electrical operation of the transmission line. Vegetation clearing shall be done in accordance with ESKASABG3 REV 0 (Standard for bush clearance and maintenance within overhead power line servitudes). All vegetation clearing must be done with the approval and in consultation with the ECO.</p> <p><b>Note:</b> No vegetation clearing may be done for the access road. Vegetation clearing may take place only in areas designated for construction camps. These should preferably be located in already disturbed areas so that the need for vegetation clearing is minimised.</p> <p><b>No scalping shall be allowed on any part of the servitude road unless absolutely necessary. The removal of all economically valuable trees or vegetation shall be negotiated by the ECO with the landowner before such vegetation is removed.</b> All trees and vegetation cleared from the site shall be cut into manageable lengths and neatly stacked at regular intervals along the line. No vegetation shall be pushed into heaps or left lying all over the veld.</p> <p><b>Note:</b> the removal of any trees must be an absolute exception and must only occur in cases where safety considerations are an overriding concern.</p> <p><b>Vegetation clearing on tower sites must be kept to a minimum. 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. All exotic and invader tree stumps shall be treated with herbicide. Smaller vegetation can be flattened with a machine, but the blade should be kept above ground level to prevent scalping.</b> Any vegetation cleared on a tower site shall be removed or flattened and not be pushed to form an embankment around the tower.</p> <p><b>No vegetation clearing in the form of de-stumping, scalping or uprooting shall be allowed on river and stream banks.</b> Vegetation shall only be cut to allow for the passage of the pilot-cables and headboard. No vegetation clearing shall be allowed across ravines and gullies, as this vegetation will very rarely interfere with the clearance to the strung conductor. Trees and vegetation not interfering with the statutory clearance to the conductors can be left under the line. Dense vegetation under the line which could cause a fire hazard, particularly in the middle third of the span in the vicinity of the lowest point of the conductors, will be considered as a separate case.</p> <p><b>Protected or endangered species of plants shall not be removed unless they are interfering with a structure.</b> Where such species have to be removed due to interference with a structure, the <b>necessary permission and permits shall be obtained from Nature Conservation</b> (Please see relevant acts in ESKOM Ref. ESKASABG3 REV 0, Page 5 of 14, 4.1.12). All protected species not to be removed must be clearly marked and such areas fenced off if required.</p> <p>The use of herbicides shall only be allowed after a proper investigation into the necessity, the type to be used, the long-term effects and the effectiveness of the agent. Eskom's approval for the use of herbicides is mandatory (Contact Dr. Eugene van Rensburg—TR1, 082 451 1994). Application shall be under the direct supervision of a qualified technician. All surplus herbicide shall be disposed of in accordance with the supplier's specifications.</p> <p><b>IT IS RECOMMENDED THAT A SPECIALIST CONTRACTOR FOR VEGETATION CLEARING SHOULD BE UTILISED WHO MUST COMPLY WITH THE FOLLOWING PARAMETERS:</b></p> <ul style="list-style-type: none"> <li>• The contractor must have the necessary knowledge to be able to identify protected species as well as species not interfering with the operation of the line due to their height and growth rate.</li> <li>• The contractor must also be able to identify declared weeds and alien species that can be totally eradicated.</li> <li>• The contractor must be in possession of a valid herbicide applicators licence.</li> </ul>		
<p><b>Management 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 species</li> </ul>		
<p><b>Measurable targets</b></p>		
<ul style="list-style-type: none"> <li>▪ Only 6m vegetation cleared along the centre of the servitude</li> <li>▪ No trees and vegetation removed unnecessarily or without approval of the ECO</li> <li>▪ No vegetation interfering with structures and statutory distances upon completion of the contract</li> <li>▪ No de-stumping of vegetation on river and stream embankments</li> <li>▪ No visible erosion scars three months after completion of the contract due to vegetation removal</li> <li>▪ No visible damage to the vegetation along the servitude one year after completion of the contract due to herbicide use</li> <li>▪ No litigation due to unauthorised removal of vegetation</li> <li>▪ All alien invaders eradicated from the servitude and no re-growth visible</li> </ul>		
<p><b>Site specific reference</b></p>	<p><b>Contract method Statement</b></p>	<p><b>Eskom contract reference</b></p>
<p>30</p>	<p>Prepared by Strategic Services and Regulatory Affairs</p>	<p>ESKASABG3 REV 0 regarding vegetation clearing.</p>

<b>PHY-0008</b>	<b>GATE INSTALLATION AND GATE CONTROL</b>	
<p>The contractor is referred to the Fencing Act, Act no 31 of 1963. Gate installation shall be according to TRMSCAAC1 REV 3 section 4.5 and the drawing 0.00/10261 Rev 2 as stated in the specifications. Game gates, drawing 0.00/10280 Rev 0, shall be installed where necessary. <b>All gates installed in electrified fencing shall be electrified as well.</b> The Environmental Control Officer shall approve gate positions. All gate positions shall be three (3) metres off centre to allow for continued access when stringing takes place.</p> <p>All gates shall be fitted with locks and be kept locked at all times during the construction phase. 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. Such gates shall be clearly marked by painting the posts green. All claims arising from gates left open shall be investigated and settled in full by the Contractor. If any fencing interferes with the construction process, such fencing shall be deviated until construction is completed.</p> <p>The ECO must establish with game farm owners what height in accordance with the landowners "Certificate of Adequate Enclosure" game farm gates must be. This will be communicated to the contractor, and Eskom must supply the relevant drawings.</p>		
<b>Management objectives</b>		
<ul style="list-style-type: none"> <li>▪ Properly installed gates to allow access to the servitude</li> <li>▪ Minimise damage to fences</li> <li>▪ Limit access to Eskom and Contractor personnel with gate keys</li> </ul>		
<b>Measurable targets</b>		
<ul style="list-style-type: none"> <li>▪ No transgressions of the fencing act and therefore no litigation</li> <li>▪ No damage to fences and subsequent complaints from landowners</li> <li>▪ All gates equipped with locks and kept locked at all times to limit access to key holders</li> <li>▪ All fences properly tied off to the gate posts</li> <li>▪ All gates properly and neatly installed according to specifications</li> <li>▪ No complaints about open gates</li> </ul>		
<b>Site specific reference</b>	<b>Contract method Statement</b>	<b>Eskom contract reference</b>
		<p><b>TRMSCAAC1 REV 3 section 4.5 and drawings 0.00/10261 Rev 2 as stated in the specifications. Game gates, drawing 0.00/10280 Rev 0</b></p>



<b>PHY-0009</b>	<b>FIRE PREVENTION</b>	
<p><b>No open fires shall be allowed on site</b> under any circumstance (The Forest Act, No 122 of 1984, TRMSCAAC1 REV 3 section 4.1.2). The Contractor shall have fire-fighting equipment available at crew camps and on all vehicles working on site, especially during the winter months.</p> <p>The ECO will ensure that the contractor and his/her workforce, in accordance with the “Contractor Method Statement - for Site Establishment”, only build fires in designated areas within fenced crew camps for cooking and warmth. Suitably constructed structures must be utilised in these areas to contain the fires.</p> <p>The contractor must supply all wood for fires. No wood is to be collected, chopped or felled for fires from private or public property.</p>		
<b>Management objectives</b>		
<ul style="list-style-type: none"> <li>▪ Minimise risk of veld fires</li> <li>▪ Minimise damage to grazing</li> </ul>		
<b>Measurable targets</b>		
<ul style="list-style-type: none"> <li>▪ No veld fires started by the Contractor’s work force</li> <li>▪ No claims from landowners for damages due to veld fires</li> <li>▪ No litigation</li> </ul>		
<b>Site specific reference</b>	<b>Contract method Statement</b>	<b>Eskom contract reference</b>
		<ul style="list-style-type: none"> <li>• TRMSCAAC1 REV 3 section 4.1.2</li> <li>• Contractor “Method Statement”</li> <li>• EPL 32-94 Eskom SHE Policy</li> </ul>

<b>PHY-0010</b>	<b>SERVICING OF VEHICLES</b>	
<p><b>Servicing of vehicles in the veld is strictly prohibited.</b> Only emergency repairs shall be allowed on site and a drip tray shall be used to prevent oil spills. All vehicles shall be serviced in the designated area inside the Contractors camp where all run-off from this area is contained and allowed to flow towards a sump. In the event of a breakdown in the veld, any oil spills shall be cleaned up immediately. (Refer CON-0002) The following shall apply:</p> <ul style="list-style-type: none"> <li>▪ All contaminated soil shall be removed and be placed in containers. Contaminated soil can be taken to one central point at the Contractors campsite where bio-remediation can be done.</li> <li>▪ A specialist Contractor shall be used for the bio-remediation of contaminated soil.</li> <li>▪ The area around the fuel storage drum at the Contractor’s campsite shall also be re-mediated upon completion of the contract</li> <li>▪ The ECO must be consulted should any queries arise in this regard.</li> <li>▪ <b>All oil spills must be reported to the ECO and Joyce Mashiteng (011) 800 4623.</b></li> <li>▪ All old parts, packaging, old oil, etc. shall be disposed of in the correct manner and in a proper area designated for such waste materials. Under no circumstances shall such waste be buried on site indiscriminately.</li> </ul>		
<b>Management objectives</b>		
<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>		
<b>Measurable targets</b>		
<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 landowners</li> </ul>		
<b>Site specific reference</b>	<b>Contract method Statement</b>	<b>Eskom contract reference</b>
	CON-0002	<ul style="list-style-type: none"> <li>▪ Contractor WMDP “Method Statement”</li> <li>▪ EPL 32-94 Eskom SHE Policy</li> </ul>

<b>PHY-0011</b>	<b>CLAIMS FOR DAMAGES</b>	
<p>All anticipated crop damage shall be noted while access negotiations are underway. All damage to commercial crops shall be recorded immediately. The Environmental Control Officer should also keep a photographic record of such damage. The date, time of damage, type of damage and reason for the damage shall be recorded in full to ensure the responsible party is held liable. All claims for compensation emanating from crop damage should be directed to the Environmental Control Officer for appraisal. The Contractor shall be held liable for all unnecessary damage to the environment and crops. <b>A register shall be kept of all complaints from landowners. All claims shall be handled immediately to ensure timely rectification / payment.</b></p>		
<b>Management objectives</b>		
<ul style="list-style-type: none"> <li>▪ Minimise complaints from landowners</li> <li>▪ Prevent litigation due to outstanding claims</li> <li>▪ Successful completion of the contract and all landowners signing release forms</li> </ul>		
<b>Measurable targets</b>		
<ul style="list-style-type: none"> <li>▪ All claims investigated and settled within one month</li> <li>▪ No litigation due to unsettled claims</li> <li>▪ All landowners signing release forms within six months after completion of the contract</li> </ul>		
<b>Site specific reference</b>	<b>Contract method Statement</b>	<b>Eskom contract reference</b>

<b>PHY-0012</b>	<b>TOWER POSITIONS</b>	
<p>Disturbance of topsoil on tower sites with severe slopes shall be minimised at all costs. At any tower sites where conventional foundations are installed, the Contractor shall remove the topsoil separately and store it for later use during rehabilitation of such tower sites.</p> <p>The location and method for stockpiling of any material must be in consultation with the ECO to ensure material is not stockpiled in drainage lines, the quality and make up of stockpiled material is not compromised, etc. 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.</p> <p>Re-seeding shall be done on disturbed areas as directed by the Environmental Control Officer. In accordance with the Conservation of Agricultural Resources Act, No 43 of 1983, 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. Contour banks shall be spaced according to the slope on tower sites. The type of soil shall also be taken into consideration.</p> <p>To get the best results in a specific area, it is a good idea to consult with a specialist or the local extension officer of the Dept of Agriculture. Seed distributors can also give valuable advice as to the mixtures and amount of seed necessary to seed a certain area. Re-seeding, as well as fencing in of badly damaged areas, will always be at the discretion of the Environmental Control Officer, unless specifically requested by a landowner.</p>		
<b>Management objectives</b>		
<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>		
<b>Measurable targets</b>		
<ul style="list-style-type: none"> <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 the contract</li> </ul>		
<b>Site specific reference</b>	<b>Contract method Statement</b>	<b>Eskom contract reference</b>
		<p>TRMSCAAC1 REV 3 SECTION 4.4.5 for specifications concerning tower sites on slopes.</p>

<b>PHY-0013</b>	<b>WINCH AND TENSIONER STATIONS</b>	
<p>The sighting of winch and tensioner stations shall be done in conjunction with the ECO, ecologist/botanist and archaeologist that participated in the compilation of the EMP.</p> <p>Specifications require the protection of Eskom supplied material on site, especially conductor drums. 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. Therefore 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. For seeding and slopes, the same provisions as in PHY-0012 shall apply.</p> <p>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 and all aspects of the EMP apply. Proper facilities must be provided to ensure sanitation standards are met. Mobile chemical toilets shall be installed at such sites where a large number of the workforce is concentrated.</p>		
<b>Management objectives</b>		
<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>		
<b>Measurable targets</b>		
<ul style="list-style-type: none"> <li>▪ No damage to vegetation outside the servitude</li> <li>▪ No loss of topsoil</li> <li>▪ No visible erosion three months after completion of the contract</li> <li>▪ All disturbed areas successfully rehabilitated three months after completion of the contract</li> </ul>		
<b>Site specific reference</b>	<b>Contract method Statement</b>	<b>Eskom contract reference</b>
	PHY-0012 for seeding and slopes	

<b>PHY-0014</b>	<b>BATCHING PLANTS</b>	
<p>The sighting of batching plants shall be done in conjunction with the ecologist/botanist and archaeologist that participated in the compilation of the EMP.</p> <p>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 installed to direct all wastewater to a catchment area (Refer PHY-0005 for the maintenance and decommissioning of berm structures). On completion of the project, these berms must be suitably repaired and the effected areas suitably rehabilitated in consultation with the ECO. Further, the following must be adhered to by the contractor;</p> <ul style="list-style-type: none"> <li>• No concrete is to be mixed within the 1:50 year flood line.</li> <li>• Concrete must be contained to the batching area with every effort made in consultation with the ECO to ensure exposed soil is not contaminated by cement mixing activities.</li> <li>• After all concrete mixing is complete; all waste concrete shall be removed from the batching area and disposed of as instructed by the ECO.</li> <li>• Storm water shall not be allowed to flow through the batching area. Cement sediment shall be removed from time to time and disposed of in a manner as instructed by the ECO.</li> </ul> <p>Should water be required from sources other than Eskom supply, a written agreement shall be reached between the ECO and the landowner in the presence of Eskom. Should the Contractor be required to use water from a natural source, <b>the Contractor shall supply a method statement to that effect.</b> Strict control shall be maintained and the ECO shall regularly inspect the abstraction point and methods used.</p> <p>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.</p> <p><b>PLEASE NOTE:</b> 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 the application of a Water Use License. Therefore the contractor, must in consultation with the ECO, assess all areas along the alignment well in advance in order to ensure the relevant Water Use License is applied for where required.</p>		
<b>Management objectives</b>		
<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>▪ Minimise pollution of soil , surface and ground water resources</li> <li>▪ Successful rehabilitation of disturbed areas</li> <li>▪ Compliance with the National Water Act 1998</li> </ul>		
<b>Measurable targets</b>		
<ul style="list-style-type: none"> <li>▪ No complaints from landowners</li> <li>▪ All disturbed areas successfully rehabilitated three months after completion of the contract</li> </ul>		
<b>Site specific reference</b>	<b>Contract method Statement</b>	<b>Eskom contract reference</b>
	PHY-0005 – berm structures	<ul style="list-style-type: none"> <li>• TRMSCAAC1 REV 3 section 4.8 for specifications regarding batching plants.</li> <li>• Contractor "Method Statement" for abstraction of water from natural source.</li> </ul>

<b>PHY-0015</b>	<b>STRINGING OPERATIONS AND BIRD FLAPPERS</b>	
<p>The necessary scaffolding must be installed to prevent damage to structures supporting certain perennial crops. All structures supplying services such as telephone and smaller power lines, as well as farm roads, shall be safeguarded by measures to prevent disruption of services (Refer CUL-0004).</p> <p>The 80m footprint must be monitored for the stringing storage areas. Construction machinery required for stringing and bird flapper installation must utilise existing 6m servitude cleared during the pylon construction process. Where the centre line servitude has not been cleared, the ECO must be consulted to ensure sensitive areas such as rocky outcrops, wetland areas, ridges, etc. are not impacted on negatively.</p>		
<b>Management objectives</b>		
<ul style="list-style-type: none"> <li>▪ Prevent damage to expensive structures and crops</li> <li>▪ Prevent disruption of services</li> </ul>		
<b>Measurable targets</b>		
<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>		
<b>Site specific reference</b>	<b>Contract method Statement</b>	<b>Eskom contract reference</b>
	CUL-0004	TRMSCAAC1 REV 3 section 8.2.1 for scaffolding

### 2.6.3 SOCIAL ISSUES AND THEIR CONTROL

SOC-0001	SANITATION	
<p><b>The Contractor shall install mobile chemical toilets on site at a ratio of 1 per 15 workforce members.</b></p> <p>The toilets must not be located within or near storm water channels, no-go areas and drainage lines. These toilets must be secured to the ground so that they cannot be pushed or blown over.</p> <p>All chemical toilets must have a suitable locking mechanism.</p> <p>Staff shall be sensitised to the fact that they should use these toilets at all times. The ratio of 1:15 per workforce is recommended.</p> <p>The chemical toilets must be serviced weekly by a reputable company to ensure that they are kept in a hygienic state and that the waste is disposed of at a registered facility. Care must be taken to ensure waste is not spilled on site. The contractor must provide the ECO with proof of maintenance contracts and schedules.</p> <p>Strategies must be implemented to ensure that toilet paper is always available to the workforce.</p> <p>'Sealed' plastic septic systems may be utilised at crew camps in consultation with the ECO. The ECO shall ensure the location and installation mitigates against any contamination of soils and surface or ground water resources. The contractor must provide the ECO with proof of 'honey sucker' maintenance contracts and schedules.</p>		
<b>Management objectives</b>		
<ul style="list-style-type: none"> <li>▪ Ensure that proper sanitation is achieved</li> </ul>		
<b>Measurable targets</b>		
<ul style="list-style-type: none"> <li>▪ No complaints received from landowners regarding sanitation</li> <li>▪ No reports of health issues to local inhabitants and their livestock as a result of poor sanitation.</li> <li>▪ No contamination of soils, surface and ground water resources from poor sanitation.</li> </ul>		
<b>Site specific reference</b>	<b>Contract method Statement</b>	<b>Eskom contract reference</b>
	CON-0001 – site establishment	<ul style="list-style-type: none"> <li>• TRMSCAAC1 REV 3</li> <li>• Contractor "Method Statement" for site establishment</li> </ul>



<b>SOC-0002</b>	<b>PREVENTION OF DISEASE</b>	
<p>Applicable where the transmission line traverses land where stock (cattle and sheep) and game farming is practised.</p> <p>The Contractor shall take all the necessary precautions against the spreading of disease, especially under livestock and game. A record shall be kept of drugs administered and the dates when this was done. This can then be used as evidence in court should any claims be instituted against Eskom or the Contractor.</p> <p><b>The workforce shall also be sensitised to the effects of sexually transmitted diseases, especially AIDS.</b></p>		
<b>Management objectives</b>		
<ul style="list-style-type: none"> <li>▪ Prevent litigation due to infestation of livestock</li> </ul>		
<b>Measurable targets</b>		
<ul style="list-style-type: none"> <li>▪ No complaints from landowners</li> <li>▪ No litigation</li> </ul>		
<b>Site specific reference</b>	<b>Contract method Statement</b>	<b>Eskom contract reference</b>
		Section 5.2 and TRMSCAAC1 REV 3 regarding prevention measures against spreading of disease.

<b>SOC-0003</b>	<b>RELOCATIONS AND INTERACTION WITH LANDOWNERS</b>	
<p>Where required, relocation and decommissioning of dwellings may only take place once negotiations and compensations have been finalised by Eskom.</p> <p>The success of the project depends a lot on the good relations with the landowners. It is therefore required that the ECO be the only liaison between the contractor and landowners. The ECO shall be available to investigate all problems arising on the work sites concerning the landowners.</p> <p>All negotiations for any reason shall be between Eskom, the landowner and the ECO. <b>NO</b> verbal agreements shall be made. All agreements shall be recorded properly and all parties shall co-sign the documentation. It is proposed that the Contractor and ECO keep a photographic record of access roads before the commencement of construction activities. 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.</p> <p>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 liaison officer should keep the landowners informed. The contact numbers of the Contractor's liaison 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.</p> <p>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.</p>		
<b>Management objectives</b>		
<ul style="list-style-type: none"> <li>▪ Maintain good relations with landowners</li> </ul>		
<b>Measurable targets</b>		
<ul style="list-style-type: none"> <li>▪ No delays in the project due to landowner interference</li> </ul>		
<b>Site specific reference</b>	<b>Contract method Statement</b>	<b>Eskom contract reference</b>
		TRMSCAAC1 REV 3

<b>SOC-0004</b>	<b>LITTERING CONTROL</b>	
<p>Littering by the employees of the Contractor shall not be allowed (Environment Conservation Act, No 73 of 1989). The Environmental Control Officer shall monitor the neatness of the work sites as well as the campsite. (Refer PHY-0006 regarding rubble and refuse disposal).</p> <p><b>The following important issues must be continually monitored</b></p> <ul style="list-style-type: none"> <li>▪ Refuse generated from the campsite, construction area, storage area or any other area shall be collected and placed in a suitable covered refuse bins on a daily basis.</li> <li>▪ A litter patrol around the construction camp and work areas along the alignment are to take place every day to collect any litter that may have been strewn around.</li> <li>▪ A skip, with a cover, should be used to contain refuse from campsite bins, rubble and other construction material.</li> <li>▪ Once full and on a regular basis, the contents of the skip must be disposed of at a licensed commercial facility.</li> <li>▪ All refuse containers are to be covered at all times.</li> <li>▪ The piling of any material that could rot and release unpleasant smells into the air will not be permitted.</li> </ul>		
<b>Management objectives</b>		
<ul style="list-style-type: none"> <li>▪ Neat workplace and site</li> </ul>		
<b>Measurable targets</b>		
<ul style="list-style-type: none"> <li>▪ No complaints from landowners or I&amp;APs</li> </ul>		
<b>Site specific reference</b>	<b>Contract method Statement</b>	<b>Eskom contract reference</b>
	PHY-0006 – rubble & refuse removal	<ul style="list-style-type: none"> <li>• TRMSCAAC1 REV 3 section 4.1.2</li> <li>• Contractor "Method Statement" for site establishment</li> </ul>

**2.6.4 BIOLOGICAL ISSUES AND THEIR CONTROL**

<b>BIO-0001</b>	<b>FAUNA</b>		
<p><b>Construction activities must be planned carefully so as not to interfere with the calving and lambing season for most animal species. The Contractor’s workforce will have to be very careful not to disturb the animals as this may lead to fatalities which will give rise to claims from the landowners.</b></p> <p>The Contractor shall under no circumstances interfere with livestock or game without the ECO and landowner being present. This includes the moving of livestock and or game where they interfere with construction activities. Should the Contractors workforce obtain any livestock or game for eating purposes, they must be in possession of a written note from the landowner.</p> <p>The breeding sites of raptors and other wild bird species shall be taken into consideration during the planning of the construction programme. There are many instances where protected and endangered species of birds are nesting on our transmission towers without causing any problems to the flow of electricity or network stability. These birds are highly territorial and some have been using the same nests for many years, i.e. Black Eagle (Witkruisarend). They are guarded jealously by the landowners and are monitored by many groups involved with ensuring their continued existence, including Nature Conservation officials at National and Provincial level.</p> <p><b>It is therefore imperative that the breeding sites of these birds are kept intact and that the breeding pairs are not disturbed especially where there are young nestlings.</b> The Contractor shall take all the necessary precautions and it is recommended that sites on parallel existing lines be noted, i.e. tower numbers. This information must then be given to the avian specialist via the Environmental Advisor so that the necessary action can be taken punctually.</p> <p>Should any new sites or nests be found, during the construction process, that was not known or have been noted before, each site shall be assessed for merit and the necessary precautions be taken to ensure the least disturbance. The recommendations of the avian specialist shall be adhered to at all time to prevent unnecessary disruption of such species. Bird guards and diverters shall be installed, as per the recommendations of the avian specialist, on the new line.</p>			
<b>Management objectives</b>			
<ul style="list-style-type: none"> <li>▪ Minimise disruption of farming activities</li> <li>▪ Minimise disturbance of animals</li> <li>▪ Minimise interruption of breeding patterns of birds</li> </ul>			
<b>Measurable targets</b>			
<ul style="list-style-type: none"> <li>▪ No stock losses where construction is underway</li> <li>▪ No complaints from landowners or Nature Conservation</li> <li>▪ No litigation concerning stock losses and animal deaths</li> </ul>			
<b>Site specific reference</b>	<b>Contract method Statement</b>	<b>Eskom contract reference</b>	

<b>BIO-0002</b>	<b>FLORA</b>	
<p>The ECO must on a regular basis conduct scans for protected or endangered species that may occur along the line route. Contractors must exercise special care not to damage or remove any such species unless absolutely necessary. Permits for removal must be obtained from NATURE CONSERVATION should such species be affected. All plants not interfering with the operation of the line shall be left undisturbed. <b>Collection of firewood is strictly prohibited.</b></p>		
<b>Management objectives</b>		
<ul style="list-style-type: none"> <li>▪ Minimal disturbance to vegetation where such vegetation does not interfere with construction and operation of the line</li> <li>▪ Prevention of litigation concerning removal of vegetation</li> </ul>		
<b>Measurable targets</b>		
<ul style="list-style-type: none"> <li>▪ No litigation due to removal of vegetation without the necessary permits</li> </ul>		
<b>Site specific reference</b>	<b>Contract method Statement</b>	<b>Eskom contract reference</b>
	PHY-0007	ESKASABG3 REV 1

<b>BIO-0003</b>	<b>HERBICIDE USE</b>	
<p>Herbicide use shall only be allowed with the approval of Eskom. The application shall be according to set specifications and under supervision of a qualified technician. The possibility of leaching into the surrounding environment shall be properly investigated and only environmentally friendly herbicides shall be used (Refer section 4.7. regarding VEGETATION CLEARING and section 3.9 regarding storage of hazardous substances).</p> <p>The use of herbicides shall only be allowed after a proper investigation into the necessity, the type to be used, the long-term effects and the effectiveness of the agent. Eskom's approval for the use of herbicides is mandatory (Contact Dr. Eugene van Rensburg—TRI, 082 451 1994). Application shall be under the direct supervision of a qualified technician. All surplus herbicide shall be disposed of in accordance with the supplier's specifications.</p> <p><b>IT IS RECOMMENDED THAT A SPECIALIST CONTRACTOR FOR VEGETATION CLEARING SHOULD BE UTILISED WHO MUST COMPLY WITH THE FOLLOWING PARAMETERS:</b></p> <ul style="list-style-type: none"> <li>▪ The contractor must have the necessary knowledge to be able to identify protected species as well as species not interfering with the operation of the line due to their height and growth rate.</li> <li>▪ The contractor must also be able to identify declared weeds and alien species that can be totally eradicated.</li> <li>▪ The contractor must be in possession of a valid herbicide applicators licence.</li> </ul>		
<b>Management objectives</b>		
<ul style="list-style-type: none"> <li>▪ Control over the use of herbicides</li> </ul>		
<b>Measurable targets</b>		
<ul style="list-style-type: none"> <li>▪ No signs of vegetation dying due to leaching of herbicides one year after completion of the bush clearing</li> <li>▪ No landowner complaints and litigation</li> </ul>		
<b>Site specific reference</b>	<b>Contract method Statement</b>	<b>Eskom contract reference</b>
	PHY-0007	ESKASABG3 REV 1

### 2.6.5 CULTURAL ISSUES AND THEIR CONTROL

<b>CUL-0001</b>	<b>ARCHAEOLOGY</b>	
<p>The position of known sites will be shown on the final profiles. Such areas shall be marked as no go areas. Artefacts shall not be removed under any circumstances. Any destruction of a site can only be allowed once a permit is obtained and the site has been mapped and noted. The permit must be obtained from the National Museum in terms of the National Heritage Resources Act, 1999 (Act No. 25 of 1999).</p> <p>Should any archaeological sites be uncovered during construction, their existence shall be reported to Eskom immediately, Joyce Mashiteng to be informed at 011 800 4623. An archaeologist will then take the necessary action so that construction can continue.</p>		
<b>Management objectives</b>		
<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 of new archaeological finds should these be discovered during construction</li> </ul>		
<b>Measurable targets</b>		
<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 Archaeologist</li> </ul>		
<b>Site specific reference</b>	<b>Contract method Statement</b>	<b>Eskom contract reference</b>

<b>CUL-0002</b>	<b>MONUMENTS / HISTORICAL SITES</b>	
<p>All monuments and historical sites shall be treated with the utmost respect. Any graves shall be clearly marked and treated as no go areas. No destruction of any site shall be allowed. Should it be necessary to remove any graves, the necessary procedures shall be followed and permits obtained.</p>		
<b>Management objectives</b>		
<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>		
<b>Measurable targets</b>		
<ul style="list-style-type: none"> <li>▪ No destruction of or damage to known sites</li> <li>▪ Management of existing sites and new discoveries in accordance with legislation</li> <li>▪ No litigation due to destruction of sites</li> </ul>		
<b>Site specific reference</b>	<b>Contract method Statement</b>	<b>Eskom contract reference</b>



<b>CUL-0003</b>	<b>FARMHOUSES / BUILDINGS</b>	
<p>If and where the lines cross any inhabited area, the necessary precautions shall be taken by the Contractor to safeguard the lives and property of the inhabitants. The Contractor shall under no circumstances interfere with the property of landowners.</p> <p>If water is required, the Contractor shall negotiate with the relevant landowner and a written agreement shall be drawn up.</p>		
<b>Management objectives</b>		
<ul style="list-style-type: none"> <li>▪ Control over actions and activities in close proximity to inhabited areas</li> </ul>		
<b>Measurable targets</b>		
<ul style="list-style-type: none"> <li>▪ No complaints from landowners</li> <li>▪ No damage to private property</li> </ul>		
<b>Site specific reference</b>	<b>Contract method Statement</b>	<b>Eskom contract reference</b>
		<p>TRMSCAAC1 REV 3 section 4.8 regarding use of landowner water use</p>

<b>CUL-0004</b>	<b>INFRASTRUCTURE</b>	
<p>No telephone lines shall be dropped during the stringing operations. All crossings shall be with at least as high as rugby posts to protect the lines. Where pipe lines are found along the route, the depth of the pipes under the surface shall be determined to ensure that proper protection is afforded to such structures. Any damage to pipe lines shall be repaired immediately.</p> <p>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. A speed limit of 40km/h shall be enforced in such areas and all drivers shall be sensitised to this effect. Upon completion of the project all roads shall be repaired to their original state.</p> <p>Many landowners use electrically driven farming activities such as irrigation or dairies. Power cuts to facilitate construction and especially stringing must be carefully planned. If possible disruptions must be kept to a minimum and should be well advertised and communicated to the landowners. Care must be taken not to damage irrigation equipment, lines, channels and crops, as this could lead to major claims being instituted against Eskom and the Contractor. The position of all pipelines and irrigation lines must be obtained from the landowners and be shown on the physical access plan.</p>		
<b>Management objectives</b>		
<ul style="list-style-type: none"> <li>▪ The control of temporary or permanent damage to plant and installations</li> <li>▪ Control of interference with the normal operation of plant and installations</li> <li>▪ Securing of the safe use of infrastructure, plant and installations</li> </ul>		
<b>Measurable targets</b>		
<ul style="list-style-type: none"> <li>▪ No unplanned disruptions of services</li> <li>▪ No damage to any plant or installations</li> <li>▪ No complaints from authorities or landowners regarding disruption of services</li> <li>▪ No litigation due to losses of plant, installations and crops</li> </ul>		
<b>Site specific reference</b>	<b>Contract method Statement</b>	<b>Eskom contract reference</b>

**SECTION 3: PYLON SPECIFIC CEMP**

Table 5 below is designed to be used as an on-site reference by the contractors, engineers and the ECO as it incorporates the standard method statements in Section 2.6 above and site specific reference to the required mitigation measures following archaeological, avi-faunal and ecological assessments to be done during the site walk-through following the issuing of an RoD.

Please note that these site specific measures should be implemented in conjunction with the statements contained in Section 2.6.

By taking pro-active measures during the construction phase, potential environmental impacts emanating during the operational phase can be minimised. This, in turn, will minimise the risk and reduce the monitoring effort. Table 5 is a graphic representation of the environmental mitigation measures to be implemented for each pylon. The contractors, engineers and ECO are therefore advised to make use of Table 5 as a tool in the day to day planning of construction related activities.

Provided the development of this powerline is mitigated, as per this EMP, the project will result in limited negative environmental impacts.

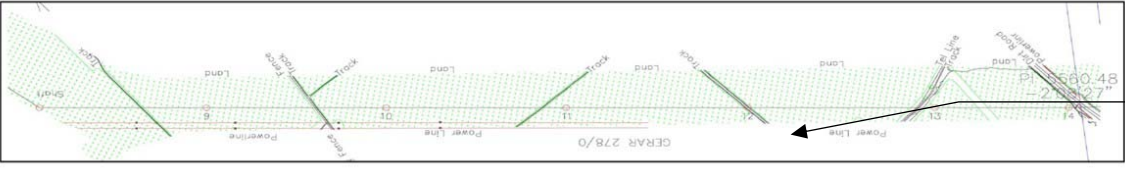
This Construction Environmental Management Plan should be used as an on-site reference document during the construction phase of this development, and auditing in accordance with Section 2.3 above should take place in order to determine compliance with this CEMP. Parties responsible for transgression of this CEMP should be held responsible for any rehabilitation that may need to be undertaken. Parties responsible for environmental degradation through irresponsible behaviour / negligence should receive penalties.

The following is a guideline to the structure of Table 5 and how it should be used.

Environmental Management Plan

**Table 5: Tower specific CEMP**

#	FARM NAME	PTN	OWNER	CONTACT_NAME	HOME_TEL:	ACTION
1						
2						
3						
4						
5	MOAB 279 05	0	ANGLOGOLD LTD	JJ WESSELS	018 478 6270	<div style="border: 1px solid black; padding: 5px;"> <p><b>KEY REFERENCE MATERIAL TO BE IMPLIMENTED</b></p> <p>CON - 0001</p> <p>PHY - 0001</p> <p>SOC - 0002</p> <p>CUL - 0001</p> <p>AVIE - 0001</p> </div> <div style="border: 2px solid red; padding: 5px; margin-top: 5px;"> <p><b>PLEASE NOTE</b></p> <p> Cultivated land (All anchors to be marked with yellow slit).</p> <p> Beware of cattle in the area and ensure no refuse in the form of plastics poisonous chemicals contained and cleared on a daily basis. Warning tape must not be utilised in this area.</p> <p> Contractor must be aware of rocky outcrops and ensure construction footprint is contained and does not creep into rocky outcrop.</p> </div>
6	MOAB 279 06	0	ANGLOGOLD LTD	JJ WESSELS	018 478 6270	
7	MOAB 279 07	0	ANGLOGOLD LTD	JJ WESSELS	018 478 6270	
	ANG LOG OLD LTD	0	JJ WESSELS		018 478 6270	
9	GERAR 278 05	0	PEET BOTHA FAMILIE TRUST	P BOTHA	018 4411213	Cultivated land (All anchors to be marked with yellow slit).



**Pylon Number**

This column indicates the specific pylon in question. Various pylons may be grouped as a "stretch" under the action column where applicable.

**Landowner details**

Pylon specific details contained in these columns include farm name; portion number; owner; and contact details.

**Contract CEMP method statements**

The codes given in blue here indicate reference to the specific statements contained in Section 2.6 "CEMP" which must be implemented for the relevant pylons. The relevant page number for each statement is indicated for convenience. The ECO must ensure these statements are referred to, implemented and are included in the audit process.

**"PLEASE NOTE"**

The contractor and ECO must take special note of these pylon-specific mitigation measures which are 'site specific' and are included in conjunction with the "standard" statements from Section 2.6 'CEMP'. Icons have been assigned to each issue for quick reference; please refer to the "Key" below for icon descriptions. The ECO must ensure these measures are adhered to and are included in the audit process.

**Specialist appended reports**

These give reference to specific specialist indications appended to the EMP. The ECO must ensure these reports are referred to and are included in the audit process.

**Alignment profile**

This graphic displays topographical detail for the specific pylons included on each page for a convenient overview of each "section" where the contractor and ECO are encouraged to make notes.

## KEY - “Pylon Specific EMP”



**CULTIVATED LANDS** – This icon is displayed where “cultivated land is the predominant land cover / use. Specific mitigation where required is indicated next to the icon.



**LIVESTOCK & GAME** – This icon is displayed when all or part of the land use includes cattle and game farming. Specific mitigation where required is indicated next to the icon.



**ECOLOGICAL** – This icon is displayed where specific mitigation is required from a biological perspective including fauna, flora and associated habitats. Specific mitigation where required is indicated next to the icon.



**HYDROLOGICAL** – This icon is displayed where the alignment runs through or in close proximity to wetland areas including pans, rivers, dams, dongas and other forms of natural or man-made drainage lines. Specific mitigation where required is indicated next to the icon.



**HERITAGE** – This icon is displayed where the alignment runs through or in close proximity to ruins, graves, artefacts, old buildings kraals, old trees, etc. Specific mitigation where required is indicated next to the icon.



**GAME FARMS** – This icon is displayed where the alignment runs through or in close proximity to private and commercial game farms and protected areas. Specific mitigation where required is indicated next to the icon.



**SOCIAL** – This icon is displayed where the alignment and the construction of the line directly impacts on landowners and I&APs during the construction phase. Specific mitigation where required is indicated next to the icon.



**AVIFAUNAL** - This icon is displayed where mitigation measures contained in the AVIFAUNAL Report, see APPENDIX 4., must be referenced and implemented.

**CONCLUSION**

This CEMP sets the institutional framework for responsibilities and reporting of all environmental issues during the construction of the 400 kV transmission line. It is important that the contractor team and engineers are fully acquainted with its contents to ensure potential negative impacts are avoided or identified in advance during construction and the appropriate mitigation measures implemented.

In order for this CEMP to be successfully implemented, all the role players involved in the project need to co-operate. For this to happen possible role players must have a clear understanding of their role in the project, must be professional, form respectful and transparent relationships, and maintain open lines of communication . These role players include Eskom Transmission, The Environmental Auditing Team (EAT), The Environmental Control Officer (ECO), Project Manager (PM), Contract Manager (CM), the Contractors (C), landowners, interested and affected parties and the relevant environmental and project specialists.

The users of this document must therefore strive not only to underwrite Eskom's Environmental Policy at all times, but also to thoroughly comply with all the conditions of the Record of Decision and other relevant legal requirements.

**No work shall commence until permission is granted by the Environmental Advisor from Transmission Engineering and the amended ROD for the 400 kV transmission line from DEAT has been obtained. The Project Manager shall ensure that all conditions in the ROD are fulfilled before the Contractor occupies the site.**

**REFERENCE LIST**

Conservation of Agricultural Resources Act (No. 43 of 1983).

DEAT (1992) Integrated Environmental Management Guideline Series, Volumes 1-6, Department of Environmental Affairs, Pretoria.

DEAT (2004a) Environmental Management Plans, Integrated Environmental Management, Information Series 12, Department of Environmental Affairs and Tourism (DEAT), Pretoria.

DEAT (2006) Environmental Impact Assessment Regulations, 21 April 2006.

Environment Conservation Act (No. 73 of 1989).

Forest Fire Act (No. 122 of 1984).

Hazardous Substances Act (No. 15 of 1973).

National Environmental Management Act (No. 107 of 1998).

National Forests Act (No. 84 of 1998).

National Heritage Resources Act (No. 25 of 1999).

National Veld & Forest Fire Act (No 101 of 1998).

National Water Act (No 36 of 1998).

Occupational Health and Safety Act (No. 85 of 1993).

Strategic Environmental Focus (2006) Environmental Impact Assessment for the proposed Kudu 400kV Transmission Line.

**APPENDIX 1: TRMSCAAC1**



**APPENDIX 2: ESKASABG3**

**APPENDIX 3: EPL 32-94**

**APPENDIX 4: AVIF – 0001**

**APPENDIX 5: VIA – 0001**

**APPENDIX 6: RECORD OF DECISION (ROD)**