



NORTHERN REGION

**ENVIRONMENTAL MANAGEMENT PLAN FOR
THE CONSTRUCTION OF THE NEW 132kV
SUB-TRANSMISSION LINE BETWEEN THE
ERMELO AND MAJUBA, MPUMALANGA
PROVINCE**

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CONTACT DETAILS OF RESPONSIBLE PERSONS

REGIONAL ENVIRONMENTAL SPECIALIST

Ms Angelina Shalang

Eskom Distribution – Environmental Management Advisor, Menlyn

Tel: 012 421 3353

Fax: 012 421 3330/ 086 662 0183

ENVIRONMENTAL PRACTITIONER

Ms Palesa Kuaho

Tel: (013) 693-3146

Fax: (013) 693 4432

GLOSSARY OF TERMS AND ABBREVIATIONS

EMP:

Environmental Management Plan. A detailed plan of action prepared to ensure that recommendations for enhancing or ensuring positive impacts and limiting or preventing negative environmental impacts are implemented during the life cycle of a project. This EMP focuses on the construction phase, operation (maintenance) phase and decommissioning phase of the proposed project.

ENVIRONMENT:

In terms of the National Environmental Management Act (NEMA) (No 107 of 1998), "environment" means the surroundings within which humans exist and that are made up of:

- (i) the land, water and atmosphere of the earth;
- (ii) micro-organisms, plant and animal life;
- (iii) any part or combination of (i) of (ii) and the interrelationships among and between them; and
- (iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

ESKOM'S PROJECT MANAGER:

The person appointed by Eskom from time to time to act in the capacity and notified, by name and in writing by Eskom to the Contractor, to act as required in the contract.

CLERK OF WORKS:

The person appointed by Eskom from time to time to act in the capacity of site manager, and whose authority shall be notified in writing to the Contractor by Eskom's Project Manager, and is responsible for managing the construction process on site.

ENVIRONMENTAL CONTROL OFFICER:

An individual nominated through the Project Manager to be present on site to act on behalf of the Project Manager in matters concerning the implementation and day to day monitoring of the EMP. The Environmental Control Officer is assumed to be the regional Environmental Practitioner appointed by Eskom.

CONTRACTOR:

A person or company appointed by Eskom to carry out stipulated activities.

ENVIRONMENTAL IMPACT

A change to the environment, whether adverse or beneficial, wholly or partially, resulting from an organisation's activities, products or services.

INCIDENT

An undesired event which may result in a significant environmental impact but can be managed through internal response.

EMERGENCY

An undesired event that does result in a significant environmental impact and requires the notification of the relevant statutory body, such as a local authority.

1. INTRODUCTION

Due to population and economic growth in the Ermelo region of Mpumalanga Province, the existing power reticulation networks have become inadequate to provide the required supply to Eskom's customers. Low voltages are experienced during peak hours and various complaints have been received from customers. In addition, new customers cannot be connected to the existing networks for fear of overloading. In order to supplement this supply to meet the needs of the surrounding and new customers, Eskom Distribution proposes the construction of a 132kV powerline situated in the Ermelo region. This is considered to be the most feasible solution proposed by Eskom Distribution, to supply electricity to the surrounding communities.

1.1. Project Description

The project is located within Ermelo, Amersfoort, Volkrust: Msukaligwa local Municipality; Pixley ka Sema local Municipality and Ger Sibande District Municipality, Mpumalanga Province, the proposed project comprises the following:

- The construction of a new 88 kV Sub-transmission line between the existing Ermelo (Uitkoms substation) to Majuba Power Station, approximately 93 km. It is proposed that a monopole structure be used for the Subtransmission line.
- The construction of a new 88 kV Sub-transmission line from the proposed Ermelo Majuba to Lebo substation, which approximately 3 km.

This power line would provide electricity to a new coal transport railway line between Ermelo to Majuba Power Station.

1.2. Applicable Documentation

The following documentation is applicable for the project, and should be read in conjunction with this EMP:

- Cognisance of the Environmental Authorisation (EA) must be taken once it has been amended. Where necessary, this EMP is amended to comply with the EA.
-

1.3 Structure of the Environmental Management Plan

The EMP provides mitigation and management measures for the following phases of the project:

- *Construction Phase*

This section of the EMP provides management principles for the construction phase of the project. Environmental actions, procedures and responsibilities as required within the construction phase are specified.

These specifications shall form part of the contract documentation and, therefore, the Contractor will be required to comply with the specifications to the satisfaction of the Project Manager and Environmental Control Officer, in terms of the construction contract.

- *Operation and Maintenance Phase*

This section of the EMP provides management principles for the operation and maintenance phase of the project. Environmental actions, procedures and responsibilities as required from Eskom within the operation and maintenance phase are specified.

- *Decommissioning Phase*

This section includes principles for the decommissioning phase of the project. This section of the EMP will be required to be revisited and updated at the time of decommissioning. All relevant environmental legislation pertaining to the project from cradle to grave is listed within Appendix A. The Contractor is required to comply with this legislation for all phases of the project. This list is intended to serve as a guideline only for the Contractor and is not exhaustive.

It should be noted that this EMP is a dynamic document which should be updated as required on a continuous basis. This may be of particular importance once the final route alignment within the preferred corridor and the exact positioning of the towers has been selected, as at this stage it may be possible to add more 'site specific' management measures. Any amendments made must be submitted to either the Environmental Control Officer (or the Regional Environmental Specialist) and Project Manager for approval prior to implementation.

1.3. Objectives of the EMP

The EMP has the following objectives:

- To outline functions and responsibilities of responsible persons.
- To state standards and guidelines, which are required to be achieved in terms of environmental legislation.
- To outline mitigation measures and environmental specifications, which are required to be implemented for all phases of the project in order to minimise the extent of environmental impacts, and to manage environmental impacts.
- To prevent long-term or permanent environmental degradation.

2. SCOPE

The scope of this document is to give environmental management guidelines, to the Contractor constructing the Distribution power lines and substation, in fulfilment of ISO 14001 requirements. This document will form part of the contract. The recommendations and constraints, as set out in this document are enforceable under the general conditions of contract.

The management programme has a long-term objective to ensure that:

- Environmental Management conditions and requirements are implemented from the start of the project,
- Precautions against damage and claims arising from damage are taken timeously, and
- The completion date of the contract is not delayed due to problems with Landowners arising during the course of construction.

Eskom requires a commitment from the Eskom Project Manager and the Contractor on the following issues:

- Take into consideration the Landowner special conditions where the line traverses private property.
- To underwrite Eskom Distribution’s SEHEQ Policy at all times.
- Ensure environmental conditions stipulated in the Environmental Authorisation (EA) are implemented.
- Resolve problems and claims arising from damage immediately to ensure a smooth flow of operations.
- To implement this Environmental Management Programme (EMP) for the benefit of all involved.
- To preserve the natural environment by limiting destructive actions on site.

2.1. Reporting Structure.



ECO: Environmental Control Officer (Can be the Eskom Site Supervisor depending on the size of the project)

C: Contractor

CM: Contract Manager (Eskom)

PM: Project Manager (Eskom)

2.2. Responsibility Matrix.

Function	Name / Cell No.	Responsibility
Project Manager (PM) Eskom	Kenneth Mokoo 0722533118	Overall management of project and EMP implementation
Clerk of work (COW) Eskom		Oversees site works, liaison with Contractor

Environmental Control Officer (ECO) Eskom		Implementation of EMP and liaison between Eskom, Contractor and Landowners, PM and ECO
Contractor (C)		Implementation and compliance with recommendations and conditions of the EMP
Distribution Services Environmental Practitioner (Eskom)	Palesa Kuaho 013 693 3146	Environmental advice and auditing

2.3. Functions and Responsibilities

Formal responsibilities are necessary to ensure that key procedures are executed. Specific responsibilities of the Project Manager, Clerk of Works and Environmental Control Officer for this project is as detailed below.

The Project Manager will:

- ensure that Eskom and the Contractor are aware of all specifications, legal constraints and Eskom standards and procedures pertaining to the project specifically with regard to the environment.
- ensure that all stipulations within the EMP are communicated and adhered to by Eskom and its contractor(s).
- monitor the implementation of the EMP throughout the project by means of site inspections and meetings. This should be documented as part of the site meeting minutes.
- be fully conversant with the Environmental Scoping Report for the project, the conditions of the EA, and all relevant environmental legislation.

The Clerk of Works (Eskom’s Representative) will:

- be fully conversant with the conditions of the EA.
- be fully conversant with the Environmental Management Plan.
- be fully conversant with all relevant environmental legislation and Eskom environmental policies and procedures, and ensure compliance with these.
- have overall responsibility for the implementation of the EMP.

- conduct audits to ensure compliance to the EMP.
- liaise with the Project Manager or his delegate, the Environmental Control Officer and relevant discipline Engineers on matters concerning the environment.
- prevent actions that will harm or may cause harm to the environment, and take steps to prevent pollution on the site.
- confine activities to the demarcated construction site.

The Environmental Control Officer will:

- be nominated through the Project Manager to be present on site to act on behalf of the Project Manager in matters concerning the implementation and day to day monitoring of the EMP.
- be fully conversant with the conditions of the EA.
- be fully conversant with the Environmental Management Plan.
- be fully conversant with all relevant environmental legislation and Eskom environmental policies and procedures, and ensure compliance with them.
- undertake regular and comprehensive inspection of the site and surrounding areas in order to monitor compliance with the EMP.
- take appropriate action if the specifications are not followed.
- monitor and verify that environmental impacts are kept to a minimum, as far as possible.
- review and approve construction methods, with input from the Clerk of Works, where necessary.
- ensure that activities on site comply with all relevant environmental legislation.
- order the removal of person(s) and/or equipment in contravention of the specifications of the EMP.
- compile progress reports on a regular basis, with input from the Clerk of Works, for submission to the Project Manager, including a final post-construction audit.
- liaise with the Clerk of Works regarding the monitoring of the site.
- report any non-compliance or remedial measures that need to be applied.

Contractors and Service Providers:

All contractors (including subcontractors and staff) and service providers are ultimately responsible for:

- complying with the environmental management specifications;

- submitting an obligatory Methods Statement for approval by the ECO before any work is undertaken;
- adhering to any instructions issued by the Engineer/Project Manager on the advice of the ECO;
- submitting a report at each site meeting which will document all incidents that have occurred during the period before the site meeting
- displaying the list of transgressions issued by the ECO in the site office
- maintaining a public complaints register.
- arrange that all his employees and those of his subcontractors receive training before the commencement of construction in order that they are aware of the terms of reference of the EMP.

3. TECHNICAL SPECIFICATIONS

3.1. 88kV Sub-transmission power lines

3.1.1. Length

The length of the lines will be approximately 93 km and 3km in length.

3.1.2. Construction Area

The servitude width for each 88 kV Sub-transmission line is 31 m, 15, 5 m on either side of the centre line. Construction will be limited to the width of the servitude in which the line will be constructed.

3.1.3. Tower Parameters

- Tower spacing: 200 m (Average)
- Tower height: 17.4 m to 21 m
- Minimum ground clearance: 6.7 m

3.1.4. Tower Design

The Contractor shall ensure that the correct equipment for construction purposes is available at all times to ensure construction proceeds without unnecessary damage to the environment. Should alternative methods be used, it requires approval from site staff and the ECO must be informed to ensure environmental issues are addressed.

3.1.5. Major Activities of the Project

The project involves 15 major activities. These are:

Step 1: Determination of technically feasible alternatives.

- Step 2:** EIA input into route selection and obtaining of relevant environmental permits.
- Step 3:** Negotiation of final route with affected landowners.
- Step 4:** Survey of the route.
- Step 5:** Selection of best-suited structures and foundations.
- Step 6:** Final design of Sub-transmission line and placement of towers.
- Step 7:** Issuing of tenders and award of contract to construction companies.
- Step 8:** Vegetation clearance and construction of access roads (where required).
- Step 9:** Pegging of structures.
- Step 10:** Construction of foundations.
- Step 11:** Assembly and erection of structures.
- Step 12:** Stringing of conductors.
- Step 13:** Rehabilitation of disturbed area and protection of erosion sensitive areas.
- Step 14:** Testing and commissioning.
- Step 15:** Continued maintenance.

3.1.6. Project Execution Area

Construction activities must be limited to an area to be demarcated by Eskom and shown on the site plans, to be produced by the contractor. Any area outside the Eskom servitude area, required to facilitate access, construction activities, construction camps or material storage areas, shall be negotiated with the affected Landowners and written agreements shall be obtained. All construction areas shall be cleared in accordance with the Eskom Standard for Bush-clearing ESKASABG3 (refer Appendix C). Any extra space to be cleared outside the servitude shall be negotiated with the relevant Landowners and approved by Eskom. All areas marked as no go areas inside the servitude shall be treated with the utmost care and responsibility.

The applicant must minimize habitat destruction and disturbance during all construction, maintenance and decommissioning activities. No development is to occur and/or impact on areas of high sensitivity, namely natural vegetation, protected tree species, riparian areas, areas of high slopes and rocky outcrops. Construction work must be confined to the construction site (s) and interference with indigenous plant and animal species, particularly rare and threatened species and their habitats is prohibited. No construction and development activities are permitted in wetland areas.

3.2.1. Project Execution Area

Construction activities are limited to the area as demarcated by Eskom and shown on the site plans, to be produced by the contractor. Any area outside Eskom owned property, required to facilitate access, construction camps or material storage areas, shall be negotiated with the Landowners (where applicable) and written agreements shall be obtained.

In the case of this new substation, the works area shall be fenced to prevent livestock or local community members from wandering onto site and getting injured. All works shall be limited to the fenced area and the Contractor workforce shall refrain from venturing outside this area onto private property.

4. ENVIRONMENTAL GUIDELINES, STANDARDS AND PERMITS

4.1. Environmental Guidelines and Standards

All applicable environmental standards contained within the environmental legislation shall be adhered to. At the time of compiling this draft EMP, the following environmental guidelines and standards were identified as being applicable.

4.1.1 Air Quality Guidelines

In terms of air quality, the Contractor will be required to describe how effective dust control measures will be achieved during the construction phase. This will only be required for activities that are to produce a significant amount of dust or other air-pollutants (e.g. excavation activities, use of heavy vehicles during construction, etc.).

4.1.2 Blasting Regulations and Standards

Wherever blasting activity is required on the site, the Contractor shall rigorously adhere to the relevant statutes and regulations that control the use of explosives.

It is, however, unlikely that blasting will be required for this project.

4.1.3 Control of Alien Vegetation

In terms of Government Notice R1048, the following regulations are applicable with regards to the control of invasive alien vegetation and declared weeds:

- It is illegal to have declared weed species or invasive alien vegetation on one's property.
- The landowner must immediately take steps to eradicate them by using the methods prescribed in the regulations, namely:
 - * uprooting and burning, or
 - * the application of a suitable chemical weed-killer (herbicide), or
 - * any other method of permanent eradication.
- One may not uproot or remove such plants and dump or discard them elsewhere to re-grow or allow their seeds to be spread or blown onto other properties.
- If the landowner does not comply with requirements above, a person may be found guilty of a criminal offence.

4.2 Environmental Permitting Requirements

Environmental permits, which will be required to be obtained for construction, are discussed briefly below. These will be required to be obtained before construction commences.

4.2.1 River and Stream Crossings

Permission is required from M DALA (Agricultural Directorate) for the removal of river bank vegetation and disturbance of the river bank itself for all river crossings under the Conservation of Agricultural Resources Act (No 43 of 1983).

All disturbances will have to be appropriately rehabilitated. The positioning of the towers have not been determined as yet, and therefore the permit may or may not be required, depending on whether any of the towers are located adjacent to any non perennial river. It is recommended that the banks of the watercourse be avoided wherever possible, rather than obtaining a permit in order to minimise the impact on the watercourse. It should be noted that pollution of river water (silt-laden run-off, oil from machines etc.) is a contravention of the National Water Act (No 36 of 1998) and is not permitted. Therefore, this must be avoided at all times during construction and maintenance activities.

4.2.2 Abstraction of Water

If water is to be abstracted from a public stream during construction (for construction activities), a permit is required from the Minister of Water Affairs .If water is to be abstracted from water of which the rights of use belong to private landowners, it will be necessary to establish whether their water use rights are still valid in terms of the provisions of the National Water Act. If they are still valid then negotiations with the relevant landowners has to be undertaken and a water use permit obtain from DWA in terms of Section 21, 40 and 41 of the National Water Act (No 36 of 1998).

4.2.3 Heritage Sites

In terms of the National Heritage Resources Act (No 25 of 1999), a permit is required to be obtained for the disturbance, removal or destruction of any national and provincial heritage sites, archaeological and palaeontological sites, burial grounds and graves and public monuments and memorials. The demolition or dismantling of all man-made structures and buildings older than 60 years is subject to the approval of the relevant provincial heritage council under the National Heritage Council Act (No 11 of 1999).

4.2.4 Waste Disposal

All waste (general and hazardous) generated during the construction of the powerline and substation may only be disposed of at appropriately licensed waste disposal sites (in terms of Section 20 of the Environment Conservation Act, No 73 of 1989). Cognisance must also be taken of the relevant provincial legislation in this regard. It should be noted that all controlling authority regulations pertaining to litter in terms of the Environment

Conservation Act (sections 19, 19A and 24A) have been delegated to the provinces. For further detail regarding the management of waste on site refer to section 4.10.

4.2.5 Public Health

Ablution facilities must be approved by the nearest local authority in terms of their by-laws and relevant provincial standard by-laws. These facilities do not fall under provisions of the National Water Act (No 25 of 1999). Chemical toilets must be provided on site and must be emptied at regular intervals. No other types of ablution facilities are permitted on site.

5. CONSTRUCTION PHASE

5.1 Site Establishment and Management

5.1.1 Construction Site Layout Plan

Once the alignment of the Sub-transmission line and the positioning of the towers and the substation have been finalised, the Contractor must develop a construction layout plan, indicating the intended use of the site, including the following to be supplied by Eskom Land Development:

- The extent of the servitude and substation area.
- Site access during construction (including all entry and exit points).
- The locations of the powerline towers.
- The route and the extent of access necessary to reach each tower location.

In addition, the contractor shall indicate the following:

- All material and equipment storage areas (including storage areas for hazardous substances such as fuel, cement and herbicides).
- Construction offices and other structures (if required).
- Security requirements (including temporary and permanent fencing and lighting) and accommodation for security staff.
- Areas where vegetation is required to be cleared.
- Areas where material is to be stockpiled (including construction materials and topsoil).
- Solid waste collection facilities.
- Temporary construction phase stormwater control measures.
- Areas that require slope stabilisation during construction.
- Provision of potable water and temporary ablution facilities for construction personnel.

The construction area should be clearly demarcated on the site plan, and all other areas must be considered no-go areas for the construction personnel.

Only designated areas may be used for the storage of construction material, topsoil, machinery, equipment and establishment of site offices.

The construction layout plan shall be made available to the Clerk of Works (Eskom's representative) for written approval. Throughout the period of construction, the Contractor shall restrict all activities to within the approved areas on the construction layout plan. Construction activities should be limited to the servitude areas.

5.1.2 Final Alignment of the Positioning of towers

Eskom has negotiated with each individual property owner regarding compensation and mitigation in order to obtain an option and register the servitude. The planned positions of towers have considered those areas with least possible impact on surrounding land-uses. Potential impacts during the operation (maintenance) and decommissioning phases should be considered to determine the final alignment in order to minimise impacts on the vegetation and prevent the requirement for expensive mitigation measures during the later phases of the project life cycle.

Construction in stream banks should be avoided, the applicant must ensure that:

- The spans between the monopole towers must be increased to the maximum necessary to meet technical and safety requirements, in order to limit the impact on sensitive vegetation areas, riparian areas, wetlands and natural woodland vegetation.
- Bird perches are fitted on the monopole tower structures to prevent potential bird electrocutions.
- all sections of the power line crossing perennial and non-perennial rivers, as well as other bird sensitive areas (which can and may be determined by the Endangered Wildlife Trust), are marked with bird flappers on the earth wires.
- Existing indigenous vegetation, particularly intact natural habitats, including rare and threatened plant species along the power line alignment are preserved.
- Excluded areas from development including important stands of vegetation, particularly indigenous forest and/or grassland are protected by temporary fencing (during construction) and limitations on access for vehicles, machinery and materials storage.
- Mitigation measures for affected sensitive areas, inclusive of bird mitigation measures, are applied equally to existing lines, especially in areas or sections where the proposed power line run adjacent and/or in proximity to the existing power lines, in order to minimise cumulative adverse impacts.

Access roads should not disturb natural drainage patterns. If streams are crossed by access roads, special attention is to be given to allow for natural drainage.

The contractor must comply with Eskom Safety Standards by constructing the powerline at the correct height (ground to lowest point of powerline)

5.1.3 Servitude Requirements and Clearances

The servitude width for an 88kV Sub-transmission line is 31 m (15, 5 m on either side of the centre line of the powerline). The minimum vertical clearance to buildings, poles and structures not forming part of the powerline must be 3,8 m, while the minimum vertical clearance between the conductors and the ground is 6,7 m.

The minimum distance of an 88kV Sub-transmission line running parallel to proclaimed public roads is 95 m from the centre of the Sub-transmission line servitude to the centre of the road servitude. The minimum distance between any part of a tree or shrub and any bare phase conductor of a 88kV Sub-transmission line must be 3,8 m, allowing for the possible sideways movement and swing of both the above-mentioned. On receipt of an approval of the final corridor by the environmental authorities and after negotiations with landowners, the final definition of the centre line for the Sub-transmission line and co-ordinates of each bend in the line are determined.

Optimal tower sizes and positions will be identified and verified using a ground survey (in terms of the Environmental Management Plan (EMP) requirements). A minimum 9 m (4,5 m either side of the centre line of the powerline) wide strip is to be cleared of all trees and shrubs down the centre of the sub-transmission line servitude for stringing purposes only. Any tree or shrub in other areas that will interfere with the operation and/or reliability of the Sub-transmission line must be trimmed or completely cleared. The clearing of vegetation must take place, with the aid of a surveyor, along approved profiles and in accordance with this EMP and Eskom's minimum standards for vegetation clearing for the construction of new power lines.

5.1.4 Site Camp(s) and Construction Staff

The Contractor shall be responsible for negotiating the site camps(s) and conditions under which the site may be established with the relevant landowner(s) (if required). Prior to the establishment of the site camp(s), the Contractor shall produce a plan showing the positions of all buildings, vehicle wash areas, fuel and cement storage areas and other infrastructure for approval of the Clerk of Works. The establishment of any camps should be negotiated with relevant landowners and communities.

All construction camps and equipment storage areas must be established on existing built-up/developed areas. It is strictly forbidden for construction camps and equipment storage areas to be allowed or established on or in areas of high ecological sensitivity, inclusive of

riparian areas, areas containing protected trees species and areas in close proximity to human settlements Site establishment should be undertaken in an orderly manner and all amenities shall be installed at the camps before the workforce moves onto site. Required facilities such as ablutions with chemical toilets, waste collection bins and wastewater management system should also be in place prior to the occupation of the campsite.

The Contractor will be required to provide a method statement on the establishment of the workforce camp, ablution facilities, waste management and wastewater management including a method statement for the management of these facilities. The Contractor is to provide a motivational memorandum should more than one site camp be considered necessary for this project. A signboard should be placed in the area of construction informing the public of the construction activities taking place. Construction staff must be adequately educated by the Environmental Control Officer or the Clerk of Works as to the provisions included in the EMP and general environmentally friendly practice.

The conduct of on-site workers must be specified to the Contractor by Eskom. Specifications are to include sanitation, water and waste (litter), as well as informal trading and interfering in local community/cultural affairs. The following activities will be disallowed at site camp (s) and by the construction staff in general:

- The irresponsible use of welding equipment, oxy-acetylene torches and other naked flames, which could result in veld fires or constitute a hazard.
- Indiscriminate disposal of rubbish or rubble.
- Littering of the site.
- Spillage of potential pollutants, such as petroleum products.
- Collection of firewood.
- Lighting of fires for cooking, heating or other purposes, and failure to exterminate any fires.
- Burning of any type of waste material, including the burning of empty cement bags.
- Interference with any wildlife, fauna or flora.
- Poaching of any description.
- Use of any facility other than the chemical toilets provided.
- Burning of wastes and cleared vegetation under any circumstances.
- The use of rivers, streams, dams or any watercourses/surface water for washing purposes.
- Entering areas outside of the demarcated construction area.

- The presence of construction staff at the construction site outside of the designated construction times (7:30 to 16:00), i.e. no construction staffs are allowed to overnight on site, outside of the demarcated construction camp.

The Contractor shall:

- Ensure that the entire camp site(s) is fenced and that gates are locked after hours and over weekends in order to prevent ad hoc access to the site by the public and to prevent the associated risk to personal safety.
- Ensure that firebreaks are made and maintained along the inside perimeter of the fence (where appropriate). This will be particularly important in areas where forestry activities are being undertaken.
- Ensure that appropriate sanitation (such as chemical toilets) and cooking facilities are provided and maintained at all work sites.
- No open fires will be permitted on the construction sites without the authority of the Environmental Control Officer. Food cooking shall be done in areas designated by the Environmental Control Officer.

The establishment of fencing and firebreaks must be negotiated with the relevant landowner(s).

The contractor must ensure that workers are educated about HIV/AIDS and that condoms are readily distributed. The local health services are to participate in order to ensure the implementation of education/condom distribution programmes.

5.1.5 Materials Handling, Use and Storage

The Contractor shall:

- Ensure that any delivery drivers are appropriately supervised by an individual familiar with all procedures and restrictions on site. This is of particular importance during off and on-loading of materials.
- Ensure that only designated areas are used for the handling or storage of construction materials.
- Ensure that all potentially hazardous and non-degradable waste is collected and disposed off at a permitted and registered waste site.
- Ensure that all maintenance to vehicles and equipment is undertaken at the workshop area.
- Ensure that all contaminated soil on site is collected and placed in containers for safe disposal at a permitted and registered waste site, where possible contaminated soils should be remedied on site.
- Ensure all potential hazardous substances are stored in suitable containers and storage areas are banded. These areas should be continuously monitored for spills.

- Ensure all storage areas are distinctly marked, with signs depicting what is stored in these areas.

5.2 Site Clearance and Management

5.2.1 Site Clearance

All vegetative matter shall be physically removed from the servitude centre line (8 m wide) for the entire 88kV Sub-transmission line servitude, substation area and any new access/service roads required. Of the 8 m wide servitude centreline, 5 m will be cleared of all vegetation for vehicle access and the remainder brush cut to height not greater than 100 mm, ensuring that the groundcover still remains. Prior to site clearance, a qualified vegetation specialist must undertake a survey of the vegetation in the area and any protected plant species recorded must be appropriately marked. As far as possible, these plants must not be damaged or disturbed. Where this cannot be avoided, the appropriate permit/s must be obtained from the Provincial Department of Conservation. All vegetation cleared from the site should be cut into manageable size and neatly stacked at regular intervals along the line. No vegetation should be pushed into heaps or left lying all over the line. No further vegetation may be removed. All cleared areas shall be stabilised as soon as possible in order to minimise the risk of erosion

In terms of the Environment Conservation Act (No 73 of 1989), the disposal of vegetation by burying or burning is prohibited. Therefore, cleared vegetation shall be removed from the site by the Contractor and disposed of at an appropriate licensed waste disposal site. No vegetative matter shall be burnt or removed for firewood under any circumstances by any Eskom employee or contractor.

Topsoil is to be stripped from areas in which construction is to take place. The topsoil must be separated from the subsoil during excavation activities. For the construction of the substation, the topsoil should be stockpiled in a designated stockpile area. The subsoil must be disposed of from site at an approved disposal site, due to its unsuitability for plant growth. The topsoil stockpile must then be used during the rehabilitation phase to provide a suitable medium for the germination of seeds and establishment of plants.

For the construction of the towers, the soil must be piled adjacent to the tower foundation being constructed, with the topsoil and subsoil separated. Following construction, it must be ensured that subsoil is replaced in the construction hole first, with the topsoil on the surface in order to ensure the establishment of vegetation.

5.2.2 Protection of Vegetation

The Contractor shall ensure that all works are undertaken in a manner, which minimises the impact on vegetation outside of the site area as designated in the construction site

layout. However, it may be necessary in certain instances to remove or prune vegetation outside of the servitude in order to prevent possible damage to the powerline. This must be undertaken in consultation with the Clerk of Works and the necessary landowners.

No vegetation clearing in the form of de-stumping, scalping or uprooting shall be allowed on river and stream banks. All protected species not to be removed shall be clearly marked and fenced off if required.

The following provisions shall apply with regards to vegetation on adjacent land:

- Any vegetation (i.e. trees) with a vertical height greater than the horizontal distance from its base to the centre line of the servitude must be removed or sufficiently pruned. This is to ensure that the powerline will not be damaged in the event of the vegetation uprooting or falling over. This will be important in areas where forestry activities are being undertaken and should be done in consultation with the affected landowners.
- No vegetative material adjacent to the site shall be burned for any reason.

5.2.3 Alien Vegetation

Monitoring the potential spread of declared weeds and invasive alien vegetation to neighbouring land and protecting the agricultural resources and soil conservation works are regulated by the Conservation of Agricultural Resources Act (No 43 of 1983) and should be addressed on a continual basis.

In view of the fact that the presence of declared weeds is illegal, it is recommended that the landowner/manager comply with the following legally prescribed requirements (refer to Sections 1, 2, 5 and 6 of the Conservation of Agricultural Resources Act (No 43 of 1983), as well as government notice GN R1048):

- a) The landowner/manager must take steps to eradicate the declared weeds by using the methods prescribed in the regulations, namely
 - * uprooting and burning, or
 - * the application of a suitable chemical weed-killer (herbicide), or
 - * any other method which will ensure their permanent eradication.
- b) One may not uproot or remove such plants and dump or discard them elsewhere to re-grow or to allow their seeds to be spread or blown onto other properties.
- c) If the landowner/manager does not comply with the requirements under a) and b) above, he/she is guilty of a criminal offence.

The Contractor shall remove all alien vegetation within the powerline servitude as listed in the Conservation of Agricultural Resources Act (No 43 of 1983), or as directed by the Environmental Control Officer during the construction period.

5.2.4 Herbicide Use

The use of herbicides shall be in compliance with the terms of the Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (No 36 of 1947). In terms of this Act, a registered pest control operator shall apply herbicides, or shall supervise the application of herbicides.

Therefore, the Contractor shall:

- Ensure that a registered pest control operator applies or supervises the application of all herbicides.
- Ensure that all Eskom policies on the use and application of herbicides shall be adhered to.
- Ensure that all herbicides are stored in a well-ventilated demarcated storage area.
- Ensure that a register of all contents of the storage area is kept and updated on a regular basis.
- Ensure that a daily register of all relevant details of herbicide usage is kept, and that such a register is maintained by the relevant Eskom custodian.

5.3 Faunal Interactions

5.3.1 Bird Anti-Electrocution Devices

The single steel pole structure is not likely to impact significantly on the birds occurring in the area through electrocution, therefore there is no need for bird perches at the top of pole structures.

5.3.2 Bird Anti-Collision Devices

No significant impact through collision is expected. The applicant is responsible for the ongoing monitoring of the power line along sensitive areas for incidents of bird collisions and electrocutions. The applicant must submit these monitoring reports to this Department every six months, during the operation of the power line, until otherwise advised in writing by this Department

5.3.3 Construction Phase Impacts

The contractor shall ensure that the following guidelines are enforced during the construction phase when managing the personnel:

- No killing of any fauna (including snakes) for any purpose.

- Should a problem arise when encountering a snake or any other problem animal, a professional should be called in to remove the problem animal
- No feeding of wildlife.

5.3.4 Habitat Destruction and Disturbance during Construction

It is recommended that all construction and maintenance activities be carried out according to generally accepted environmental best practice. It is essential that habitat destruction is minimized in these areas – to this end it is recommended that any construction camps, equipment storage areas etc be situated as far from the river as possible.

5.3.5 Management of Complaints

The Contractor shall, as soon as reasonably possible, but within 24 hours of becoming aware of a complaint relating to wildlife interaction, respond to the complaint and register the complaint in the Environmental Register. In addition, the complaint should be reported to the Environmental Practitioner as soon as possible such that the Environmental Practitioner and Contractor can investigate the incident.

5.4 Access and Traffic Management

Prior to the commencement of construction, Eskom shall negotiate the use of access roads required to gain access to the servitude with the relevant landowners where required.

5.4.1 Traffic Control Measures

Strict controls should be imposed on construction traffic to ensure minimal disturbance to neighbours and fellow road-users. Access routes should be defined prior to construction and should impose minimal disturbance to neighbouring community and road-users, and must be strictly adhered to. The Contractor shall ensure the implementation of the following traffic control measures and shall conform to Eskom's driving standards at all times:

- All drivers shall be in possession of an appropriate valid driver's license.
- All construction vehicles travelling on public roads shall adhere to the specified speed limits.
- Only designated roads and entrances approved by Eskom and agreed to in writing by the landowner shall be used.

- The movement of all vehicles and equipment shall be controlled such that they remain on designated routes.
- No deviation from approved access roads shall be allowed. Any deviation from the approved access roads shall be closed and rehabilitated immediately at the Contractor's cost.
- No member of the construction workforce shall be permitted to drive a construction vehicle under the influence of alcohol or narcotic substances.

5.4.2 Use of Roads

The Contractor shall:

- Ensure maximum use of both the powerline servitude and existing roads to gain access to the site during the construction phase, thereby minimising the need for the construction of new roads.
- Record the condition of all private roads to be used to gain access to the site (e.g. to be photographed), and agree to their condition with Eskom and the landowner prior to use by the Contractor.
- Ensure that all temporary access roads no longer required are decommissioned and the area rehabilitated.
- Ensure that, upon completion of construction, all private roads are left in at least the original condition. Any damage that may have occurred during the construction phase must be repaired. Any damage that occurs to the roads during construction as a result of construction activities must be reported and attended to.
- Rehabilitate and re-vegetate (if necessary) all access roads created during the construction process that will not be used for future maintenance of the servitude.
- Ensure ripping of areas on construction sites that were visibly compacted by construction activities in order to allow for the re-establishment of natural vegetation.
- Ensure that all existing private access roads used for the for construction purposes are maintained at all times to ensure that the local people have free access to and from their properties

Only upon Eskom's written approval shall new access roads be constructed. The Contractor shall:

- Provide justification for the need for the new access road.
- Obtain approval for the alignment/route from Eskom and the affected landowner(s).
- Avoid excessive disturbance to the area, and not traverse sensitive habitats.

- Adhere to a maintenance plan for the access road, should it be required by Eskom as a service road, during the maintenance phase.

Eskom are required to negotiate with individual landowners regarding maintenance of access roads, as well as with regards to compensation in the event of damage to existing infrastructure (e.g. fences) or stock losses. Eskom must ensure that access roads for maintenance purposes are kept in good travelling conditions and cleared of any obstructions.

5.4.3 Gate installation and Gate Control

The Contractor shall:

- Ensure that all gates installed in electrified fencing are also electrified
- Ensure that the Environmental Control Officers approve all gate positions before being installed.
- Fit all gates with locks and keep them closed at all times

5.4.4 Management of Complaints

The Contractor shall, as soon as reasonably possible, but within 24 hours of becoming aware of a complaint relating to traffic and access management, respond to the complaint and register the complaint in the Environmental Register (refer to Section 4.16). In addition, the complaint should be reported to the Environmental Practitioner as soon as possible such that the Environmental Practitioner and Contractor can investigate the incident.

5.5 Construction within the Servitude and Substation Site

The Contractor shall:

- Ensure that all foundation excavations are kept covered or barricaded in a manner acceptable to the Clerk of Works (Eskom's representative) to prevent injury to people, livestock and wildlife.
- Ensure that material removed from the excavation, which is not suitable or not required for backfill is spread evenly over or adjacent to the tower position or within the substation area. Any material not considered by the Clerk of Works to be suitable for backfilling shall be disposed of at an appropriate DWAF licensed waste disposal site. The Environmental Control Officer shall obtain a list of nearby landfill sites and will determine the most appropriate site for disposal.

- Ensure that all excavated soil suitable for backfill is returned to the excavation by backfilling, with the subsoil first and the topsoil last.
- Fence off the substation site at the commencement of the construction phase and ensure that the fence is maintained throughout the construction period until such time as the site is handed over to Eskom, in order to prevent the endangering of the safety of people and animals in the area.
- Ensure that the necessary scaffolding is installed during stringing to prevent damage to structures supplying services such as telephone and other power lines. Any damages to structures shall be repaired immediately.
- Ensure that all power cuts to facilitate construction are kept at a minimum.

5.5.1 Management of Construction Materials

The Contractor shall:

- Ensure that imported and construction materials are stockpiled only in designated areas, as per the approved construction layout plan.
- Ensure that imported and construction materials are appropriately managed in order to reduce dust generation.
- Ensure that imported materials are free of alien vegetation, weeds, litter and other contaminants.
- Ensure measures are implemented to prevent spillage of concrete or other substances that could permanently destroy vegetation or the surrounding habitat.

5.5.2 Management of Complaints

The Contractor shall, as soon as reasonably possible, but within 24 hours of becoming aware of a complaint relating to construction activities, respond to the complaint and register the complaint in the Environmental Register. In addition, the complaint should be reported to the Environmental Practitioner as soon as possible such that the Environmental Practitioner and Contractor can investigate the incident.

5.6 Air Quality Management

5.6.1 Fugitive Dust

Fugitive dust can be defined as natural and/or human-associated dust which becomes airborne due to the forces of wind or human activity. The control of fugitive dust is one of the most sensitive issues at construction sites. Potential sources of fugitive dust emissions during the construction phase include:

- Vehicle entrained dust from access roads and the construction site.
- Wind erosion from open areas and stockpiled imported and construction materials.

Given the nature of the study area, it should be taken into consideration that watering of construction roads may result in erosion. Selection of an appropriate dust suppression programme must, therefore, be made taking into consideration the nature of the study area and vehicle movements. It may be appropriate not to implement dust suppression mitigation on construction roads.

The Contractor shall:

- Ensure the implementation of effective and regular control techniques for fugitive dust sources within the Contractors area of responsibility. As appropriate, mitigation measures will include:
 - * adherence to speed limits for all vehicles;
 - * stabilisation of disturbed areas as soon as possible after disturbance, through the introduction of vegetation or the use of stone-covering (e.g. at the substation site); and
 - * limiting the extent of the area of exposed ground susceptible to dust emissions at any single point in time.

5.6.2 Gases and Smoke

Small quantities of noxious and/or offensive gaseous air pollutants and smoke could be generated during construction. Potential sources include:

- Combustion products from vehicle engines or veld fires.
- Odours from solid waste and temporary ablution facilities.

Such gaseous air pollutants and smoke can be a nuisance to the construction workforce and to the public.

The Contractor shall, therefore:

- Ensure that all vehicles and equipment are kept in a serviceable condition to avoid excessive exhaust fumes.
- No open fires will be permitted on the construction sites without the authority of the Environmental Control Officer. Food cooking shall be done in areas designated by the Environmental Control Officer.
- Prevent disturbances due to unpleasant odours through the implementation of Environmental Specifications for Waste Management.

5.6.3 Management of Complaints

The Contractor shall, as soon as reasonably possible, but within 24 hours of becoming aware of a complaint relating to air pollution, respond to the complaint and register the complaint in the Environmental Register. In addition, the complaint should be reported to the Environmental Practitioner as soon as possible such that the incident can be investigated by the Environmental Practitioner and Contractor.

5.7 Noise Management

The Contractor shall:

- Take all necessary steps to minimise noise generation within the Contractors area of responsibility.
- Limit “noisy activities” (e.g. drilling) to daylight hours.
- Compile a list of all activities, vehicles and equipment likely to generate excessive noise during the construction phase.
- Provide all equipment with standard silencers and maintain silencer units on vehicles and equipment in good working order, where necessary.
- If blasting is required, times should be negotiated with nearby landowners/community members such that they can take appropriate steps to safeguard domestic animals and children. All surrounding structures should be checked for stability prior to blasting.

As far as possible, any drilling and other construction activities should be limited to normal working hours. All machinery must be maintained in good working order, in compliance with generally accepted noise levels. Any high impact activity would require prior warning to adjacent community members.

5.7.1 Management of Complaints

The Contractor shall, as soon as reasonably possible, but within 24 hours of becoming aware of a complaint relating to noise management, respond to the complaint and register the complaint in the Environmental Register. In addition, the complaint should be reported to the Environmental Practitioner as soon as possible such that the incident can be investigated by the Environmental Practitioner and Contractor.

5.8 Water Management

5.8.1 Water for Domestic Use

The Contractor shall implement measures to ensure that the construction workforce present on the site has access to sufficient potable water. Measures will include, *inter alia*:

- The provision of potable water at various points on the site.

- Provision of facilities for hand washing at all ablution facilities and near all toilets.

5.8.2 Water Consumption

The Contractor shall implement the following measures to minimise water consumption:

- Create awareness and encourage the construction workforce to use water sparingly such that there is no wastage of water.
- Ensure that no natural water sources (i.e. streams, rivers) are used for construction activities or for domestic purposes by the construction workforce.
- Negotiate the use of water for any purpose with the landowner and the appropriate authorities.
- Obtain written approval from Eskom for the use of such water.

5.8.3 Water Pollution Management

The Contractor shall implement the following water pollution prevention measures:

- Ensure that working areas where hazardous substances (such as cement and vehicle fuels) are handled or stored are designed to collect and contain these hazardous substances.
- Ensure that no pollution enters surface water or has the potential to pollute groundwater by ensuring that there is containment of spillages (e.g. diesel, oils, etc) and that there is an emergency plan in place to deal with accidental spillage.
- Ensure that washing of containers, equipment, vehicles and other surfaces only occurs at designated washing areas.
- Ensure that sufficient ablution facilities are provided (at least one toilet for every 25 members of the construction workforce). Adequate numbers and placement of portable chemical toilet facilities at construction sites is crucial to prevent unnecessary pollution of the surrounding environment. No other toilets will be allowed to be utilised.
- Place temporary ablutions at strategic points on the site to ensure that they are accessible to all members of the construction workforce. These locations are to be approved by the Clerk of Works prior to establishment.
- Ensure that no spillages occur when the temporary ablution facilities are cleaned or emptied, and that the wastewater is removed from the site.

5.8.4 Management of wetland areas

The Contractor shall ensure that these areas are not damaged during the construction phase by:

- Preventing vehicle access to such areas.

- Ensuring that no equipment which may result in irreparable damage to wet areas is allowed in such areas.
- Only existing roads in these areas maybe used by the Contractor with the approval of Eskom and the Landowners.

5.8.6 Management of Complaints

The Contractor shall, as soon as reasonably possible, but within 24 hours of becoming aware of a complaint relating to water management, respond to the complaint and register the complaint in the Environmental Register. In addition, the complaint should be reported to the Environmental Practitioner as soon as possible such that the Environmental Practitioner and Contractor can investigate the incident.

5.9 Mitigation and Management of Heritage Sites and Objects

Should any heritage sites or artefact be uncovered during the construction process, the following applies:

- The National Heritage Resources Act (No. 25 of 1999) protects all archaeological sites older than 100 years and no site may be removed, disturbed or demolished without a permit issued by the South African Heritage Resources Agency (SAHRA). In certain cases, permission from the local communities (i.e. sensitive remains (for example human remains)) must be negotiated.

Environmental Control Officer should inform construction managers prior to construction what heritage sites and cultural material may be encountered in the area and the procedures to follow should sites be uncovered. All archaeological sites shall be marked as no-go areas. Managers must inform the workers not to disturb (dig) sites, make any collections of material (i.e. medallions, cartridges or other artefacts), and not to disturb (dig, camp or make fires) stone wall structures or any other structure associated with a heritage site. If heritage sites and/or cultural material are found, work should be stopped and SAHRA should be informed immediately such that an archaeologist can investigate the site and determine its significance. Enough time should be allowed to excavate, remove or collect material if it should be necessary.

The Contractor shall:

- Become familiar with those structures that are classified as heritage sites within his area of responsibility.
- Prevent any heritage site from being unnecessarily damaged.
- Advise the construction workforce of the penalties associated with the unlawful removal of heritage objects, as set out in the relevant legislation.

- Be responsible for payment of penalties (as per the relevant legislation) resulting from deliberate or negligent damage to a heritage object.
- Immediately stop work in the vicinity of any potential heritage objects or sites being unearthed during construction.
- Notify the Environmental Control Officer of the unearthed objects.
- Obtain the necessary permits for the disturbance, removal or destruction of any heritage objects or sites. The Environmental Control Officer shall notify SAHRA to arrange for the object to be evaluated by a qualified specialist.

Depending on the authenticity and significance of the object, the specialist shall prescribe measures necessary to document the find and remove the object from the site (with the necessary permit from SAHRA) prior to construction activities being able to continue.

Should any archaeological sites of significance or structures older than 60 years be located within the defined route alignment or substation site during construction activities, all possibilities need to be investigated to avoid the site. The contractor must also ensure that employees are aware of the various locations of archaeological sites in or close to the construction sites, and to mark these areas and to ensure that the construction workers do not traverse or disturb the site/area.

5.10 General and Hazardous Waste Management

Waste generated by the Contractor shall be the responsibility of the Contractor, and shall be disposed of by the Contractor off-site at an appropriate licensed waste disposal facility. The Contractor must inform the Environmental Practitioner at which site the waste will be disposed of and it must be verified whether this is a licensed site.

5.10.1.1 Waste Management Procedures

The Contractor shall ensure the implementation of the following waste management procedures:

- Maintain good housekeeping practices to ensure that there is proper collection and no accumulation of general waste within the site area. All building rubble and spoil must be removed from site as soon as possible must not be stored on site for longer than 80 days.
- Ensure that staffs are educated as to the different types of waste generated during construction, and that the waste is correctly disposed of.
- Provide appropriate containers (with lids/nets where waste could become airborne) within designated areas for construction rubble, general waste and hazardous waste on site.

- Ensure that the containers designated for the disposal of waste are appropriately and clearly marked according to the intended waste stream.

Appropriate pictures and colours should be used to ensure that the containers are easily identifiable by all members of the construction workforce.

- Ensure that all waste is removed off site to an approved waste disposal site.
- Arrange for the removal of full waste containers as soon as possible by an appropriate waste contractor to be disposed of at an appropriately licensed disposal site. The Contractor shall supply the Environmental Control Officer with a certificate of disposal.
- Ensure no waste (including empty cement bags) is burned, buried or used for rehabilitation purposes.
- Prevent temporary dumping of waste anywhere on site or in the surrounding area.
- Ensure that hazardous waste is not to be stored or stockpiled in any area other than that designated on the construction site layout. The location of this area shall be agreed with the Clerk of Works.
- Ensure that Hazardous Waste Disposal Manifests are obtained from the administrators of hazardous waste disposal sites. Hazardous waste should be disposed of at a permitted Hazardous Waste Disposal Site.
- Ensure that no hazardous waste is disposed of in containers intended for general waste.
- Ensure that documentation regarding waste collection and disposal/recycling is collated and made available to the Project Manager, his delegate, or the Environmental Control Officer, on request.
- Ensure that littering, specifically of the natural areas, is prevented. Adequate containers for litter removal should be supplied on site. These containers should be emptied on a regular basis and the contents removed to an appropriate and licensed waste disposal site. Illegal dumping shall not be tolerated.
- Ensure that concrete vehicles are not washed on site after disposal of concrete and all concrete spills are cleaned up immediately.

5.10.1.2 Management of Complaints

The Contractor shall, as soon as reasonably possible, but within 24 hours of becoming aware of a complaint relating to waste management, respond to the complaint and register the complaint in the Environmental Register. In addition, the complaint should be reported to the Environmental Practitioner as soon as possible such that the Environmental Practitioner and Contractor can investigate the incident.

5.11 Management of Hazardous Substances

The Contractor shall ensure the implementation of the following procedures for the management of hazardous substances:

- Identify and maintain a register of all activities that involve the handling of potentially hazardous substances, as well as devise and supervise the implementation of protocols for the handling of these substances. This will include all fuels, oils, lubricants and grease.
- Ensure that all hazardous substances are handled in accordance with the manufacturer's specifications, legal requirements and Eskom's procedures.
- Store all hazardous substances (including oils, fuels, chemicals, etc.) in a manner prescribed in the relevant Acts and Regulations, namely the Environment Conservation Act (Act 73 of 1989), the Hazardous Substances Act (Act 15 of 1973) and the National Water Act (Act 54 of 1956).
- Implement appropriate actions and measures to reduce, stop or contain a spill of potentially hazardous substances (e.g. fuel or lubricating oil).
- Implement appropriate actions and measures to reduce or prevent contamination of the ground and surface water as a result of a spill of potentially hazardous substances.
- Arrange and supervise the implementation of clean-up operations and appropriate disposal of contaminated materials at a licensed hazardous waste disposal site.
- Keep written records detailing the type of spill, the corrective and remedial measures implemented in the stopping or reduction of the spill, and the clean up of the spill. Such progress reporting is important for monitoring and auditing purposes and the written reports may afterwards be used for training purposes in an effort to prevent similar future occurrences.
- Report the nature and extent of the spill to the Environmental Practitioner, the Clerk of Works and/or Project Manager at the nearest Eskom Depot as soon as reasonably possible, but within 24 hours. The Environmental Control Officer shall prescribe measures to be implemented in order to prevent spills of potentially hazardous substances.

5.11.1.1 Management of Complaints

Eskom shall, as soon as reasonably possible, but within 24 hours of becoming aware of a complaint relating to the management of hazardous substances, respond to the complaint and register the complaint in the Environmental Register. In addition, the complaint should be reported to the Environmental Practitioner as soon as possible such that the Environmental Practitioner and Contractor can investigate the incident.

5.12 Safety and Security

5.12.1.1 General Procedures

The Contractor shall ensure the implementation of the following safety and security measures:

- Clearly mark dangerous areas and restrict access to these areas.
- Ensure compliance with the Occupational Health and Safety Act (No 85 of 1993).
- Ensure that no person under the influence of alcohol or narcotic substances is allowed to work on the site.
- Ensure that employees are aware of the telephone numbers of emergency services, where these are readily available, and the procedure to be followed in the event of an emergency. The Environmental Control Officer should source these contact details prior to construction.
- In terms of construction worker safety, safety management plans must be implemented.
- In terms of community safety, community safety concerns are to be addressed by the Contractor. Workers employed and vehicles used should be readily identifiable as Eskom construction staff. Workers may be obligated to wear identity cards or corporate clothing to assist the community in identifying them as construction workers.

5.12.1.2 Fire Management

The Contractor shall:

- Take reasonable and active steps to avoid increasing the risk of fire through his activities on site. Accidental fires should be prevented through proper sensitisation of the contractors and their workers towards the associated risks, dangers and damage of property. Fires will only be allowed within designated areas. Fire extinguishers should be made available, and all workers should be informed of their location and shown how to use them.
- Ensure that no fires are lit on site under any circumstances. The use of open fires for cooking of food, etc. by construction personnel should be strictly prohibited. Enclosed areas for food preparation must be provided.
- Any fires, which occur, are to be reported to the Environmental Control Officer as soon as possible.
- Ensure that there is basic fire-fighting equipment available on site at all times.
- Educate specific members of the construction force regarding the location and use of fire-fighting equipment.
- Restrict smoking activities to demarcated smoking areas.

- Ensure that an emergency preparedness plan is in place in order to fight accidental veld fires should they occur. The adjacent land owners/users/ managers should also be informed and/or involved.
- The use of branches from trees and shrubs for fire-making purposes must be strictly prohibited.
- No waste (including empty cement bags) may be burnt.

5.12.1.3 Management of Complaints

The Contractor shall, as soon as reasonably possible, but within 24 hours of becoming aware of a complaint relating to safety and security, respond to the complaint and register the complaint in the Environmental Register (refer to Section 4.16). In addition, the complaint should be reported to the Environmental Practitioner as soon as possible such that the incident can be investigated by the Environmental Practitioner and Contractor.

5.13 Site Rehabilitation

The Contractor shall:

- Ensure that all disturbed areas are stabilised as soon as possible after disturbance.
Particular attention must be paid to slopes greater than 20° (1:5) and other areas prone to erosion, which should be appropriately vegetated. Rehabilitated areas that are susceptible to erosion due to their position in the landscape should be adequately protected by soil conservation measures.
- Ensure that rehabilitation is undertaken as soon as possible after completion of construction activities in any one area of the site.
- Ensure that all construction access roads are closed and the area is rehabilitated on the completion of the construction works, unless otherwise specified by the Clerk of Works and agreed with the landowner.
- Remove from the site all construction equipment, surplus material, waste and temporary structures and works of every kind before the final hand-over.
After completion of construction, the site should be properly cleaned of any construction waste, litter etc. and adequately rehabilitated/re-vegetated.
- Rehabilitate any environmental damage caused by construction activities before the final hand-over.
- Removal of all excavated material (rocks, excess soil, etc.) and construction rubble after construction is completed.
- The Environmental Control Officer should monitor re-vegetated areas until the vegetation is stabilised. This monitoring must occur at three-monthly intervals for the first twelve

months, and once a year thereafter, and may only halt once the vegetation has been stabilised.

- Exotic weeds and invaders that are likely to establish on the rehabilitated areas are to be controlled to allow grasses to adequately establish.
- Damage to rehabilitated areas should be repaired promptly.
- The erosion risk will be reduced significantly during the dry season (i.e. winter).

Therefore, depending on the construction schedule, excavation activities should aim to be focussed during winter.

The rehabilitation schedule and procedure to be adhered to is as follows:

- Replace the soil after the tower has been planted and ensures that the soil is compacted and levelled around the tower.
- Ensure that all construction material and rubble has been removed from site.

5.14 Monitoring

A monitoring programme shall be in place not only to ensure conformance with the EMP through the contract/work instruction specifications, but also to monitor any environmental issues and impacts which have not been accounted for in the EMP that are, or could result in significant environmental impacts for which corrective action is required. As part of the contract or work instruction, Eskom shall stipulate the period and frequency of monitoring required. The Project Manager shall ensure that the monitoring is carried out.

An Environmental Control Officer must be appointed to ensure compliance with the EMP, and to carry out monitoring activities. The Environmental Control Officer will report to the Clerk of Works should any non-compliance be evident or corrective action necessary. Only in severe cases of non-compliance, or repeated offences, will the Environmental Control Officer be required to report to the Project Manager.

5.15. Compliance with the Environmental Management Plan Specifications

- The EMP shall be available on-site at all times.
- All persons employed by the Contractor or his sub-contractors shall abide by the requirements of the EMP.
- Any members of the construction workforce found to be in breach of any of the specifications contained within the EMP may be ordered by the Project Manager or Clerk of Works to leave the site. The order may be given orally or in writing. Confirmation of an oral order will be provided as soon as practically possible, but the absence of a written

order shall not be cause for an offender to remain on site. No extension of time will be granted for any delay or disadvantage to the Contractor brought about by an offender ordered to leave the site.

- The Contractor shall not direct a person to undertake any activity, which would place them in contravention of the specifications contained within the EMP.
- Should the Contractor be in breach of any of the specifications contained in the EMP, the Project Manager shall, in writing, instruct the Contractor responsible for the incident of non-compliance regarding corrective and/or remedial action required, specify a timeframe for implementation of these actions, implement a penalty and/or indicate that work shall be suspended should non-compliance continue.
- Should non-compliance continue, further written notification shall be forwarded to the Contractor responsible for the incident of non-compliance outlining the required corrective and/or remedial action, the timeframe for implementation, penalties and/or work shall be suspended as specified previously.
- The Contractor shall be responsible and shall bear the cost of any delays, corrective or remedial actions required as a result of non-compliance with the specifications and clauses of the EMP.

5.16. Environmental Register

The Contractor shall:

- Report incidents involving Contractor employees and/or the public that could potentially cause negative sentiment and perception towards the project and/or Eskom.
- Report environmental complaints and correspondence received from the public to the Project Manager or the Environmental Control Officer.
- Record and report incidents to the Environmental Control Officer that cause harm or may cause harm to the environment.
- Record all hazardous materials used on site.
- Maintain a record of all Hazardous Waste Disposal Manifests detailing the nature of the hazardous waste disposed of, the hazardous waste classification and the location of the site to which such waste was sent.

The above records will form an integral part of the Contractors' Records. These records will be kept with the EMP, and will be made available for scrutiny if so requested by the Project Manager or his delegate and the Environmental Control Officer.

The Environmental Control Officer shall put in place an Environmental Register to document:

- All environmental complaints and correspondence received from the public, Eskom or the construction workforce.
- Incidents of non-compliance with the EMP.
- Any other environmental incidents related to the construction phase of the project.

The Environmental Control Officer shall ensure that the following information is recorded for all complaints/incidents:

- Nature of complaint/incident.
- Causes of complaint/incident.
- Party/parties responsible for causing complaint/incident.
- Immediate actions undertaken to stop/reduce/contain the causes of the complaint/incident.
- Additional corrective or remedial action taken and/or to be taken to address and to prevent reoccurrence of the complaint/incident.
- Timeframes and the parties responsible for the implementation of the corrective or remedial actions.
- Procedures to be undertaken and/or penalties to be applied if corrective or remedial actions are not implemented.
- Copies of all correspondence received regarding complaints/incidents.

Refer to Appendix C for a summary of the mitigation measures that are applicable to the construction phase of the project.

6. OPERATION AND MAINTENANCE PHASE

6.1 Maintenance of the Servitude and Substation Areas

6.1.1 Bush Clearance Requirements

Eskom is required to conduct maintenance along the servitude in order to ensure the continued reliable operation of the power supply. An important component is bush clearing to ensure that vegetation does not interfere with the operation of the line. In terms of the bush clearing to be undertaken, Eskom shall:

- Ensure that all alien and invasive vegetation, as well as any trees that could grow and interfere with the powerline along the centre line of the servitude are cleared on a regular basis.

- As far as possible, ensure that protected plants are not damaged or disturbed during operation and maintenance activities. Where this cannot be avoided, the appropriate permit/s must be obtained from the Provincial Department of Conservation.
 - Ensure that no vegetation (i.e. trees) has a vertical height greater than the horizontal distance of its base to the centreline of the servitude.
 - Ensure that all alien vegetation within the servitude and substation areas is cleared and treated with the appropriate herbicide.
 - Ensure all unwanted vegetation (i.e. all alien and invasive vegetation, as well as other vegetation which could interfere with the operation of the substation) within the substation area is cleared on a regular basis.
 - Ensure that all removed vegetation is not left *in situ*, but is removed from site to an appropriate disposal site.
- Landowners and the relevant authorities must be informed of maintenance activities in advance. Eskom's servitude must be properly maintained, although agricultural activities can still take place under the powerline.

6.1.2 Herbicide Use

The use of herbicides shall be in compliance with the terms of the Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (No 36 of 1947). In terms of this Act, a registered pest control operator shall apply herbicides, or shall supervise the application of herbicides.

Therefore, Eskom shall:

- Ensure that a registered pest control operator applies or supervises the application of all herbicides.
- Ensure that all herbicides are stored in a well-ventilated demarcated storage area.
- Ensure that a register of all contents of the storage area is kept and updated on a regular basis.
- Ensure that a daily register of all relevant details of herbicide usage is kept, and that the relevant Eskom custodian maintains such a register.

6.1.3 Conduct of Employees

The following restrictions or constraints shall be placed on the maintenance staff in general:

- No indiscriminate disposal of rubbish or rubble.
- No littering of the servitude and substation areas and the surrounding areas.

- No collection of firewood.
- No interference with any wildlife, fauna or flora.
- No poaching of any description.
- No use of facilities other than the chemical toilets provided.

6.1.4 Management of Complaints

Eskom shall, as soon as reasonably possible, but within 24 hours of becoming aware of a complaint relating to the maintenance of the powerline servitude and/or substation areas, respond to the complaint and register the complaint in the Environmental Register. In addition, the complaint should be reported to the Environmental Practitioner as soon as possible such that the Environmental Practitioner and Contractor can investigate the incident.

6.2 Access and Traffic Management

6.2.1 Access Control

Eskom shall:

- Ensure that all maintenance staffs are readily recognisable as Eskom employees, and that appropriately marked vehicles are used when on or moving between properties.
- Ensure that appropriate signage is displayed indicating the danger of electricity and electrical infrastructure. Eskom are to educate communities (minors and adults) regarding this danger.

6.2.2 Traffic Control Measures

Eskom shall ensure the implementation of the following traffic control measures:

- All drivers shall be in possession of an appropriate valid driver's license.
- All maintenance vehicles travelling on public roads shall adhere to the specified speed limits.
- Only designated roads and entrances agreed to in writing by the landowner shall be used.
- Moderate speeds (to be agreed to by Eskom) shall be employed and adhered to on all access/service roads.
- The movement of all vehicles shall be controlled such that they remain on designated routes.
- No member of the workforce shall be permitted to drive a vehicle under the influence of alcohol or narcotic substances.

- No deviation from approved access roads shall be allowed. If necessary, new access routes can be designed, but must initially be approved by the Clerk of Works and negotiated with the landowner.
 - Travel in wet weather conditions shall be limited as far as possible in order to minimise the potential for erosion along access/service roads.
- Should any damage occur to the road surface during maintenance activities as a result of non-compliance with the above traffic control measures, the nature and extent of damage should be recorded within Eskom's environmental register and then repaired to the written satisfaction of the landowner. It is Eskom's responsibility to prove that maintenance activities within the servitude have not resulted in any erosion or damage of the access roads.

6.2.3 Management of Complaints

Eskom shall, as soon as reasonably possible, but within 24 hours of becoming aware of a complaint relating to access and traffic management, respond to the complaint and register the complaint in the Environmental Register. In addition, the complaint should be reported to the Environmental Practitioner as soon as possible such that the Environmental Practitioner and Contractor can investigate the incident.

6.3 Faunal Interactions

- The maintenance staff may not harm or kill any fauna during the activities of maintaining the servitude.
- Should there be an interaction with wildlife (e.g. avifauna), it must be reported to the, Environmental Officer and the Technical Service Officer at the nearest Eskom Depot as soon as reasonably possible, but within 24 hours.
- The Environmental Officer shall investigate wildlife interaction.
- The Environmental Officer shall write a report regarding the incident, and make recommendations.
- The Environmental Officer shall conduct a follow up site inspection in order to assess the effectiveness of the recommendations.

6.3.1 Management of Complaints

Eskom shall, as soon as reasonably possible, but within 24 hours of becoming aware of a complaint relating to wildlife interaction, respond to the complaint and register the complaint in the Environmental Register. In addition, the complaint should be reported to

the Environmental Practitioner as soon as possible such that the Environmental Practitioner and Contractor can investigate the incident.

6.4 Air Quality Management

6.4.1 Fugitive Dust

The major potential source of fugitive dust emissions during the operation and maintenance phase include vehicle entrained dust from access/service roads, although these are usually not significant. Eskom shall ensure the implementation of effective and regular control techniques for fugitive dust sources. As with the construction phase, it should be taken into consideration that watering certain areas in order to suppress fugitive dust may result in erosion. It may be appropriate not to implement dust suppression mitigation in such areas.

6.4.2 Gases and Smoke

Small quantities of noxious and/or offensive gaseous air pollutants and smoke could be generated during operation as a result of combustion products from vehicle engines, although these emissions are generally negligible. In order to avoid the emission of gaseous air pollutants, Eskom shall ensure that all vehicles are kept in a serviceable condition to avoid excessive exhaust fumes.

6.4.3 Management of Complaints

Eskom shall, as soon as reasonably possible, but within 24 hours of becoming aware of a complaint relating to air pollution, respond to the complaint and register the complaint in the Environmental Register. In addition, the complaint should be reported to the Environmental Practitioner as soon as possible such that the Environmental Practitioner and Contractor can investigate the incident.

6.5 Noise Management

In order to limit noise generation during maintenance activities, Eskom shall provide all equipment with standard silencers and maintain silencer units on vehicles and equipment in good working order, for those vehicles where it is necessary.

In addition, all noise from activities at the substation during the operation and maintenance of the substation must be within acceptable limits (according to the Environment Conservation Act and the National Environmental Management Act), taking into consideration that maintenance activities may be required at the substation site

outside of working hours, for example, in the case of emergencies such as electrical outages at night.

6.5.1 Management of Complaints

Eskom shall, as soon as reasonably possible, but within 24 hours of becoming aware of a complaint relating to noise management, respond to the complaint and register the complaint in the Environmental Register.

In addition, the complaint should be reported to the Environmental Practitioner as soon as possible such that the Environmental Practitioner and Contractor can investigate the incident.

6.6 Waste Management

Eskom shall ensure the following waste management practices are implemented during operation and maintenance:

- All structures and/or components replaced during maintenance activities are appropriately disposed of at an appropriate DWA licensed waste disposal site or sold to a recycling merchant for recycling.
- Ensure that care is taken to ensure that spillage of oils and other hazardous substances are limited during maintenance. Should any accidental spillage take place, it should be cleaned up according to specified standards regarding bioremediation.

6.6.1 Management of Complaints

Eskom shall, as soon as reasonably possible, but within 24 hours of becoming aware of a complaint relating to waste management, respond to the complaint and register the complaint in the Environmental Register.

In addition, the complaint should be reported to the Environmental Practitioner as soon as possible such that the Environmental Practitioner and Contractor can investigate the incident.

6.7 Management of Hazardous Substances

Eskom shall ensure the implementation of the following procedures for the management of hazardous substances:

- Identify and maintain a register of all activities that involve the handling of potentially hazardous substances, as well as devise and supervise the implementation of protocols for the handling of these substances. This will include all fuels, oils, lubricants and grease.
- Ensure that all hazardous substances are handled in accordance with the manufacturer's specifications, legal requirements and Eskom's procedures.

- Store all hazardous substances in a manner prescribed in the relevant Acts and Regulations (e.g. in a well-ventilated area).
- Implement appropriate actions and measures to reduce, stop or contain a spill of potentially hazardous substances (e.g. fuel or lubricating oil).
- Implement appropriate actions and measures to reduce or prevent contamination of the ground and surface water as a result of a spill of potentially hazardous substances.
- Arrange and supervise the implementation of clean up operations and proper disposal of contaminated materials at a licensed hazardous waste disposal site.
- Keep written records detailing the type of spill, the corrective and remedial measures implemented in the stopping or reduction of the spill, and the clean up of the spill. Such progress reporting is important for monitoring and auditing purposes and the written reports may afterwards be used for training purposes in an effort to prevent similar future occurrences.
- Report the nature and extent of the spill to the Environmental Officer, the Environmental Advisor and the Technical Service Officer at the nearest Eskom Depot as soon as reasonably possible, but within 24 hours.

The Environmental Control Officer shall prescribe measures to be implemented in order to prevent spills of potentially hazardous substances.

6.7.1 Management of Complaints

Eskom shall, as soon as reasonably possible, but within 24 hours of becoming aware of a complaint relating to the management of hazardous substances, respond to the complaint and register the complaint in the Environmental Register. In addition, the complaint should be reported to the Environmental Practitioner as soon as possible such that the Environmental Practitioner and Contractor can investigate the incident.

6.8 Compliance with the Environmental Management Plan Specifications

- All persons employed by Eskom or its Contractors shall abide by the requirements of the EMP.
- Any members of the operation and maintenance workforce found to be in breach of any of the specifications contained within the EMP may be ordered by the Environmental Officer to leave the site. The order may be given orally, or in writing. Confirmation of an oral order will be provided as soon as practically possible, but the absence of a written order shall not be cause for an offender to remain on site.

- Eskom shall not direct a person to undertake any activity, which would place them in contravention of the specifications contained within the EMP.

6.9 Environmental Register

The Field Services Personnel shall:

- Report incidents involving employees and/or the public that could potentially cause negative sentiment and perception towards the project and/or Eskom.
- Report environmental complaints and correspondence received from the public to the Environmental Officer
- Record and report incidents to the Environmental Officer that cause harm or may cause harm to the environment.

The above records will form an integral part of Eskom's EMP. This EMP will be made available for scrutiny if so requested by the Project Manager or his delegate and the Environmental Officer.

The Environmental Officer shall put in place an Environmental Register to document:

- All environmental complaints and correspondence received from the public, Eskom or the construction workforce.
- Incidents of non-compliance with the EMP
- Any other environmental incidents related to the construction phase of the project.

The Environmental Control Officer shall ensure that the following information is recorded for all complaints/incidents:

- Nature of complaint/incident.
- Causes of complaint/incident.
- Party/parties responsible for causing complaint/incident.
- Immediate actions undertaken to stop/reduce/contain the causes of the complaint/incident.
- Additional corrective or remedial action taken and/or to be taken to address and to prevent reoccurrence of the complaint/incident.
- Timeframes and the parties responsible for the implementation of the corrective or remedial actions.
- Procedures to be undertaken and/or penalties to be applied if corrective or remedial actions are not implemented.
- Copies of all correspondence received regarding complaints/incidents.

Refer to Appendix C for a summary of the mitigation measures that are applicable to the operational phase of the project.

7. DECOMMISSIONING PHASE

7.1 General Principles for Environmental Management during Decommissioning

At this point of the project planning process, the necessity for and timing of the decommissioning of the 88kV Sub-transmission line between the Ermelo and Majuba is not known. In addition, approval of this EMP is limited by a specified timeframe, where-after revision and resubmission is required. Therefore, only general principles for decommissioning are detailed below. These principles will be required to be re-visited and supplemented in the event of the decommissioning of the power line and/or the Ermelo and Majuba.

In order to minimise the extent of rehabilitation activities required during the decommissioning phase, Eskom should ensure that constant effort is applied to rehabilitation activities throughout the construction, operation and maintenance phases of the project.

In decommissioning the Sub-transmission line and/or the substation, Eskom shall:

- Ensure that all sites not already vegetated are vegetated as soon as possible after operation ceases with species appropriate to the area.
- All structures, foundations and concrete and tarred areas are demolished, removed and waste material disposed of at an appropriately licensed waste disposal site.
- All access/service roads not required to be retained by landowners are closed and fully rehabilitated.
- All disturbed areas are compacted, sloped and contoured to ensure drainage and runoff and to minimise the risk of erosion.
- All rehabilitated areas are monitored for erosion.

Refer to Appendix B for a summary of the mitigation measures that are applicable to the decommissioning phase of the project.

APPENDIX A: ENVIRONMENTAL LEGISLATION

Summary table of relevant environmental legislation:

Name of Act or Regulation	Area of Application	Responsible Authority
Atmospheric Pollution Prevention Act (No 45 of 1965)	Control of noxious and offensive gases, smoke, dust and vehicular emissions.	DEA: Regional Air Pollution Control Office
Occupational Health and Safety Act	General duties of employers to their employees	
Conservation of Agricultural Resources Act (No 43 of 1983)	Control and prevention of veld fires, soil conservation, control, control of weeds and invader plants.	Department of Agriculture, Forestry and Fisheries
Constitution of the Republic of South Africa Act (No 108 of 1996)	The constitution of South Africa.	National, Provincial and Local Government
Environment Conservation Act (No 73 of 1989) National Environmental Management, Act (No 107 of 1998)	Control/prevention of pollution; combating of noise; activities which may have a detrimental effect on the environment, preparation and contents of environmental impact reports.	Department of Environmental Affairs; Department of Water Affairs; Department of Agriculture, Forestry and Fisheries; Provincial Department of Environmental Affairs
Hazardous Substances Act (No 15 of 1973)	Provides for the control of substances, which may cause injury or ill health to, or the death of human beings.	National Department of Health. Local Authorities may be authorised
National Water Act (No 36 of 1998)	Conservation and use of water. Treatment and disposal of waste, wastewater and effluent. Pollution and pollution emergencies.	Department of Water Affairs

National Heritage Resources Act (No 25 of 1999)	Conservation of national heritage and archaeological material.	South African Heritage Resources Agency; National Council for Heritage
Occupational Health and Safety Act (No 85 of 1993)	Controls the exposure of employees and the public to dangerous and toxic substances or activities.	
National Veld and Forest Fire Act (No 101 of 1998)	Control and prevention of veld fires.	Department Agriculture, Forestry and Fisheries
Road Traffic Act (No 29 of 1989)	Provides for road traffic matters.	Department of Transport
National Environmental Management: Waste Act (No 59 of 2008)	Provides and protect health, well-being and the environment by providing reasonable measures	Department of Water Affairs
National Forest Act (Act 84 of 1998)	Prohibits the destruction of indigenous trees, protected trees, in any natural forest without a licence and prohibits any infrastructure within the natural protected and State forest without a licence.	Department Agriculture, Forestry and Fisheries
All relevant Provincial regulations, Municipal by-laws and ordinances		

**APPENDIX B:
ENVIRONMENTAL MANAGEMENT
PLAN SUMMARY**

Table C1: Summary of mitigation measures during construction, operation and maintenance and decommissioning

Aspect	Mitigation and Management Measures	Responsible Party
<p>CONSTRUCTION PHASE</p> <p><i>1. Site Establishment and Management</i></p>		
<p>Construction Site Layout Plan</p>	<p>The Contractor shall develop a construction layout plan, indicating the intended use of the site, including the following to be supplied by Eskom Land Development:</p> <ul style="list-style-type: none"> • The extent of the servitude and substation area. • Site access during construction (including all entry and exit points). • Two metre interval contour lines. • The locations of the powerline towers. • The route and the extent of access necessary to reach each tower location. <p>In addition, the following shall be indicated by the contractor:</p> <ul style="list-style-type: none"> • All material and equipment storage areas (including storage areas for hazardous substances such as fuel, cement and herbicides). • Construction offices and other structures (if required). • Security requirements (including temporary and permanent fencing and lighting) and accommodation for security staff. • Areas where vegetation is required to be cleared. 	<p>Eskom Land Development Contractor</p>

	<ul style="list-style-type: none"> • Areas where material is to be stockpiled (including construction materials and topsoil). • Solid waste collection facilities. • Temporary construction phase stormwater control measures. • Areas that require slope stabilisation during construction. • Provision of potable water and temporary ablution facilities for construction personnel. • Construction in stream banks should be avoided. • Access roads should not disturb natural drainage patterns. 	
<p>Final Alignment and Positioning of Towers</p>	<ul style="list-style-type: none"> • If streams are crossed by access roads, special attention is to be given to allow for natural drainage. • Comply with Eskom Safety Standards by constructing the powerline at the correct height (see below). 	<p>Contractor</p>
<p>Servitude Requirements and Clearances</p>	<ul style="list-style-type: none"> • The servitude width for an 88kV Sub-transmission line is 36 m (18 m on either side of the centre line of the powerline). The width of the total servitude required for the proposed project is 31 m. The distance between the centre line and the outside line of the servitude is 15, 5 m. • The minimum vertical clearance to buildings, towers and structures not forming part of the powerline must be 3,8 m. • The minimum vertical clearance between the conductors and the ground is 6,7 m. • The minimum distance of an 88kV Sub-transmission line running parallel to proclaimed 	<p>Contractor</p>

	<p>public roads is 95 m from the centre of the Sub-transmission line servitude to the centre of the road servitude.</p> <ul style="list-style-type: none"> • The minimum distance between any part of a tree or shrub and any bare phase conductor of an 88 kV Sub-transmission line must be 3,8 m. • A minimum 8 m wide strip is to be cleared of all trees and shrubs down the centre of the Sub-transmission line servitude for stringing purposes only. • Any tree or shrub in other areas, which will interfere with the operation and/or reliability of the Sub-transmission line, must be trimmed or completely cleared. • Prior to site clearance, a qualified vegetation specialist must undertake a survey of the vegetation in the area and any protected plant species recorded must be appropriately marked. As far as possible, these plants must not be damaged or disturbed. Where this cannot be avoided, the appropriate permit/s must be obtained from the Provincial Department of Conservation. 	
<p>Site Camp(s) and Construction Staff</p>	<p>Prior to the establishment of the site camp(s), the Contractor shall produce a plan showing the positions of all buildings, vehicle wash areas, fuel and cement storage areas and other infrastructure for approval of the Clerk of Works.</p> <ul style="list-style-type: none"> • A signboard should be placed in the area of construction informing the public of the construction activities taking place. • Construction staff must be adequately educated by the Environmental Control Officer or the Clerk of Works as to the provisions included in the EMP and general environmentally friendly practice. The following activities will be disallowed at site camp(s), and by the construction staff in general: 	<p>Contractor Environmental Control Officer Clerk of Works</p>

	<ul style="list-style-type: none"> • The irresponsible use of welding equipment, oxy-acetylene torches and other naked flames, which could result in veld fires or constitute a hazard. • Indiscriminate disposal of rubbish or rubble. • Littering of the site. • Spillage of potential pollutants, such as petroleum products. • Collection of firewood. • Lighting of fires for cooking, heating or other purposes, and failure to exterminate any fires. • Interference with any wildlife, fauna or flora. • Poaching of any description. • Use of any facility other than the chemical toilets provided. • Burning of wastes (including empty cement bags) and cleared vegetation under any circumstances. • The use of rivers, streams, dams or any watercourses/surface water for washing purposes. • Entering areas outside of the demarcated construction area. • The presence of construction staff at the construction site outside of the designated construction times (7:30 to 16:00), i.e. no construction staffs are allowed to overnight on site, outside of the demarcated construction camp. 	
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	<p>The Contractor shall:</p> <ul style="list-style-type: none"> • Ensure that the entire camp site(s) is fenced and that gates are locked after hours and over weekends in order to prevent ad hoc access to the site by the public and the associated risk to personal safety. <p>Ensure that firebreaks are made and maintained along the inside perimeter of the fence (where appropriate). This will be particularly important in areas where forestry activities are being undertaken.</p> <ul style="list-style-type: none"> • Ensure that appropriate sanitation (i.e. chemical toilets) and cooking facilities are provided and maintained at all work sites. No open fires will be permitted on the construction sites without the authority of the Environmental Control Officer. Food cooking shall be done in areas designated by the Environmental Control Officer. 	
<p>Materials Handling, Use and Storage</p>	<ul style="list-style-type: none"> • Ensure that any delivery drivers are appropriately supervised by an individual familiar with all procedures and restrictions on site. This is of particular importance during loading and off-loading of materials. • Ensure that only designated areas are used for the handling or storage of construction materials. 	<p>Contractor</p>
<p>2. Site Clearance and Management</p>		
<p>Site Clearance</p>	<ul style="list-style-type: none"> • All vegetative matter shall be physically removed from the servitude centreline (8 m wide) for the entire 88 kV Sub-transmission line servitude, substation area and any new access/service roads required. As far as possible, protected plants must not be damaged or disturbed. Where this cannot be avoided, the appropriate permit/s must be obtained 	<p>Contractor</p>

	<p>from the Provincial Department of Conservation.</p> <ul style="list-style-type: none"> • Of the 8 m wide servitude centreline, 5 m will be cleared of all vegetation for vehicle access and the remainder brush cutter to height not greater than 100 mm, ensuring that the groundcover still remains. • No further vegetation may be removed. • All cleared areas shall be stabilised as soon as possible in order to minimise the risk of erosion. • Cleared vegetation shall be removed from the site by the Contractor and disposed of at an appropriate licensed waste disposal site. • No vegetative matter shall be burnt or removed for firewood under any circumstances by any Eskom employee or contractor. • Topsoil is to be stripped from areas in which construction is to take place. • The topsoil must be separated from the subsoil during excavation activities. • Topsoil should be stockpiled in a designated stockpile area. • Subsoil must be disposed of from site at an approved disposal site, due to its unsuitability for plant growth. • The topsoil stockpile must then be used during the rehabilitation phase to provide a suitable medium for the germination of seeds and establishment of plants. Following construction, it must be ensured that subsoil is replaced in the construction hole first, with the topsoil on the surface in order to ensure the establishment of vegetation. 	
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<p>Protection of Vegetation</p>	<p>The Contractor shall ensure that all works are undertaken in a manner, which minimises the impact on vegetation outside of the site area as designated in the construction site layout.</p> <ul style="list-style-type: none"> • Any vegetation (i.e. trees) with a vertical height greater than the horizontal distance from its base to the centreline of the servitude must be removed or sufficiently pruned. This is to ensure that the powerline will not be damaged in the event of the vegetation uprooting or falling over. This will be important in areas where forestry activities are being undertaken and should be done in consultation with the affected landowner. • No vegetative material adjacent to the site shall be burned for any reason. 	<p>Contractor</p>
<p>Alien Vegetation</p>	<p>The contractor shall remove all alien vegetation within the powerline servitude as listed in the Conservation of Agricultural Resources Act (No 43 of 1983).</p>	<p>Contractor Environmental Control Officer</p>
<p>Herbicide use</p>	<ul style="list-style-type: none"> • Ensure that a registered pest control operator applies or supervises the application of all herbicides. • Ensure that all Eskom policies on the use and application of herbicides shall be adhered to. <hr/> <ul style="list-style-type: none"> • Ensure that all herbicides are stored in a well-ventilated demarcated storage area. • Ensure that a register of all contents of the storage area is kept and updated on a regular basis. • Ensure that a daily register of all relevant details of herbicide usage is kept, and that the relevant Eskom custodian maintains such a register. 	<p>Contractor</p>

3. Faunal Interactions		
Bird Anti-Electrocution Devices	The single steel pole structure is not likely to impact significantly on the birds occurring in the area through electrocution, therefore there is no need for bird perches at the top of pole structures	Eskom Distribution
Bird Anti-Collision Devices	No significant impact through collision is expected	Eskom Distribution
Construction phase impacts	<ul style="list-style-type: none"> • No killing of any fauna (including snakes) for any purposes • Should a problem arise when encountering a snake or any other problem animal, a professional should be called in to remove the problem animal. • No feeding of wildlife. 	Contractor
Management of complaints	<ul style="list-style-type: none"> • Register any complaints received. • Respond within 24 hours of becoming aware of the complaint. • Inform the Environmental Practitioner of the incident as soon as possible such that the Environmental Practitioner and the Contractor can investigate it. 	Contractor Environmental Practitioner
4. Access and Traffic Management		
Traffic Control Measures	<ul style="list-style-type: none"> • All drivers shall be in possession of an appropriate valid driver's license. • All construction vehicles travelling on public roads shall adhere to the specified speed limits. • Only designated roads and entrances approved by Eskom and agreed to in writing by the landowner shall be used. 	Contractor

	<ul style="list-style-type: none"> • The movement of all vehicles and equipment shall be controlled such that they remain on designated routes. • No deviation from approved access roads shall be allowed. Any deviation from the approved access roads shall be closed and rehabilitated immediately at the Contractor’s cost. • No member of the construction workforce shall be permitted to drive a construction vehicle under the influence of alcohol or narcotic substances. 	
Use of Roads and access	<p>Prior to the commencement of construction,</p> <p>Eskom shall: • Negotiate the use of access roads required to gain access to the servitude with the relevant landowners where required.</p> <p>The Contractor shall:</p> <ul style="list-style-type: none"> • Provide justification for the need for the new access road. • Obtain approval for the alignment/route from Eskom and the affected landowner(s). • Avoid excessive disturbance to the area, and not traverse sensitive habitats. • Adhere to a maintenance plan for the access road, should it be required by Eskom as a service road, during the maintenance phase. • Ensure maximum use of both the powerline servitude and existing roads to gain access to the site during the construction phase, thereby minimising the need for the construction of new roads. 	Eskom Contractor

	<ul style="list-style-type: none"> • Record the condition of all private roads to be used to gain access to the site (e.g. to be photographed), and agree to their condition with Eskom and the landowner prior to use by the Contractor. • Ensure that all temporary access roads no longer required are decommissioned and the area rehabilitated. • Ensure that, upon completion of construction, all private roads are left in at least the original condition. Any damage that may have occurred during the construction phase must be repaired. Any damage that occurs to the roads during construction as a result of construction activities must be reported and attended to. • Rehabilitate and re-vegetate (if necessary) all access roads created during the construction process that will not be used for future maintenance of the servitude. • Ensure ripping of areas on construction sites that were visibly compacted by construction activities in order to allow for the re-establishment of natural vegetation. 	
Management of Complaints	<ul style="list-style-type: none"> • Register any complaints received. • Respond within 24 hours of becoming aware of the complaint. • Inform the Environmental Practitioner of the incident as soon as possible such that the Environmental Practitioner and the Contractor can investigate it. 	Contractor Environmental Practitioner
5. Construction within the Servitude and Substation area		
Construction within	<ul style="list-style-type: none"> • Ensure that all foundation excavations are kept covered or barricaded in a manner acceptable to the 	Contractor

<p>the Servitude and Substation area</p>	<p>Clerk of Works (Eskom’s representative) to prevent injury to people, livestock and wildlife.</p> <ul style="list-style-type: none"> • Ensure that material removed from the excavation, which is not suitable or not required for backfill is spread evenly over or adjacent to the tower position or within the substation area. Any material not considered by the Clerk of Works to be suitable for backfilling shall be disposed of at an appropriate DWAF licensed waste disposal site. • The Environmental Control Officer shall obtain a list of nearby landfill sites and will determine the most appropriate site for disposal. • Ensure that all excavated soil suitable for backfill is returned to the excavation by backfilling, with the subsoil first and the topsoil last. • Ensure that the transformer oil catch pit and the transformer oil holding dam at the substation site are appropriately constructed in order to ensure no leakage of oil occurs which could result in soil and/or groundwater pollution. • Fence off the substation site at the commencement of the construction phase and ensure that the fence is maintained throughout the construction period until such time as the site is handed over to Eskom, in order to prevent the endangering of the safety of people and animals in the area. 	
<p>Management of Construction materials</p>	<ul style="list-style-type: none"> • Ensure that imported and construction materials are stockpiled only in designated areas, as per the approved construction layout plan. • Ensure that imported & construction materials are appropriately managed to reduce dust generation. 	<p>Contractor</p>

	<ul style="list-style-type: none"> • Ensure that imported materials are free of alien vegetation, weeds, litter and other contaminants. • Ensure measures are implemented to prevent spillage of concrete or other substances that could permanently destroy vegetation or the surrounding habitat. 	
Management of Complaints	<ul style="list-style-type: none"> • Register any complaints received and respond within 24 hours of becoming aware of the complaint. • Inform the Environmental Practitioner of the incident as soon as possible such that the Environmental Practitioner and the Contractor can investigate it. 	Contractor Environmental Practitioner
6. Air Quality Management		
Fugitive Dust	<ul style="list-style-type: none"> • Ensure the implementation of effective and regular control techniques for fugitive dust sources within the Contractors area of responsibility. As appropriate, mitigation measures will include: <ul style="list-style-type: none"> * adherence to speed limits for all vehicles; * stabilisation of disturbed areas as soon as possible after disturbance, through the introduction of vegetation or the use of stone-covering (e.g. at the substation site); and * limiting the extent of the area of exposed ground susceptible to dust emissions at any single point in time. 	Contractor
Gases and Smoke	<ul style="list-style-type: none"> • Ensure all vehicles & equipments are kept in a serviced condition to avoid excessive exhaust fumes. • Ensure that there are no open fires under any circumstances. 	Contractor

	<ul style="list-style-type: none"> • Prevent disturbances due to unpleasant odours through the implementation of Environmental Specifications for Waste Management. 	
Management of Complaints	<ul style="list-style-type: none"> • Register any complaints received. • Respond within 24 hours of becoming aware of the complaint. • Inform the Environmental Practitioner of the incident as soon as possible such that the Environmental Practitioner and the Contractor can investigate it. 	Contractor Environmental Practitioner
7. Noise Management		
Noise management	<ul style="list-style-type: none"> • Take all necessary steps to minimise noise generation within the Contractors area of responsibility. • Limit “noisy activities” (e.g. drilling) to daylight hours. • Compile a list of all activities, vehicles and equipment likely to generate excessive noise during the construction phase. • Provide all equipment with standard silencers and maintain silencer units on vehicles and equipment in good working order, where necessary. • If blasting is required, times should be negotiated with nearby landowners/community members such that they can take appropriate steps to safeguard domestic animals and children. All surrounding structures should be checked for stability prior to blasting. 	Contractor
Management of Complaints	<ul style="list-style-type: none"> • Register any complaints received. • Respond within 24 hours of becoming aware of the complaint. 	Contractor Environmental Practitioner

	<ul style="list-style-type: none"> • Inform the Environmental Practitioner of the incident as soon as possible such that the Environmental Practitioner and the Contractor can investigate it. 	
8. Water Management		
Water for domestic use	<p>Implement measures to ensure that the construction workforce present on site has access to sufficient potable water, for example:</p> <ul style="list-style-type: none"> • Provide potable water at various points on site. • Provide facilities for hand washing at all ablution facilities and near all toilets. 	Contractor
Water Consumption	<ul style="list-style-type: none"> • Create awareness and encourage the construction workforce to use water sparingly such that there is no wastage of water. • Ensure that no natural water source (i.e. streams, rivers) is used for construction activities or for domestic purposes by the construction workforce. • Negotiate the use of water for any purpose with the landowner and the appropriate authorities. • Obtain written approval from Eskom for the use of such water. 	Contractor
Water pollution management	<ul style="list-style-type: none"> • Ensure that working areas where hazardous substances (such as cement and vehicle fuels) are handled or stored are designed to collect and contain these hazardous substances. • Ensure that no pollution enters surface water or has the potential to pollute groundwater by ensuring that there is containment of spillages (e.g. diesel, oils, etc) and that there is an emergency plan in place to deal with accidental spillage. 	Contractor Environmental Control Officer

	<ul style="list-style-type: none"> • Ensure that washing of containers, equipment, vehicles and other surfaces only occurs at designated washing areas. • Ensure that sufficient ablution facilities are provided (at least one toilet for every 25 members of the construction workforce). Adequate numbers and placement of portable chemical toilet facilities at construction sites is crucial to prevent unnecessary pollution of the surrounding environment. • Place temporary ablutions at strategic points on the site to ensure that they are accessible to all members of the construction workforce. These locations are to be approved by the Clerk of Works prior to establishment. • Ensure that no spillage occurs when the temporary ablution facilities are cleaned or emptied, and that the wastewater is removed from the site. 	
Management of complaints	<ul style="list-style-type: none"> • Register any complaints received. • Respond within 24 hours of becoming aware of the complaint. • Inform the Environmental Practitioner of the incident as soon as possible such that the Environmental Practitioner and the Contractor can investigate it. 	Contractor Environmental Practitioner
9. Heritage Sites and Objects		
Mitigation and Management of Heritage sites and objects	<p>Become familiar with those structures that are classified as heritage sites within his area of responsibility.</p> <ul style="list-style-type: none"> • Prevent any heritage site from being unnecessarily damaged. • Advise the construction workforce of the penalties associated with the unlawful removal of heritage objects, as set out in the relevant legislation. 	Contractor Environmental Control Officer

	<ul style="list-style-type: none"> • Be responsible for payment of penalties (as per the relevant legislation) resulting from deliberate or negligent damage to a heritage object. • Immediately stop work in the vicinity of any potential heritage objects or sites being unearthed during construction. • Notify the Environmental Control Officer of the unearthed objects. • Obtain the necessary permits for the disturbance, removal or destruction of any heritage objects or sites. The Environmental Control Officer shall notify SAHRA to arrange for the object to be evaluated by a qualified specialist. Depending on the authenticity and significance of the object, the specialist shall prescribe measures necessary to document the find and remove the object from the site (with the necessary permit from SAHRA) prior to construction activities being able to continue. 	
10. General Waste Management		
Waste management procedure	<ul style="list-style-type: none"> • Maintain good housekeeping practices to ensure that there is proper collection and no accumulation of general waste within the site area. Building rubble and spoil material should be removed from site as soon as possible, but should not be stored on site for longer than 80 days. • Ensure that staffs are educated as to the different types of waste generated during construction, and that the waste is correctly disposed of. • Provide appropriate containers (with lids/nets where waste could become airborne) within designated areas for construction rubble, general waste and hazardous waste on site. 	

	<ul style="list-style-type: none"> • Ensure that the containers designated for the disposal of waste are appropriately and clearly marked according to the intended waste stream. • Use should be made of appropriate pictures and colours to ensure that the containers are easily identifiable by all members of the construction workforce. • Ensure that all waste is removed off site to an approved waste disposal site. • Inform the Environmental Practitioner of the waste disposal site at which waste is disposed in order to confirm that this is an appropriately licensed site. • Arrange for the removal of full waste containers as soon as possible by an appropriate waste contractor to be disposed of at an appropriately licensed disposal site. The Contractor shall supply the Environmental Control Officer with a certificate of disposal. • Ensure no waste (including empty cement bags) is burned, buried or used for rehabilitation purposes. • Prevent temporary dumping of waste anywhere on site or in the surrounding area. <p>Ensure that hazardous waste is not being stored or stockpiled in any area other than that designated on the construction site layout. The location of this area shall be agreed with the Clerk of Works.</p> <ul style="list-style-type: none"> • Ensure that Hazardous Waste Disposal Manifests are obtained from the administrators of hazardous waste disposal sites. Hazardous waste should be disposed of at a permitted Hazardous Waste Disposal Site. 	
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	<ul style="list-style-type: none"> • Ensure that no hazardous waste is disposed of in containers intended for general waste. • Ensure that documentation regarding waste collection and disposal/recycling is collated and made available to the Project Manager, his delegate, or the Environmental Control Officer, on request. • Ensure that littering, specifically of the natural areas, is prevented. Adequate containers for litter removal should be supplied on site. These containers should be emptied on a regular basis and the contents removed to an appropriate and licensed waste disposal site. Illegal dumping shall not be tolerated. 	
Management of complaints	<ul style="list-style-type: none"> • Register any complaints received. • Respond within 24 hours of becoming aware of the complaint. • Inform the Environmental Practitioner of the incident as soon as possible such that the Environmental Practitioner and the Contractor can investigate it. 	Contractor Environmental Practitioner
11. Hazardous Substances		
Management of Hazardous Substances	<ul style="list-style-type: none"> • Identify and maintain a register of all activities that involve the handling of potentially hazardous substances, as well as devise and supervise the implementation of protocols for the handling of these substances. This will include all fuels, oils, lubricants and grease. • Ensure that all hazardous substances are handled in accordance with the manufacturer's specifications, legal requirements and Eskom's procedures. 	Contractor

	<ul style="list-style-type: none"> • Store all hazardous substances (including oils, fuels, chemicals, etc.) in a manner prescribed in the relevant Acts and Regulations, namely the Environment Conservation Act (Act 73 of 1989), the Hazardous Substances Act (Act 15 of 1973) and the National Water Act (Act 54 of 1956). • Implement appropriate actions and measures to reduce, stop or contain a spill of potentially hazardous substances (e.g. fuel or lubricating oil). • Implement appropriate actions and measures to reduce or prevent contamination of the ground and surface water as a result of a spill of potentially hazardous substances. • Arrange and supervise the implementation of clean-up operations and appropriate disposal of contaminated materials at a licensed hazardous waste disposal site. • Keep written records detailing the type of spill, the corrective and remedial measures implemented in the stopping or reduction of the spill, and the clean up of the spill. Such progress reporting is important for monitoring and auditing purposes and the written reports may afterwards be used for training purposes in an effort to prevent similar future occurrences. • Report the nature and extent of the spill to the Environmental Practitioner, the Clerk of Works and/or Project Manager at the nearest Eskom Depot as soon as reasonably possible, but within 24 hours. 	
<p>Management of complaints</p>	<ul style="list-style-type: none"> • Register any complaints received. • Respond within 24 hours of becoming aware of the complaint. • Inform the Environmental Practitioner of the incident as soon as possible such that the 	<p>Contractor Environmental Practitioner</p>

	Environmental Practitioner and the Contractor can investigate it.	
12. Safety and Security		
General Procedures	<ul style="list-style-type: none"> • Clearly mark dangerous areas and restrict access to these areas. • Ensure compliance with the Occupational Health and Safety Act (No 85 of 1993). • Ensure that no person under the influence of alcohol or narcotic substances is allowed to work on the site. • Ensure adequate signage is provided along the access roads, and at the entrance to the substation construction site. • Ensure that employees are aware of the telephone numbers of emergency services, where these are readily available, and the procedure to be followed in the event of an emergency. The Environmental Control Officer should source these contact details prior to construction. • In terms of construction worker safety, safety management plans must be implemented. • In terms of community safety, community safety concerns are to be addressed by the Contractor. Workers employed and vehicles used should be readily identifiable as Eskom construction staff. Workers may be obligated to wear identity cards or corporate clothing to assist the community in identifying them as construction workers. • All construction areas to be fenced off before any construction activities take place, 	Contractor

	<p>access control to construction sites to be in place, and signage to be displayed indicating dangerous areas, etc. All construction materials and equipment to be safely stored. Construction materials to be guarded during operation. Road network to and from construction sites to be clearly marked. Construction Company to have security on site at all times.</p>	
<p>Fire management</p>	<ul style="list-style-type: none"> • Take reasonable and active steps to avoid increasing the risk of fire through activities on site. Accidental fires should be prevented through proper sensitisation of the contractors and their workers towards the associated risks, dangers and damage of property. Fires will only be allowed within designated area. Fire extinguishers should be made available and all workers should be informed of their location and shown how to use them. • Ensure that no fires are lit on site under any circumstances. The use of open fires for cooking of food, etc. by construction personnel should be strictly prohibited. Enclosed areas for food preparation must be provided. • Ensure that no waste is burnt. • Report any fires, which occur to the Environmental Control Officer as soon as possible. • Ensure that there is basic fire-fighting equipment available on site at all times. • Educate specific members of the construction force regarding the location and use of fire-fighting equipment. • Restrict smoking activities to demarcated smoking areas. • Ensure that an emergency preparedness plan is in place in order to fight accidental 	<p>Contractor</p>

	<p>veld fires should they occur. The adjacent land owners/users/ managers should also be informed and/or involved.</p> <ul style="list-style-type: none"> • The use of branches from trees and shrubs for fire-making purposes must be strictly prohibited. 	
Management of complaints	<ul style="list-style-type: none"> • Register any complaints received. • Respond within 24 hours of becoming aware of the complaint. • Inform the Environmental Practitioner of the incident as soon as possible such that the Environmental Practitioner and the Contractor can investigate it. 	Contractor Environmental Practitioner
13. Site Rehabilitation		
Site rehabilitation	<ul style="list-style-type: none"> • Ensure that all disturbed areas are stabilised as soon as possible after disturbance. Particular attention must be paid to slopes greater than 20° (1:5) and other areas prone to erosion which should be appropriately vegetated. Rehabilitated areas that are susceptible to erosion due to their position in the landscape should be adequately protected by soil conservation measures. • Ensure that rehabilitation is undertaken as soon as possible after completion of construction activities in any one area of the site. • Ensure that all construction access roads are closed and the area rehabilitated upon completion of the construction works, unless otherwise specified by the Clerk of Works and agreed with the landowner. • Remove from the site all construction equipment, surplus material, waste and temporary structures and works of every kind before the final hand-over. After 	Contractor Environmental Control Officer

	<p>completion of construction, the site should be properly cleaned of any construction waste, litter etc. and adequately rehabilitated/re-vegetated.</p> <ul style="list-style-type: none"> • Rehabilitate any environmental damage caused by construction activities before the final hand-over. • Removal of all excavated material (rocks, excess soil, etc.) and construction rubble after construction is completed. • Re-vegetated areas should be monitored by the Environmental Control Officer until the vegetation is stabilised. • Exotic weeds and invaders that are likely to establish on the rehabilitated areas are to be controlled to allow grasses to adequately establish. • Damage to rehabilitated areas should be repaired promptly. • The erosion risk will be reduced significantly during the dry season (i.e. winter). <p>Therefore, depending on the construction schedule, excavation activities should aim to be focussed during winter.</p> <p>The rehabilitation schedule and procedure to be adhered to is as follows:</p> <ul style="list-style-type: none"> • Replace the soil after the tower has been planted and ensures that the soil is compacted and levelled around the tower. • Ensure that all construction material and rubble has been removed from site. • Ensure any minor oil and diesel spills resulting from vehicles etc are appropriately cleaned up. 	
14. Monitoring		

Monitoring	<ul style="list-style-type: none"> • A monitoring programme shall be in place not only to ensure conformance with the EMP through the contract/work instruction specifications, • Monitor any environmental issues and impacts, which have not been accounted for in the EMP that are, or could result in significant environmental impacts for which corrective action is required. • An Environmental Control Officer must be appointed to ensure compliance with the EMP, and to carry out monitoring activities. 	Contractor
15. Compliance with the Environmental Management Plan Specifications		
Compliance with the Environmental Management Plan Specifications	<ul style="list-style-type: none"> • The EMP shall be available on-site at all times. • All persons employed by the Contractor or his sub-contractors shall abide by the requirements of the EMP. • Any members of the construction workforce found to be in breach of any of the specifications contained within the EMP may be ordered by the Project Manager or Clerk of Works to leave the site. The order may be given orally or in writing. • Confirmation of an oral order will be provided as soon as practically possible, but the absence of a written order shall not be cause for an offender to remain on site. No extension of time will be granted for any delay or disadvantage to the Contractor brought about by an offender ordered to leave the site. • The Contractor shall not direct a person to undertake any activity which would place them in contravention of the specifications contained within the EMP. 	Contractor

	<ul style="list-style-type: none"> • Should the Contractor be in breach of any of the specifications contained in the EMP, the Project Manager shall, in writing, instruct the Contractor responsible for the incident of non-compliance regarding corrective and/or remedial action required, specify a timeframe for implementation of these actions, implement a penalty and/or indicate that work shall be suspended should non-compliance continue. • Should non-compliance continue, further written notification shall be forwarded to the Contractor responsible for the incident of non-compliance outlining the required corrective and/or remedial action, the timeframe for implementation, penalties and/or work shall be suspended as specified previously. • The Contractor shall be responsible and shall bear the cost of any delays, corrective or remedial actions required as a result of non-compliance with the specifications and clauses of the EMP. 	
16. Environmental Register		
Environmental Register	<p>The Contractor shall:</p> <ul style="list-style-type: none"> • Report incidents involving Contractor employees and/or the public that could potentially cause negative sentiment and perception towards the project and/or Eskom. • Report environmental complaints and correspondence received from the public to the Project Co-ordinator or the Environmental Control Officer. • Record and report incidents that cause harm or may cause harm to the environment to 	Contractor Environmental Control Officer

	<p>the Environmental Control Officer.</p> <ul style="list-style-type: none"> • Record all hazardous materials used on site. • Maintain a record of all Hazardous Waste Disposal Manifests detailing the nature of the hazardous waste disposed of, the hazardous waste classification and the location of the site to which such waste was sent. <p>The Environmental Control Officer shall put in place an Environmental Register to document:</p> <ul style="list-style-type: none"> • All environmental complaints and correspondence received from the public, Eskom or the construction workforce. • Incidents of non-compliance with the EMP. • Any other environmental incidents related to the construction phase of the project. <p>The Environmental Control Officer shall ensure that the following information is recorded for all complaints/incidents:</p> <ul style="list-style-type: none"> • Nature of complaint/incident. • Causes of complaint/incident. • Party/parties responsible for causing complaint/incident. • Immediate actions undertaken to stop/reduce/contain the causes of the complaint/incident. • Additional corrective or remedial action taken and/or to be taken to address and to prevent reoccurrence of the complaint/incident. 	
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	<ul style="list-style-type: none"> • Timeframes and the parties responsible for the implementation of the corrective or remedial actions. • Procedures to be undertaken and/or penalties to be applied if corrective or remedial actions are not implemented. • Copies of all correspondence received regarding complaints/incidents. 	
<p>Operational and Maintenance Phase 1. Maintenance of Servitude and Substation Areas</p>		
<p>Bush clearing requirements</p>	<ul style="list-style-type: none"> • Ensure that all alien and invasive vegetation, as well as any trees, which could grow and interfere with the power line along the centre line of the servitude, are cleared on a regular basis. • Ensure that no vegetation (i.e. trees) has a vertical height greater than the horizontal distance of its base to the centreline of the servitude. • Ensure that all alien vegetation within the servitude and substation areas is cleared and treated with the appropriate herbicide. • Ensure that, as far as possible protected plant species are not damaged or destroyed. <p>Where this cannot be avoided, the relevant permit/s should be obtained from the Provincial Department of Conservation. Ensure all unwanted vegetation (i.e. all alien and invasive vegetation, as well as other vegetation which could interfere with the operation of the substation) within the substation area is cleared on a regular basis.</p> <ul style="list-style-type: none"> • Ensure that all vegetation that is removed is not left in situ, but is removed from site 	<p>Eskom-Distribution</p>

	to an appropriate disposal site.	
Herbicides Use	<ul style="list-style-type: none"> • Ensure that a registered pest control operator applies or supervises the application of all herbicides. • Ensure that all herbicides are stored in a well-ventilated demarcated storage area. • Ensure that a register of all contents of the storage area is kept and updated on a regular basis. • Ensure that a daily register of all relevant details of herbicide usage is kept, and that the relevant Eskom custodian maintains such a register. 	Eskom-Distribution
Conduct of Employees	<ul style="list-style-type: none"> • No indiscriminate disposal of rubbish or rubble. • No littering of the servitude and substation areas and the surrounding areas. • No collection of firewood. • No interference with any wildlife, fauna or flora or poaching of any description. • No use of facilities other than the chemical toilets provided. 	Eskom Distribution
Management of complaints	<ul style="list-style-type: none"> • Register any complaints received. • Respond within 24 hours of becoming aware of the complaint. • Inform the Environmental Practitioner of the incident as soon as possible such that the Environmental Practitioner and the Contractor can investigate it. 	Eskom Distribution Environmental Practitioner
2. Access and Traffic Management		

<p>Access Control</p>	<ul style="list-style-type: none"> • Ensure that all maintenance staff is readily recognisable as Eskom employees, and that appropriately marked vehicles are used when on or moving between properties. • Ensure that appropriate signage is displayed indicating the danger of electricity and electrical infrastructure. Eskom are to educate communities (minors and adults) regarding this danger. 	<p>Eskom Distribution</p>
<p>Traffic Control Measures</p>	<ul style="list-style-type: none"> • All drivers shall be in possession of an appropriate valid driver’s license. • All maintenance vehicles travelling on public roads shall adhere to the specified speed limits. • Only designated roads and entrances agreed to in writing by the landowner shall be used. • Moderate speeds (to be agreed to by Eskom) shall be employed and adhered to on all access/service roads. • The movement of all vehicles shall be controlled such that they remain on designated routes. • No member of the workforce shall be permitted to drive a vehicle under the influence of alcohol or narcotic substances. • No deviation from approved access roads shall be allowed. If necessary, new access routes can be designed, but must initially be approved by the Clerk of Works and negotiated with the landowner. • Travel in wet weather conditions shall be limited as far as possible in order to minimise 	<p>Eskom Distribution</p>

	the potential for erosion along access/service roads.	
Management of complaints	<ul style="list-style-type: none"> • Register any complaints received. • Respond within 24 hours of becoming aware of the complaint. • Inform the Environmental Practitioner of the incident as soon as possible such that the Environmental Practitioner and the Contractor can investigate it. 	Eskom Distribution Environmental Practitioner
3. Faunal Interactions		
General Procedure	<p>The maintenance staff may not harm or kill any fauna during the activities of maintaining the servitude.</p> <ul style="list-style-type: none"> • Should there be an interaction with wildlife (e.g. avifauna), it must be reported to the, Environmental Officer and the Technical Service Officer at the nearest Eskom Depot as soon as reasonably possible, but within 24 hours. • The Environmental Officer shall investigate wildlife interaction. • The Environmental Officer shall write a report regarding the incident, and make recommendations. • The Environmental Officer shall conduct a follow up site inspection in order to assess the effectiveness of the recommendations. 	Eskom Distribution
Management of Complaints	<ul style="list-style-type: none"> • Register any complaints received and respond within 24 hours of becoming aware of the complaint. • Inform the Environmental Practitioner of the incident as soon as possible such that the Environmental Practitioner and the Contractor can investigate it. 	Eskom Distribution Environmental Practitioner
4. Air Quality Management		

Fugitive Dust	<ul style="list-style-type: none"> • All vehicles to adhere to speed limits when using access or service roads 	Eskom Distribution
Gases and Smoke	<ul style="list-style-type: none"> • All vehicles are to be kept in a serviceable condition to avoid excessive exhaust fumes 	Eskom Distribution
Management of Complaints	<ul style="list-style-type: none"> • Register any complaints received and respond within 24 hours of becoming aware of the complaint. • Inform the Environmental Practitioner of the incident as soon as possible such that the Environmental Practitioner and the Contractor can investigate it. 	Eskom Distribution Environmental Practitioner
5. Noise Management		
General Procedure	<ul style="list-style-type: none"> • Provide all equipment with standard silencers. • Maintain silencer units on vehicles and equipment in good working order. • All noise to be kept within acceptable limits. 	Eskom Distribution
Management of complaints	<ul style="list-style-type: none"> • Register any complaints received and respond within 24 hours of becoming aware of the complaint. • Inform the Environmental Practitioner of the incident as soon as possible such that the Environmental Practitioner and the Contractor can investigate it. 	Eskom Distribution Environmental Practitioner
6. Waste Management		
General Procedure	<ul style="list-style-type: none"> • All structures and/or components replaced during maintenance activities are appropriately disposed of at an appropriate DWAF licensed waste disposal site or sold to a recycling merchant for recycling. • Ensure that care is taken to ensure that spillage of oils and other hazardous substances are limited during maintenance. Should any accidental spillage take place, it should be 	Eskom Distribution

	cleaned up according to specified standards regarding bioremediation.	
Management of complaints	<ul style="list-style-type: none"> • Register any complaints received and respond within 24 hours of becoming aware of the complaint. • Inform the Environmental Practitioner of the incident as soon as possible such that the Environmental Practitioner and the Contractor can investigate it. 	Eskom Distribution Environmental Practitioner
8. Compliance with the Environmental Management Plan Specifications		
Compliance with the EMP	<ul style="list-style-type: none"> • All persons employed by Eskom or its Contractors shall abide by the requirements of the EMP. • Any members of the operation and maintenance workforce found to be in breach of any of the specifications contained within the EMP may be ordered by the Environmental Control Officer to leave the site. The order may be given orally, or in writing. Confirmation of an oral order will be provided as soon as practically possible, but the absence of a written order shall not be cause for an offender to remain on site. • Eskom shall not direct a person to undertake any activity which would place them in contravention of the specifications contained within the EMP. 	Eskom Distribution
9. Environmental Register		
Environmental Register	<ul style="list-style-type: none"> • Report incidents involving employees and/or the public that could potentially cause negative sentiment and perception towards the project and/or Eskom. • Report environmental complaints and correspondence received from the public to the 	

	<p>Environmental Officer</p> <ul style="list-style-type: none"> • Record and report incidents that cause harm or may cause harm to the environmental to the Environmental Officer. <p>The Environmental Officer shall put in place an Environmental Register to document:</p> <ul style="list-style-type: none"> • All environmental complaints and correspondence received from the public, Eskom or the construction workforce. • Incidents of non-compliance with the EMP • Any other environmental incidents related to the construction phase of the project. 	
<p align="center"><i>Decommissioning Phase</i></p> <p align="center"><i>1. General Principles for Environmental Management during Decommissioning</i></p>		
<p>Environmental Management</p>	<p>On decommissioning of the Sub-transmission line and/or the substation, Eskom shall:</p> <ul style="list-style-type: none"> • Ensure that all sites not already vegetated are vegetated as soon as possible after operation ceases with species appropriate to the area. • All structures, foundations and concrete and tarred areas are demolished, removed and waste material disposed of at an appropriately licensed waste disposal site. • All access/service roads not required to be retained by landowners are closed and fully rehabilitated. • All disturbed areas are compacted, sloped and contoured to ensure drainage and runoff and to minimise the risk of erosion. • All rehabilitated areas are monitored for erosion. 	

APPENDIX C: ESKOM STANDARD FOR BUSHCLEARING

Table C1: Minimum standards to be used for vegetation clearing for the construction of a new 88 kV Sub-transmission line.

Item	Standard	Follow-up
Centre line of the proposed Sub-transmission line	Clear to a maximum (depending on tower type and voltage) of an 8 m wide strip of all vegetation along the centre line. Vegetation to be cut within 100mm of the ground. Treat stumps with herbicide.	Re-growth shall be cut within 100 mm of the ground and treated with herbicide, as necessary.
Inaccessible valleys (trace line)	Clear a 1 m strip for access by foot only, for the pulling of a pilot wire by hand.	Vegetation not to be disturbed after initial clearing – vegetation to be allowed to re-grow.
Access / service roads	Clear a maximum (depending on tower type) 5 m wide strip for vehicle access within the maximum 8 m width, including de-stumping / cutting stumps to ground level, treating with a herbicide and re-compaction of soil.	Re-growth to be cut at ground level and treated with herbicide as necessary.
Proposed tower position and proposed support / stay wire position	Clear all vegetation within proposed tower position and within a maximum (depending on tower type) radius of 5 m around the position, including de-stumping / cutting stumps to ground level, treating with a herbicide and re-compaction of soil. Allow controlled agricultural practices, where feasible.	Re-growth to be cut at ground level and treated with herbicide as necessary.
Indigenous vegetation within servitude area (outside of maximum 8 m strip)	Area outside of the maximum 8 m strip and within the servitude area, selective trimming or cutting down of those identified plants posing a threat to the integrity of the proposed Sub-transmission line.	Selective trimming

<p>Alien species within servitude area (outside of maximum 8 m strip)</p>	<p>Area outside of the maximum 8 m strip and within the servitude area, remove all vegetation within servitude area and treat with appropriate herbicide.</p>	<p>Cut and treat with appropriate herbicide.</p>
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