



**ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT  
FOR THE CONSTRUCTION OF A SINGLE 132KV DISTRIBUTION  
POWERLINE FROM THE NGWEDI MAIN TRANSMISSION  
STATION TO THE RUIGHOEK SUBSTATION AS PART OF THE  
NGWEDI NETWORK DEVELOPMENT PLAN IN THE SUN CITY  
AREA, NORTH WEST PROVINCE.**

August 2016



**DOCUMENT CONTROL**

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**LIST OF ABBREVIATIONS**

BENVSC	Bachelor of Environmental Science
BSC	Bachelor of Science
CE	Consulting Engineers
C	Contractor
CELO	Contractor Environmental Liaison Officer
CM	Contract Manager (Eskom)
CEMPR	Construction Environmental Management Programme Report
DEA	Department of Environmental Affairs
DWS	Department of Water & Sanitation
EA	Environmental Authorisation
ECO	Environmental Control Officer
Eskom	Eskom Holdings SOC Limited
CEMPR	Construction Environmental Management Programme Report
ELO	Environmental Liaison Officer
FEIR	Final Environmental Impact Report
MOU	Memorandum of Understanding
NEMA	National Environmental Management Act
SABS	South African Bureau of Standards
SAHRA	South African Heritage Resource Agency
SAMOAC	South African Manual for Outdoor Advertising Control
SS	Site Supervisor

### Key Definitions

**Auditing:** A systematic process of objectively obtaining and evaluating evidence regarding the effectiveness and performance of the Environmental Management Plan.

**Corrective Measures:** A response required to eliminate the occurrence of a non-compliance with the requirements of the EMP.

**Environmental Impact Assessment (EIA):** A systematic process of identifying, assessing and reporting environmental impacts associated with an activity.

**Environmental Impact Report:** A report describing the process of examining the environment effects of a development proposal, the expected impacts and the proposed mitigating measures.

**Environmental Method Statement:** A statements that indicates how compliance with environmental specifications will be achieved, providing a framework for the setting of objectives and targets.

**Impact:** A description of the potential effect or consequence of an aspect of the development on a specified component of the biophysical, social or economic environment within a defined time and space.

**Mitigation Measures:** These are the management measures that are used to mitigate negative impacts or enhance positive impacts associated with a proposed project.

**Non-conformance:** Non-compliance is issued when a transgression of the underlying management measures outlined in this document, relating to the construction, operation or decommissioning of the power lines occurs. A Non-conformance report must be completed setting out corrective actions, responsibilities and timeframes.

Details of Environmental Impact Assessment Practitioner*Table 1: Details of Environmental Assessment Practitioner.*

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## 1. Introduction

Eskom Holdings Limited (Eskom) is mandated by the South African Government to ensure the provision of reliable and affordable power to South Africa. Eskom currently generates approximately 95% of the electricity used in South Africa. Electricity cannot be stored and must be used as it is generated. Therefore, electricity must be generated in accordance with supply-demand requirements. Eskom's core business is in the generation, transmission (transport), trading and retail of electricity. In terms of the Energy Policy of South Africa "energy is the lifeblood of development". Therefore, the reliable provision of electricity by Eskom is critical for industrial development and related employment and sustainable development in South Africa.

It is important that better precautions be taken to ensure that project activities do not result in environmental damage and that any environmental impacts are minimised and managed. This will require a concerted effort from the Contractor appointed by Eskom, as well as by Eskom itself during operation of the power lines. This EMPr is designed to assist in this objective and to ensure that proper planning is undertaken. This EMPr has also been compiled to provide recommendations and guidelines to which compliance monitoring can be done during the construction of the power lines as well as to ensure that all relevant factors are considered to ensure for environmentally responsible development. The EMPr will be strictly implemented during the construction of the Power lines and will be reviewed regularly during the lifespan of the project until decommissioning for updating where necessary. It is important to note that this EMPr is a "living" document and should be reviewed on a regular basis.

### 1.1. Project Description

The proposed Ngwedi Network Development Plan involves the construction of approximately 35km 132kV power line from the proposed Ngwedi Main Transmission Substation to the existing Ruighoek Substation.

### 1.2. Study Area

The proposed development of a 35km 132 kV power line from the Ngwedi Main Transmission Substation (MTS) to the Ruighoek Substation is within the Sun City area, with the start, middle and end point coordinates for the linear development are as follows:

- **Starting points:** 26°56'18.3" E; 25°14'49.8" S
- **Middle points:** 27°1'46.5" E; 25°24'43.3" S
- **End points:** 26°56'17.7" E; 25°15'3.9" S

The proposed development of the 35km 132 kV power line from the Ngwedi MTS to Ruighoek Substation will affect the following properties listed below:



ITEM NO	FARM NAME	PORTION/S
1	Ruighoek 169-JP	1, 3, 4, 5, 6, 7, 9, 11, 13,R/E and 14
2	Vogelstruisnek 173-JP	1, 7 of Ptn2, 3, 0, 5, 4,
3	Palmietfontein 208-JP	Ptn5 of R/E, 6
4	Zandsrivierspoort 901-JP	1
5	Koedoesfontein 94-JQ	R/E
6	Erishgewaagd 96-JQ	4, 18, 0, 13, 14, 10, 17

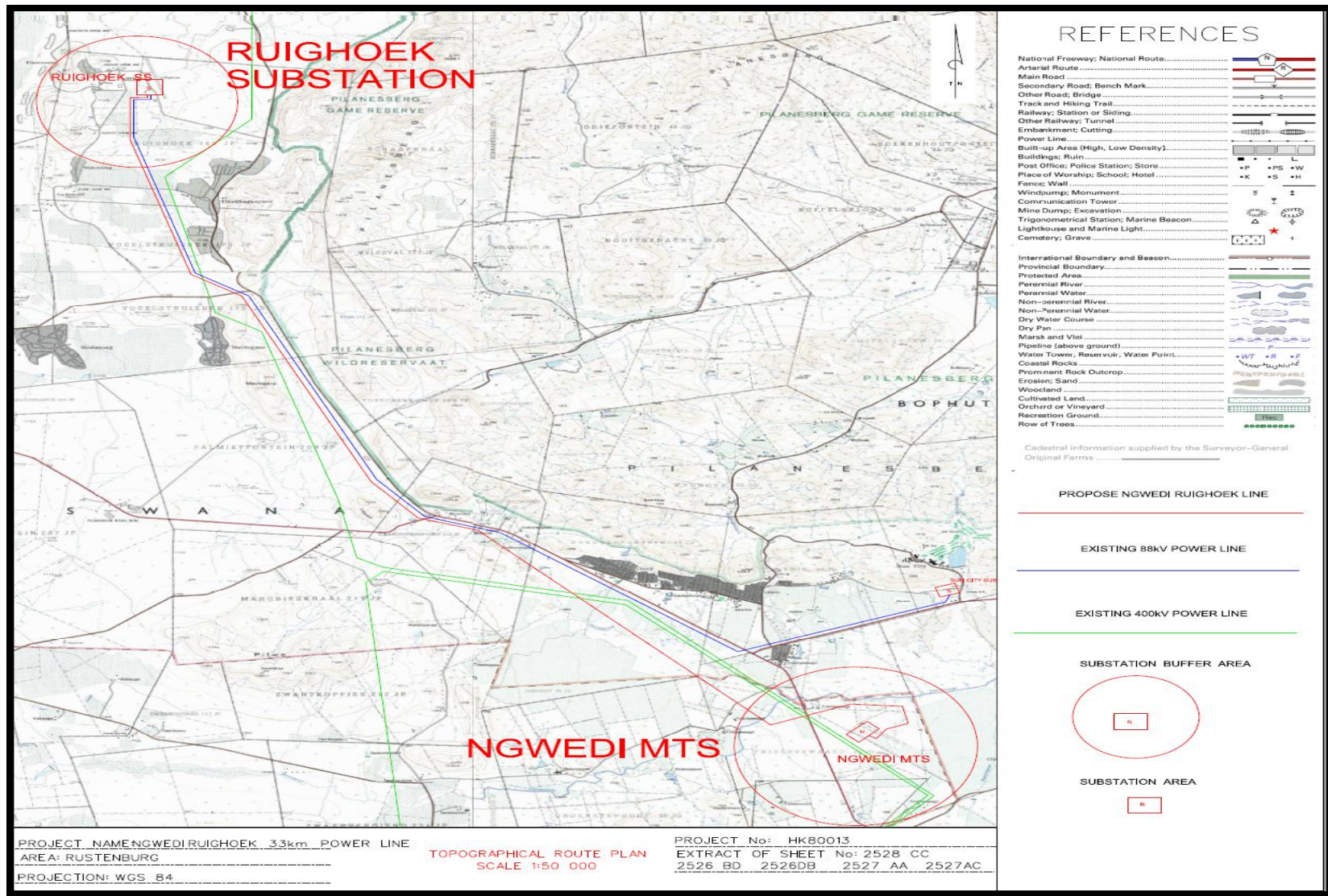


Figure 1: Project locality

### 1.3. Background Information

It is widely accepted that any development can pose various risks to the environment as well as the inhabitants in the surrounding areas. These possible risks should be taken into account during both the construction and operational phase of the development. The purpose of this document is to provide management responses that will ensure impacts resulting from the development are minimised. This EMP is, therefore, a stand-alone document, which must be used onsite during each phase of the development (construction and operation).

This document is flexible, and will allow the contractor and Eskom Holdings SOC Limited to conform to the management commitments provided in this document. The management commitments will ensure that the anticipated risks on the environment will be minimised. The responsibility to undertake the requirements set out in the EMP rests with Eskom Holdings SOC Limited, the main contractors and subcontractors. Any party responsible for transgression of the underlying management measures outlined in this document will be held liable for non-compliances and will be dealt with accordingly.

The process that was followed in compiling the EMP is in compliance with chapter 4 of the National Environmental Management Act (Act 107 of 1998) of New Environmental Impact Assessment Regulation, 2014 promulgated on the 4<sup>th</sup> of December 2014. The purpose of this EMP is to formulate mitigation measures that are legally binding to all contractors during the construction phase as well as measures that should be implemented during the operational phase.

### 1.4. Applicable Documentation

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

- Basic Assessment (BA) Report for the proposed Construction of the power lines
- Environmental Authorisation issued by the Department of Environmental Affairs, (once issued).

## 2. Project Responsibilities

### Eskom Holdings SOC Limited

The Eskom Team is responsible for ensuring that the development is implemented according to the requirements of the EMP. Although the Eskom Team appoints specific role players to perform functions on their behalf, this responsibility is delegated. The Eskom Team is

responsible for ensuring that sufficient resources (time, financial, human, equipment, etc.) are available to the other role players (e.g. the ECO, CELO and contractor) to efficiently perform their tasks in terms of the EMP. The Eskom Team is liable for restoring the environment in the event of negligence leading to damage to the environment.

The Eskom Team must ensure that the EMP is included in the tender documentation so that the contractor who is appointed is bound to the conditions of the EMP. The Eskom Team must appoint an independent Environmental Control Officer (ECO) during the construction phase to oversee all the environmental aspects relating to the development.

### Contractor

The contractor, as the Eskom's agent on site, is bound to the EMP conditions through its contract with the Eskom Holdings SOC Limited, and is responsible for ensuring that it adheres to all the conditions of the EMP. The contractor must be thoroughly familiarised with the EMP requirements before coming onto site and must request clarification on any aspect of these documents, should they be unclear. The contractor must ensure they have provided sufficient budget for complying with all EMP conditions at the tender stage.

The contractor must comply with all orders (whether verbal or written) given by the ECO, project manager or site engineer in terms of the EMP.

### Environmental Control Officer (ECO)

The Environmental Control Officer (ECO) is appointed by the Eskom Holdings SOC Limited as an independent monitor of the implementation of the EMP and monitor project compliance. The ECO must form part of the project team and be involved in all aspects of project planning that can influence environmental conditions on the site. The ECO must attend relevant project meetings, conduct inspections to assess compliance with the EMP and be responsible for providing feedback on potential environmental problems associated with the development. In addition, the ECO is responsible for:

- Liaison with relevant authorities;
- Liaison with contractors regarding environmental management;
- Undertaking routine monitoring and identifying a competent person/institution to be responsible for specialist monitoring, if necessary; and
- The ECO has the right to enter the site and undertake monitoring and auditing at any time, subject to compliance with health and safety requirements applicable to the site (e.g. wearing of safety boots and protective head gear).

The ECO will be also be responsible for conducting the environmental induction-training course in order to provide the site employees with an understanding of Eskom's policies regarding

safety, health and environmental issues. This will include the overall objective of the EMP and of their roles and responsibilities. The typical environmental induction-training course should include:

- A site induction;
- Emergency incident and response training;
- Familiarisation with site environmental controls;
- Specific environmental training for relevant employees; and
- Convey areas of environmental sensitivity to the attention of employees and also procedure with regard to these areas.

#### Liaison with Authorities

The ECO will be responsible for liaising with the National Department of Environment (DEA). The ECO must submit monthly environmental reports and quarterly audit reports to the authorities. These environmental and audit reports must contain information on the contractor and Eskom's levels of compliance with the EMP.

The audit report must also include a description of the general state of the site, with specific reference to non-compliance. The ECO is to recommend corrective action measures to eliminate the occurrence of the non-compliance incidents. In order to keep a record of any impacts, an Environmental Log Sheet (refer to **Appendix A**) should be kept on a continual basis.

#### Liaison with Contractors

The Eskom EO is responsible for informing the contractors of any decisions that are taken concerning environmental management during the construction phase. This would also include informing the contractors with the necessary corrective action to be taken.

#### Contractor Environmental Liaison Officer (CELO)

The contractor must appoint an Environmental Liaison Officer (CELO) to assist with day-to-day monitoring of the construction activities. Any issues raised by the ECO will be routed to the CELO for the contractors' attention and subsequently, CELO liaise with the main contractor for his or her attention. The CELO shall be permanently on site during the construction phase to ensure daily environmental compliance with the EMP and should ideally be a senior and respected member of the construction crew.

### 3. The Project Process and Phases

The detailed and overall process that is undertaken for the planning, construction and operation of the proposed project is as follows:

- 1) Basic Assessment: This draft EMP is submitted together with the Basic Assessment Report to the Department Of Environmental Affairs for authorisation of the proposed project.
- 2) Environmental Impact Assessment: The Draft EMP is further submitted together with the FEIR to the Department of Environmental Affairs. After approval and the issuing of a RoD, the EMP will be refined through development of a site-specific construction EMP.
- 3) Negotiations for the servitude: Eskom will initiate a negotiation process with various landowners situated within the project area to discuss issues pertaining to servitude acquisition. During the negotiation process, special landowner conditions will be discussed and agreed to with the property owners. These special landowner conditions will be detailed in the site-specific construction EMP, which is a product of the walk down process.
- 4) Preliminary placement of the line towers: Once the agreements to register the servitude with the respective landowners are successful, the Surveyors will prepare a preliminary route alignment profile.
- 5) Walk Down Process: The walk down process is a pre- requisite activity for the design and negotiation process, whereby specialists are appointed to undertake detailed surveys of the proposed power line route and each pylon position. The Specialist team will usually comprise of an ecologist, archaeologist, avi-fauna specialist, visual scientist and a wetland specialist. The two main objectives of the walk down process are to identify sensitive area, with regards to the respective fields of specialisation, and to recommend local deviations and pylon position modifications to avoid these areas and appropriate mitigation measures where deviations are not possible.
- 6) Final profiles for construction: The information generated from the walk down process will be issued to the design engineers to generate a final profile of the power lines.
- 7) Erection of campsites for the Contractors' workforce: The appointed Contractor will have to negotiate with respective landowners in order to acquire land for the establishment of the campsite. The campsite will be used for duration of the



construction phase and thereafter it has to be cleaned and rehabilitated and the land evacuated.

- 8) Negotiations for access roads to the servitude: Eskom and the respective landowners will agree on the access road including the access points to be used by Eskom to gain entry to the servitude through the landowner's properties.
- 9) Servitude gate installation to facilitate access to the servitude: Gates will be installed at the agreed upon points of entry at each property.
- 10) Bush clearing: to facilitate access, construction and the safe operation of the line: A specific strip of vegetation cover has to be removed to facilitate access, construction and the safe operation of the line.
- 11) Establishment of access roads on the servitude
- 12) Transportation of equipment, materials and personnel
- 13) Installation of foundations for the towers and substation equipment: Soil types and trial pits at each foundation point will be carried to determine foundation requirements. Thereafter, the foundations will be excavated to the required depth and steel reinforcement and concrete used to reinforce and stabilise them.
- 14) Tower assembly and erection: The towers are brought to site in sections and assembled before they are erected into position using cranes.
- 15) Conductor stringing and regulation: The conductor cables are pulled up and strung from one tower to the next though the use of a pulley. Sag and tensions are checked for in order to ensure that the minimum ground clearance heights are achieved.
- 16) Final inspection of the line and substation: Once the construction of power lines is completed it will be tested to ensure it functions correctly.
- 17) Rehabilitation of disturbed areas: Excess material and equipment are removed from the project area and the campsite. The disturbed environment is returned to a condition close to its original state.
- 18) Signing off Landowners: Eskom's internal procedures prescribe that landowners sign off a release forms confirming that the land was rehabilitated accordingly. There is a one-year guarantee on contractors' work during which all rehabilitation work must be completed.

- 19) Handing and taking over of the servitude: The Eskom Transmission head offices will, after the satisfaction that line is operating correctly and all rehabilitation works implemented correctly, hand over the line to regional division for operation and maintenance.
- 20) Operation and maintenance of the line: Ongoing maintenance will be performed periodically throughout the operational life span of power line. This typically includes annual visits to inspect the line and at least one visit for servitude maintenance per year.

The point of departure for this EMP is to take a practical approach, through addressing potential problems before they occur, thereby providing corrective measures that will be required during the construction and operational phases of the development. In particular, this EMP deals with the following phases, as detailed below:

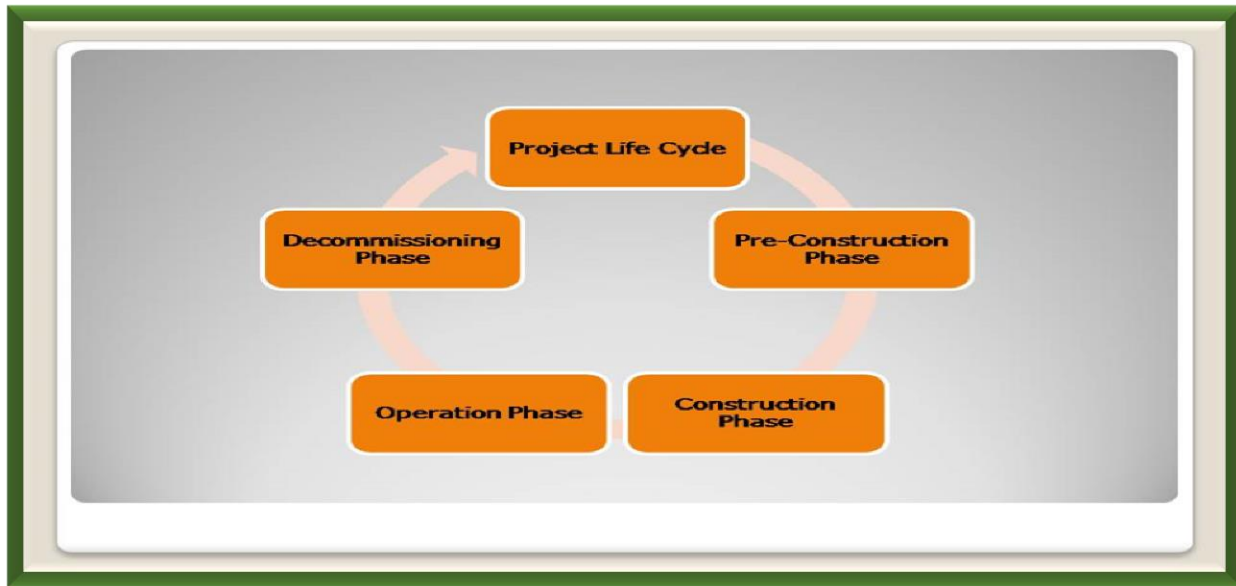
#### Construction Phase

The final outcome of this EMP, after the acceptance of the FEIR (and draft EMP) and the issuing of a RoD, is a site-specific construction Environmental Management Plan (CEMPR), therefore, details of the planning stage is not necessary. The bulk of the impacts during this phase will have immediate effect (e.g. noise, dust and water pollution). If the site is monitored on a continual basis during this phase, it is possible to identify these impacts as they occur. These impacts will then be mitigated accordingly in conjunction with a commitment to sound environmental management from the Eskom Team.

#### Operational Phase

By taking pro-active measures during the construction phases, potential environmental impacts emanating during the operational phase will be minimised. This, in turn, will minimise the risk and reduce the monitoring effort, but it does not make monitoring obsolete.



Project Life Cycle:**4. Objectives of the EMP**

The objective of this EMP is to ensure that:

- Environmental management conditions and requirements are implemented from the start of the project,
- The contractor is able to and shall include any costs of compliance with this EMP into the tender price;
- Precautions against environmental damage and claims arising from such damage are taken timeously;
- The completion date of the contract is not delayed due to environmental problems with the landowner, grid staff, communities or regulatory authorities arising during the course of the project execution;
- The asset created conforms to environmental standard required by ISO 14001 and Transmission Policy;
- Eskom Project manager and Contractor should take into consideration any landowner special conditions, with regards to the power lines, which may arise during the negotiation phase;

- Environmental conditions stipulated in the Environmental Authorisation (EA), which is still to be issued, are implemented;
  - Resolve problems and claims arising from damaged immediately to ensure a smooth flow of operations;
  - Implementation of this EMP for the benefit of all involved; and
- Preservation of the natural environment by limiting destructive activities on site.

## 5. Legal Framework

Depending on the type of development that is being proposed, certain legislation applies, either as a framework to guide the development process or as permit or approval requirements. This EMP has been undertaken in accordance with provisions of the Constitution and principles of Integrated Environmental Management.

All legislation applicable to the development must be strictly enforced both during the construction and operational phases. The contractor must be acquainted with the relevant environmental legislation, including provincial and local government regulations, which are in place to ensure the protection of the environment. The environmental legislation applicable to the project includes, but is not limited to, the following:

- The Constitution of the Republic of South Africa, 1996;
- National Environmental management Act, 1998 (Act No. 107 of 1998) (NEMA);
- National Environmental Management: Air Quality Management Act (Act No. 39 of 2004);
- National Water Act, 1998 (Act No. 36 of 1998);
- National Environmental Management: Biodiversity Act (Act 10 of 2004);
- Fencing Act( No. 31 of 1963 (as amended by act 108 of 1991));
- Occupational Health and Safety Amendment Act (Act No. 181 of 1998);
- Hazardous Substances Act, 1973 (Act No. 15 of 1973);
- National Heritage Resource Act, 1999 (Act No. 25 Of 1999);
- Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983);

- National Environmental Management: Waste Act (Act No. 59 of 2008).

## **6. Possible Permit Applications**

### Water Use Licence

Any construction or operation activities near or in a permanent drainage system may have implications in terms of the National Water Act 1998 (Act No.36 of 1998), and thereby, may require the application for Water Use Licence. Therefore, the contractor must in consultation with the ECO, assess all areas along the alignment well in advance in order to ensure the relevant Water Use License is applied for where required.

### Heritage permit

In the event that any heritage artefacts are found on site, it would be necessary to apply for a Heritage Permit under the National Heritage Resource Act, 1999 (Act No. 25 of 1999).

### Removal of protected trees permit

In the event whereby Red Data plants are affected by construction activities, measure should be taken to avoid or rescue these plants. An attempt should be made to evaluate and avoid obviously large specimens of trees, which would qualify as champion or remarkable trees based on their height (> 10 m), stem diameter at chest height (> 1 m) and the diameter of their crowns (> 15 m).

## **7. Environmental Monitoring and Auditing**

To measure and ensure compliance to this EMP it is imperative that a monitoring and auditing programme be established, in which bi-monthly reports are submitted to Eskom and DEA to indicate the level of compliance. In addition, potential risks to the project will have to be identified. Where the ECO identifies a transgression or blatant disregard to the EMP it should be reported to Eskom immediately and rectification steps undertaken.

This document is a draft document that is being submitted with the Basic Assessment Report for the project. The final site-specific construction EMP (CEMP), however, will be a living document and therefore must be updated from time to time. The ECO, in consultation with the proponent (Eskom) can make recommendations to the proponent for certain CEMP amendments. The proponent should then officially apply to DEA for the approval of the proposed amendments to the CEMP. The amended CEMP becomes valid once the authority (DEA) approves it in writing.

## 8. Method Statement

A Contractor shall submit a written method statement (refer to **Appendix B**) to the ECO for review and recommendations, covering these activities, which are identified (in this document and/or by the ECO), as being potential harmful to the environment. Method statements indicate how compliance with the Environmental Specification will be achieved. The approval of the method statements will be undertaken by the ECO.

The Method Statement shall state clearly:

- Timing of activities;
- Materials to be used;
- Equipment and staffing requirements;
- Proposed construction procedure designed to implement the relevant environmental specifications;
- The system to be implemented to ensure compliance with the above; and
- Other information deemed necessary by the ECO.

The method statement shall be submitted at least 14 working days prior to projected commencement of work on an activity, to allow the ECO time to review and provide recommendations on the method statement. The Contractor shall not commence work on that activity until such time as the method statement has been approved in writing by ECO, which shall be done within seven working days of receipt.

Due to changing circumstances, it may be necessary to modify method statements. In such cases, the proposed modifications must be indicated and agreed upon in writing between Eskom, the ECO and the Contractor.

The ECO and SS must retain records of any amendments and ensure that the most current version of any method statement is being used.

The following are typical Method Statement's which will be called for by the ECO:

- Location, layout and preparation of the construction camp(s) and materials storage areas;
- Location, layout and preparation of cement/concrete batching facilities including the methods employed for the mixing of concrete and the management of runoff water from such areas;
- Contaminated water management Program, including the containment of runoff and polluted water;
- Emergency construction Method Statements (including details of methods for fuel spills and clean-up operations);
- Rehabilitation of disturbed areas and re-vegetation after construction is complete;
- Solid waste management and removal of waste from site; and

- Crossing of erosion trenches and drainage lines

## 9. Key Environmental Issues

### 9.1. Climate

The Zeerust Thornveld is in the summer rainfall region with very dry winter and the MAP ranging in a narrow band of 550 – 600 mm. The area receives frequent frost and temperatures vary between 36.7°C and -0.4°C. The Pilansberg Mountain Bushveld is associated with the summer rainfall region with very dry winters. The MAP range between 600 and 700mm and frost occur frequently in the lower areas and temperatures varies between 36.7 and -2.2°C (Mucina and Rutherford, 2006).

### 9.2. Geology

The geology of the Zeerust Thornveld is made up of sediments from the Pretoria Group with mostly shales and less quartzite and conglomerates present. Another formations present include carbonates, volcanic rocks, breccias, diamictites, bronzite, harzburgite, gabro and norite. Soils are mostly deep red-yellow, apedal and free draining with clays present in many areas. In the case of the Pilansberg Mountain Bushveld, the alkaline complex is dominated by potassium- and sodium-rich, silica poor rocks, mainly foyaite, lava, tuff and some syenite. Due to the original volcanic activity and the subsequent erosion and collapses resulting, complex geological patterns exist. Soils are shallow, rocky lithosols, mostly Glenrosa and Mispah associated with the hills and mountains. The valley floor has deeper soils as a result from weathering and alluvial deposits (Mucina and Rutherford, 2006).

### 9.3. Vegetation

In the study area around the new proposed power line, one vegetation unit is found. It passes to a small section of a second unit and will be discussed, as some trees associated with the unit are observed in the corridor. The main vegetation unit is referred to as the Zeerust Thornveld (Mucina and Rutherford, 2006) but was previously known as the Sourish Mixed Bushveld (Acocks, 1953) or the Mixed Bushveld (Low and Rebelo, 1996). The second is the Pilansberg Mountain Bushveld (Mucina and Rutherford, 2006) but was previously known as the Sourish Bushveld (Acocks, 1953) or the Mixed Bushveld (Low and Rebelo, 1996).

Zeerust Thornveld (SVcb 3) is distributed in the North-West Province with the altitude varying between 1 000 and 1 250m. It consists of deciduous, open to short thorny woodlands dominated by various Acacia species. The grasses form the herbaceous layer on clays on the plains, lowlands and between the rocky ridges (Mucina and Rutherford, 2006).

The Pilansberg Mountain Bushveld (SVcb 5) vegetation type occurs in the mountains and hills in the North-West Province around Sun City and the altitude varies from 1 100 – 1 500m. The

unique near circular (23 – 27km in diameter) complex is an intrusive and extrusive massif with most of the original volcanic caldera almost eroded away. This resulted in broken hills and low mountains with valley floors between the hills and mountains. The vegetation is dominated by broad-leaved deciduous trees and shrubs with a grass layer on the valley floors, slopes and mountains summits (Mucina and Rutherford, 2006).

#### 9.4. Conservation

The vegetation unit is Least Threatened and less than 4% of the targeted 19% is protected. More than 16% is transformed due to cultivation, mining and urban areas. *Ceres jamacaru* is a problem along with a variety of other aliens and erosion is low to moderate, depending on slope angles (Mucina and Rutherford, 2006).

#### 9.5. Fauna

From an overall faunal perspective, some of the habitat types within the corridor are considered to be sensitive on a large scale, as well as a site specific basis. Immediate impacts include trampling and overgrazing effects from livestock and wildlife mismanagement by landowners. Although a number of species in the area are considered to be red-data, the nature of the power line development is relatively low impact on most of the larger, more mobile species. It is the more sedentary and fossorial (burrowing) species, or those species relying upon sensitive habitats that may be at risk from the development process. Overall, from a terrestrial fauna perspective, the proposed project represents a relatively low impact development type. The linear footprint of the clearance will also be minimised as the existing servitude will be used to service the towers, ensuring that the overall habitat loss is minimised. However, recognised sensitive habitat - such as ridges, dune crests or wetlands - are at risk from impacts such as the creation of the small excavation paths, vegetation clearance by machinery and power line placement (and subsequent maintenance).

#### 9.6. Avi-Fauna

Ngwedi-Ruighoek Network Development Plan Power line will pose a limited threat to the birds occurring in the vicinity of the new infrastructure. The power line poses a medium-high collision risk, mostly to non-Red Data species and a medium-high electrocution risk, in particular to vultures. With the implementation of appropriate mitigation measures, the risk should be reduced to low for both these envisaged impacts. The habitat transformation will have a low impact, and should only affect a few non-Red Data species at a local level, provided riparian vegetation is not significantly impacted.

As far as indicating a preferred alignment from a bird impact perspective is concerned, there is little to choose between the various alternative alignments. All run through virtually the same type of habitat and therefore the potential impacts are likely to be similar. In view of this,

sensitive areas for mitigation have been indicated on all the alternative alignments. However, it should be noted that by clustering line together, it becomes more visible to birds and therefore pose less of a collision risk (APPLIC 1994). Furthermore, the fragmentation of the habitat is reduced. For these reasons the alignments that are currently situated next to existing infrastructure might be better from a bird impact perspective, and are therefore preferred

### **9.7. Heritage Resources and Cultural Aspects**

The Project Area is located between the Magaliesberg in the west and the series of norite kopjes running from Thekwane in the south to near the Pilanesberg in the north. This area is known for its rich and diverse range of heritage resources. Stone Age sites are scattered along the Magaliesberg and are also found in caves and rock shelters in the mountain. Rock engravings are located further towards Maanhaarrand and Rustenburg in the west. The most abundant heritage, however, are those that date from the Late Iron Age and which are associated with the numerous Tswana chiefdoms who occupied this region during the last four centuries.

The interaction between the climate, geology, topography, and the fauna and flora of the Central Bankeveld established a milieu in which the first Tswana found a suitable living environment in order to practise herding, agriculture, metal working and trading. It was here that their chiefdoms flourished during AD1600 to 1840.

The settlements of these early Tswana chiefdoms are characterised by an impressive and elaborate stone-built tradition. Hundreds and perhaps thousands of sites were built along the bases of the norite hills. The most formidable of these chiefdoms were the Kwena Mōgōpa, Kwena Mōgale (Bapō), Bakgatla and Fokeng. Further to the west, closer to Rustenburg was the Fōkeng chiefdom while several Kgatla spheres of influence emerged further to the west near Brits. The Kgatla were subjugated by Mzilikazi and were used as labourers to built one of the Ndebele's villages, probably known as emHlalandlela.

The Bapō, a people whose earliest ancestors were descended from the Amambō Nguni from Kwa Zulu/Natal, arrived in the Magaliesberg during the 16th or 17th centuries. One of their capitals was Tlhōgōkgōlō (Wolhuterskop). Several of the chiefs of this clan were known by the name of Mōgale. The name of the Magalies Mountains (Magaliesberg) was derived from the name Mōgale.

Numerous difaqane wars were fought during the last quarter of the 18th century and during the first quarter of the 19th century in the Central Bankeveld. These wars led to the displacement of large numbers of Tswana in the Bankeveld. The difaqane wars were caused by the Ndebele (Matabele) of Mzilikazi who arrived from the Vaal River region to occupy the Bankeveld in August 1827. The Ndebele destroyed the Kwena Mōgōpa, the Kgatla and what had

remained of the Bapô after an earlier defeat by the Pedi of Thulare. These wars exacerbated the havoc started earlier in the Bankeveld and gradually became a characteristic feature of historical events in this region during the early 19th century.

The Ndebele established several settlement complexes in the Central Bankeveld from whence they maintained their grip on the indigenous population. Four of these Zulu/Nguni residences (imisi) and military kraals (amakhandanda) have been discovered during the course of earlier archaeological surveys.

Internal strife between the various Tswana chiefdoms also seems to have been on the increase from the latter half of the 18th century onwards. Paternal relatives fought against each other to attain the chieftaincy of the various Tswana chiefdoms. Succession disputes also led to the splintering of the existing chiefdoms into a growing number of independent spheres of influence in the Bankeveld.

During the early 19th century travellers, traders and missionaries visited the Central Bankeveld where they encountered the devastated Tswana chiefdoms. They also mentioned that numerous Tswana tribes were displaced. These travellers included the traders Robert Schoon and William McLuckie in August 1829. They were soon followed by the missionary Robert Moffat who visited Mzilikazi in an umuzi near what is today Pretoria. In June 1835 Charles Bell and other members of Andrew Smith's expedition visited a Ndebele village near Rustenburg which Bell subsequently painted. One year later, in December 1836, Cornwallis Harris also visited the Central Bankeveld where he painted emHlalandlela near Brits.

The Bankeveld was rich in fauna which attracted the Griqua and the first white hunters to the region. Ivory was plentiful, with herds of elephants roaming the area. Ivory and the skins of the wide variety of fauna were sought after as precious trade commodities. Although the Tswana hunted the fauna of the Bankeveld, they were more renowned as agriculturists and cattle herders than as hunters.

Complex causes led to the unfolding of the numerous Tswana chiefdoms and their spheres of influence throughout the Bankeveld during the last decades of the 18th century and during the first decades of the 19th century. These causes were multidimensional and included the ecological potential of the region, the social and political formation and expansion of different spheres of influence, the establishment of short and long distance trade relations and local and regional wars. These causes and historical events were complex and are not fully recorded in oral traditions or in any other records.

The Phase I HIA study for the Eskom Project Area revealed none of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) found within the area of the proposed project.



## **10. ENVIRONMENTAL MANAGEMENT PROGRAMME: CONSTRUCTION, OPERATIONAL AND DECOMMISSIONING PHASE.**

### **10.1. Site Clearing**

Site clearing must take place in phased matter, as and when required. Areas which are not to be maintained within two months of time must not be cleared to reduce erosion risks. The area to be cleared must be clearly demarcated and this footprint strictly maintained. Spoil that is removed from the site must be removed to an approved spoil site or DWAF licensed landfill site. The necessary silt fences and erosion control measures must be implemented in areas where these risks are more prevalent. These include wetland and steep areas. Topsoil from the Right of Way must be neatly stockpiled adjacent to the trench ready for backfill when required.

### **10.2. Site Establishment**

Site establishment shall take place in an orderly manner and all required amenities shall be installed at Camp sites before the main workforce move onto site. The Construction camp shall have the necessary ablution facilities with chemical toilets at commencement of construction activities. The Contractor shall inform all site staff to make use of supplied ablution facilities and under no circumstances shall indiscriminate sanitary activities be allowed other than in supplied facilities. The Contractor shall supply waste collection bins where such is not available and all solid waste collected shall be disposed of at a DWAF registered landfill. A certificate of disposal shall be obtained by the Contractor and kept on file. Where a registered waste site is not available close to the construction site, the Contractor shall provide a method statement with regard to waste management. The disposal of waste shall be in accordance with all relevant legislation. Under no circumstances may solid waste be burnt on site.

**10.3. Construction Traffic and Access**

Phase	Mitigation	Responsibility	Frequency/Monitoring Requirements
Construction	<p><b><u>Construction traffic</u></b></p> <ol style="list-style-type: none"> <li>1. Construction routes must be clearly defined.</li> <li>2. Delivery of equipment must be undertaken with the minimum amount of trips.</li> <li>3. Access of all construction and material delivery vehicles should be strictly controlled, especially during wet weather to avoid compaction and damage to the topsoil structure.</li> <li>4. Planning of site delivery hours must be scheduled to avoid peak hour traffic, weekends and evenings.</li> <li>5. Wheel washing and damping down of un-surfaced roads must be implemented to reduce dust.</li> <li>6. Vehicles and equipment shall be serviced regularly to avoid the contamination of soil from oil and hydraulic fluid leaks etc.</li> <li>7. Servicing must be done off-site.</li> <li>8. Soils compacted by construction shall be deep ripped to loosen compacted layers and re-graded to even running levels.</li> </ol> <p><b><u>Access</u></b></p> <ol style="list-style-type: none"> <li>9. Temporary access roads that might be required must be</li> </ol>	Main Contractor, ECO	Weekly

	<p>rehabilitated prior to the contractor leaving the site. Should these roads trigger the threshold specified in the EIA Regulation, Environmental Authorisation must be obtained.</p> <p>10. Strategic positioning of entry and exit points to ensure as little impact/ effect as possible on the traffic flow.</p> <p>11. The main routes to the site must be clearly signposted.</p> <p>12. Planning of temporal access routes to the site for construction purposes shall be done in conjunction between the Contractor, Eskom and the Landowner. All agreements reached should be documented and no verbal agreements should be made. The Contractor shall clearly mark all access roads.</p> <p>13. Where new access roads are constructed, this must be done according to design and contract specifications. Drainage channels shall be suitably designed to ensure erosion does not occur, especially at the outflow points. The new access road shall be designed to allow for the natural flow of water where required. Crossing of dongas and eroded areas on access routes to new sites shall be thoroughly planned and installed according to design and contract specifications. All areas susceptible to erosion shall be protected with suitable erosion control measures from the onset of the project. Prevention is the ultimate aim, as restoration is normally very difficult and costly.</p> <p><b><u>Road maintenance</u></b></p> <p>14. Contractors should ensure that access roads are maintained</p>		
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	<p>in good condition by attending to potholes, corrugations and storm water damage as soon as these develop.</p> <p>15. If necessary, staff must be employed to clean surfaced roads adjacent to construction sites where materials have spilt.</p> <p><b><u>General</u></b></p> <p>16. The Contractor shall meet safety requirements under all circumstances. All equipment transported shall be clearly labelled as to their potential hazards according required safety labelling on the containers and trucks used shall be in place.</p> <p>17. The Contractor shall meet these safety requirements under all circumstances. All equipment transported shall be clearly labelled as to their potential hazards according to specifications. All the required safety labelling on the containers and trucks used shall be in place.</p> <p>18. The Contractor shall ensure that all the necessary precautions against damage to the environment and injury to persons are taken in the event of an accident</p>		
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10.4. **Construction Camp**

Phase	Mitigation	Responsibility	Frequency/Monitoring Requirements
Construction	<b><u>Site of construction camp</u></b>	Main	Weekly

	<ol style="list-style-type: none"> <li>1. Choice of site for the Contractor’s camp requires the ECOs permission and must take into account location of local residents and / or ecologically sensitive areas, including flood zones and slip / unstable zones. A site plan must be submitted to the ECO and project manager for approval.</li> <li>2. The construction camp may not be situated within the 1:100 year flood line or on slopes greater than 1:3.</li> <li>3. If the Contractor chooses to locate the camp site on private land, he must get prior permission from both the project manager and the landowner</li> <li>4. The size of the construction camp should be minimized (especially where natural vegetation or grassland has had to be cleared for its construction).</li> <li>5. Adequate parking must be provided for site staff and visitors. This should not inconvenience or serve as a nuisance for neighbours.</li> <li>6. The Contractor must attend to drainage of the camp site to avoid standing water and / or sheet erosion.</li> <li>7. Suitable control measures over the Contractor’s yard, plant and material storage to mitigate any visual impact of the construction activity must be implemented.</li> <li>8. No development, or activity of any sort associated with camp, is allowed below the 1:100 year flood line of any water system.</li> </ol>	<p>Contractor, ECO</p>	
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	<p>Storage of materials (including hazardous materials)</p> <p>9. Choice of location for storage areas must take into account prevailing winds, distances to water bodies, general onsite topography and water erosion potential of the soil. Impervious surfaces must be provided where necessary.</p> <p>10. Storage areas must be designated, demarcated and fenced.</p> <p>11. Storage areas should be secure so as to minimize the risk of crime. They should also be safe from access by unauthorised persons.</p> <p>12. Fire prevention facilities must be present at all storage facilities.</p> <p>13. Proper storage facilities for the storage of oils, paints, grease, fuels, chemicals and any hazardous materials to be used must be provided to prevent the migration of spillage into the ground and groundwater regime around the temporary storage area(s). These pollution prevention measures for storage should include a bund wall high enough to contain at least 110% of any stored volume, and this should be sited away from drainage lines in a site with the approval of the ECO.</p> <p>14. These storage facilities (including any tanks) must be on an impermeable surface that is protected from the ingress of storm water from surrounding areas in order to ensure that accidental spillage does not pollute local soil or water resources.</p>		
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	<p>15. Clear signage must be placed at all storage areas containing hazardous substances / materials.</p> <p>16. Staff dealing with these materials / substances must be aware of their potential impacts and follow the appropriate safety measures.</p> <p>17. A Waste Disposal Contractor must be employed to remove waste oil. These wastes should only be disposed of at DWAF licensed landfill sites designed to handle hazardous wastes. A disposal certificate must be obtained from the Waste Disposal Contractor.</p> <p>18. The contractor must ensure that its staff is made aware of the health risks associated with any hazardous substances used and has been provided with the appropriate protective clothing/equipment in case of spillages or accidents and have received the necessary training.</p> <p>19. All excess cement and concrete mixes are to be contained on the construction site prior to disposal off site.</p> <p>20. Any spillage, which may occur, shall be investigated and immediate action must be taken. This must also be reported to the ECO and DWAF, as well as local authorities if so required.</p> <p>21. The Constructor must ensure that care and the onus of protecting endangered wildlife must be reasonably practiced.</p>		
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	<p><b><u>Drainage of construction camp</u></b></p> <p>21. Run-off from the camp site must NOT discharge into neighbours’ properties or into adjacent wetlands, rivers or streams.</p> <p><b><u>End of construction</u></b></p> <p>22. Once construction has been completed on site and all excess material has been removed, the storage area shall be rehabilitated. If the area was badly damaged, re-seeding shall be done.</p> <p>23. Such areas shall be rehabilitated to their natural state. Any spilled concrete shall be removed and soil compacted during construction shall be ripped, levelled and re-vegetated.</p> <p>24. Only designated areas must be used for storage of construction materials, soil stockpiles, machinery and other equipment.</p>		
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10.5. **Environmental Education and Training**

Phase	Mitigation	Responsibility	Frequency/Monitoring Requirements
Construction	<p><b><u>Environmental training</u></b></p> <p>1. Ensure that all site personnel have a basic level of environmental awareness training. Topics covered should</p>	Main Contractor, ECO	Monthly



	<p>include;</p> <ul style="list-style-type: none"> <li>• What is meant by “Environment”</li> <li>• Why the environment needs to be protected and conserved</li> <li>• How construction activities can impact on the environment</li> <li>• What can be done to mitigate against such impacts</li> <li>• Awareness of emergency and spills response provisions</li> </ul> <p>Social responsibility during construction of the power lines e.g. being considerate to local residents</p> <p>2. It is the Contractor’s responsibility to provide the site foreman with environmental training and to ensure that the foreman has sufficient understanding to pass this information onto the construction staff.</p> <p>3. Training should be provided to the staff members in the use of the appropriate fire-fighting equipment. Translators are to be used where necessary.</p> <p>4. Use should be made of environmental awareness posters on site.</p> <p>5. The need for a “clean site” policy also needs to be explained to the workers.</p> <p>6. Staff operating equipment (such as excavators, loaders, etc.) shall be adequately trained and sensitised to any</p>		
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	<p>potential hazard associated with their tasks.</p> <p><b><u>Monitoring of environmental training</u></b></p> <p>7. The Contractor must monitor the performance of construction workers to ensure that the points relayed during their introduction have been properly understood and are being followed.</p>		
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10.6. Soils

Phase	Mitigation	Responsibility	Frequency/Monitoring Requirements
Construction	<p><b><u>Topsoil</u></b></p> <p>1. The contractor should, prior to the commencement of earthworks determine the average depth of topsoil, and agree on this with the ECO. The full depth of topsoil should be stripped from areas affected by construction and related activities prior to the commencement of major earthworks. This should include the building footprints, working areas and storage areas. Topsoil must be reused where possible to rehabilitate disturbed areas.</p> <p>2. Care must be taken not to mix topsoil and subsoil during stripping.</p> <p>3. Removed polluted topsoil should be transported to a</p>	ECO, Main Contractor	Monthly

	<p>licensed landfill site.</p> <p><b><u>Soil Stripping</u></b></p> <p>4. No soil stripping must take place on areas within the site that the contractor does not require for construction works or areas of retained vegetation.</p> <p>5. Subsoil and overburden should, in all construction and lay down areas, be stockpiled separately to be returned for backfilling in the correct soil horizon order.</p> <p>6. Construction vehicles must only be allowed to utilise existing tracks or pre-planned access routes.</p> <p><b><u>Stockpiles</u></b></p> <p>7. Stockpiles should not be situated such that they obstruct natural water pathways and drainage channels.</p> <p>8. Stockpiles should not exceed 2m in height.</p> <p>9. If stockpiles are exposed to windy conditions or heavy rain, they should be covered either by vegetation or cloth. Stockpiles may further be protected by the construction of berms or low brick walls around their bases.</p> <p>10. Stockpiles should be kept clear of weeds and alien vegetation growth by regular weeding.</p>		
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	<p>11. Where contamination of soil is expected, analysis must be done prior to disposal of excess soil to determine the appropriate disposal route.</p> <p><b><u>Fuel storage</u></b></p> <p>12. Topsoil and subsoil to be protected from contamination.</p> <p>13. Fuel and material storage must be away from stockpiles.</p> <p>14. Cement, concrete and chemicals must be mixed on an impermeable surface and provisions should be made to contain spillages or overflows into the soil.</p> <p>15. Any storage tanks containing hazardous materials must be placed in banded containment areas with sealed surfaces. The bund walls must be high enough to contain 110% of the total volume of the stored hazardous material.</p> <p>16. Contaminated soil must be contained and disposed of offsite at an approved landfill site.</p> <p><b><u>Concrete mixing (if required)</u></b></p> <p>17. Concrete mixing must be contained within a bounded area.</p> <p>18. Concrete mixing must only take place within designated areas.</p> <p>19. Ready mixed concrete must be utilised where possible.</p>		
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	<p>20. No vehicles transporting concrete to the site may be washed on site.</p> <p>21. If a batching plant is necessary, run-off should be managed effectively to avoid contamination of other areas of the site. Untreated run-off from the batch plant must not be allowed to get into the storm water system or any rivers, streams, wetlands or existing erosion channels / dongas.</p> <p><b><u>Earthworks</u></b></p> <p>22. Soils compacted during the construction of the line should be deeply ripped to loosened compacted layers and re-graded to even running levels. Topsoil should be re-spread over landscaped areas. According to specifications by the Eskom’s landscape architect the area should be re-vegetated upon completion of construction activities.</p>		
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10.7. **Erosion Control**

Phase	Mitigation	Responsibility	Frequency/Monitoring Requirements
Construction	<p><b><u>Erosion Control</u></b></p> <p>1. Wind screening and storm water control should be undertaken to prevent soil loss from the site.</p> <p>2. The use of silt fences and sand bags must be implemented</p>	ECO, Main Contractor	Bi-Monthly

	<p>in areas that are susceptible to erosion.</p> <p>3. Other erosion control measures that can be implemented are as follows:</p> <ul style="list-style-type: none"> <li>• Brush packing with cleared vegetation</li> <li>• Mulch or chip packing</li> <li>• Planting of vegetation</li> <li>• Hydro seeding / hand sowing</li> </ul> <p>4. All erosion control mechanisms need to be regularly maintained.</p> <p>5. Seeding of topsoil and subsoil stockpiles to prevent wind and water erosion of soil surfaces.</p> <p>6. Retention of vegetation where possible to avoid soil erosion.</p> <p>7. Vegetation clearance should be phased to ensure that the minimum area of soil is exposed to potential erosion at any one time.</p> <p>8. Re-vegetation of disturbed surfaces should occur immediately after the construction activities are completed.</p> <p>9. No impediment to the natural water flow other than</p>		
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	<p>approved erosion control works is permitted.</p> <p>10. To prevent stormwater damage, the increase in stormwater runoff resulting from construction activities must be estimated and the drainage system assessed accordingly. A drainage plan must be submitted to the ECO for approval and must include the location and design criteria of any temporary stream crossings.</p> <p>11. Stockpiles not used in three (3) months after stripping must be seeded to prevent dust and erosion.</p> <p>12. The Elands River and Spruit are ecologically sensitive. Where these have to be crossed, the pylons should not be within the River or Spruit banks and not so close to the River or Spruit that it will cause erosion (observe 50m buffer).</p>		
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**10.8. Ground and Surface Water Pollution**

Phase	Mitigation	Responsibility	Frequency/Monitoring Requirements
Construction	<p><b><u>Sanitation</u></b></p> <p>1. Adequate sanitary facilities and ablutions must be provided for construction workers</p> <p>2. The facilities must be regularly serviced and emptied to reduce the risk of surface or groundwater pollution.</p>	ECO, Main Contractor	Weekly

	<p><b><u>Hazardous materials</u></b></p> <p>3. Use and or storage of materials, fuels and chemicals which could potentially leak into the ground must be controlled.</p> <p>4. All storage tanks containing hazardous materials must be placed in banded containment areas with sealed surfaces. The bund wall must be high enough to contain 110% of the total volume of the stored hazardous material with an additional allocation for potential storm water events.</p> <p>5. Any hazardous substances must be stored at least 20m from any of the water bodies on site.</p> <p>6. The Environmental Control Officer should be responsible for ensuring that potentially harmful materials are properly stored in a dry, secure, ventilated environment, with concrete or sealed flooring and a means of preventing unauthorised entry.</p> <p>7. Contaminated wastewater must be managed by the Contractor to ensure existing water resources on the site are not contaminated. All wastewater from general activities in the camp shall be collected and removed from the site for appropriate disposal at a licensed commercial facility.</p> <p><b><u>Cement mixing</u></b></p> <p>8. Cement contaminated water must not enter the water system as this disturbs the natural acidity of the soil and</p>		
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	<p>affects plant growth.</p> <p><b><u>Public areas</u></b></p> <p>9. Food preparation areas should be provided at the construction camp with adequate washing facilities and food refuse should be stored in sealed refuse bins which should be removed from site on a regular basis.</p> <p>10. The contractor should take steps to ensure that littering by construction workers does not occur and persons should be employed on site to collect litter from the site and immediate surroundings, including litter accumulating at fence lines.</p> <p><b><u>Water resources</u></b></p> <p>10. Site staff shall not be permitted to use any other open water body or natural water source adjacent to or within the designated site for the purposes of bathing, washing of clothing or for any construction or related activities.</p> <p>11. Municipal water (or another source approved by the ECO) should instead be used for all activities such as washing of equipment or disposal of any type of waste, dust suppression, concrete mixing, compacting, etc.</p> <p>12. The Department of Water Affairs and Forestry and the ECO as well as other Emergency contact numbers provided by the Municipality should be contacted in order to deal with spillages and contamination of aquatic</p>		
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	<p>environments.</p> <p>13. Proper compaction of backfilled material to attain low permeability.</p> <p>14. Ensure that surface/storm water is diverted away from excavation trenches.</p> <p>15. If necessary ensure that stream flow bypasses the construction area within drainage lines.</p> <p>16. Shape backfilling of trench in such a way that water ponding and erosion of backfilled trench are avoided.</p> <p>17. Ensure that contaminants are safely stored and away from the construction site.</p>		
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10.9. Hydrology and Storm Water

Phase	Mitigation	Responsibility	Frequency/Monitoring Requirements
Construction	<p><b><u>Hydrology and Storm water</u></b></p> <p>1. The site must be managed in order to prevent pollution of drains, downstream watercourses or groundwater, due to suspended solids, silt or chemical pollutants.</p> <p>2. Silt fences should be used to prevent any soil entering the storm water drains.</p> <p>3. Temporary cut of drains and berms may be required to capture storm water and promote infiltration.</p>	ECO, Main Contractor	Weekly

	<p>4. Promote water saving mind set with construction workers in order to ensure less water wastage.</p> <p>5. New storm water infrastructure construction must be developed strictly according to specifications from ECO in order to ensure efficiency.</p> <p>6. Hazardous substances must be stored at least 20m away from the buffer area surrounding any water bodies on site to avoid pollution.</p> <p>7. The installation of the storm water system must take place as soon as possible after commencement of the construction activities, to attenuate storm water from the construction as well as the operational phase.</p> <p>8. Earth, stone and rubble is to be properly disposed of so as not to obstruct natural water path ways over the site. (I.e. these materials must not be placed in storm water channels, drainage lines or rivers).</p> <p>9. There should be a periodic checking of the site’s drainage system to ensure that the water flow is unobstructed.</p> <p>10. If a batching plant is necessary, run-off should be managed effectively to avoid contamination of other areas of the site. Runoff from the batch plant must not be allowed to get into the storm water system or nearby streams, rivers or erosion channels or dongas.</p>		
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10.10. Air Quality

Phase	Mitigation	Responsibility	Frequency/Monitoring Requirements
	<p><b><u>Dust control</u></b></p> <ol style="list-style-type: none"> <li>1. Wheel washing and damping down of un-surfaced and unvegetated areas.</li> <li>2. Retention of vegetation where possible will reduce dust travel.</li> <li>3. Excavations and other clearing activities must only be done during agreed working times and permitting weather conditions to avoid drifting of sand and dust into neighbouring areas.</li> <li>4. Damping down of all exposed soil surfaces with water sprinklers when necessary to reduce dust.</li> <li>5. The Contractor shall be responsible for dust control on site to ensure no nuisance is caused to the Landowner or neighbouring Communities.</li> <li>6. A speed limit of 30km/h must not be exceeded on dirty roads (if any).</li> </ol>		

	<p>7. Any complaints or claims emanating from the lack of dust control shall be attended to immediately by the Contractor.</p> <p>8. Regular servicing of vehicles in order to limit gaseous emissions (to be done off-site).</p> <p>9. Regular servicing of onsite toilets to avoid potential odours.</p> <p>10. Allocated cooking areas must be provided.</p> <p>11. The contractor must make alternative arrangements (other than fires) for cooking and / or heating requirements. LP gas cookers may be used provided that all safety regulations are followed.</p> <p>Rehabilitation</p> <p>12. The contractor should commence rehabilitation of exposed soil surfaces as soon as practical after completion of earthworks.</p> <p>Fire prevention</p> <p>13. The contractor must ensure that any grass left in a natural state during the construction of a powerline should be cut in order to prevent veld fires, especially during the dry months.</p> <p>14. No open fires shall be allowed on site under any circumstance. All cooking shall be done in demarcated areas that are safe and cannot cause runaway fires.</p>		
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	<p>15. The Contractor shall have operational fire-fighting equipment available on site at all times. The level of fire fighting equipment must be assessed and evaluated thorough a typical risk assessment process. It may be required to increase the level of protection, especially during the winter months.</p>		
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10.11. Noise

Phase	Mitigation	Responsibility	Frequency/Monitoring Requirements
Construction	<p><u>Noise</u></p> <ol style="list-style-type: none"> <li>1. The construction phase must aim to adhere to the relevant noise regulations and limit noise to within standard working hours in order to reduce disturbance of residential areas in close proximity to the development.</li> <li>2. Construction site yards, workshops, and other noisy fixed facilities should be located well away from noise sensitive areas. Once the proposed final layouts are made available by the contractor(s), the sites must be evaluated in detail and specific measures designed into the system.</li> <li>3. Truck traffic should be routed away from noise sensitive areas, where possible.</li> <li>4. Noisy operations should be combined so that they occur</li> </ol>	ECO, Main Contractor	Daily

	<p>where possible at the same time.</p> <p>5. Blasting operations (if required) are to be strictly controlled with regard to the size of explosive charge in order to minimise noise and air blast, and timings of explosions. The number of blasts per day should be limited, blasting should be undertaken at the same times each day and no blasting should be allowed at night.</p> <p>6. Construction activities are to be contained to reasonable hours during the day and early evening. Night-time activities near noise sensitive areas should not be allowed.</p> <p>7. With regard to unavoidable very noisy construction activities in the vicinity of noise sensitive areas, the contractor and ECO should liaise with local residents on how best to minimise impact, and the local population should be kept informed of the nature and duration of intended activities.</p> <p>8. As construction workers operate in a very noisy environment, it must be ensured that their working conditions comply with the requirements of the Occupational Health and Safety Act (Act No 85 of 1993). Where necessary ear protection gear should be worn.</p> <p>9. Noisy activities to take place during allocated construction hours only as per section 25 of the Noise Control Regulations of the Environment Conservation Act, 1989 (Act No. 73 of 1989).</p>		
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	<p>10. Noise from labourers must be controlled.</p> <p>11. Noise suppression measures must be applied to all construction equipment. Construction equipment must be kept in good working order and where appropriate fitted with silencers which are kept in good working order. Should the vehicles or equipment not be in good working order, the contractor may be instructed to remove the offending vehicle or machinery from site.</p> <p>12. The contractor must take measures to discourage labourers from loitering in the area and causing noise disturbance. Where possible</p>		
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10.12. Vegetation Disturbance

Phase	Mitigation	Responsibility	Frequency/Monitoring Requirements
Construction	<p><b><u>Vegetation Disturbance</u></b></p> <p>1. During all phases of the project; workers must be limited to areas under construction and access to neighbouring undeveloped areas adjacent to the sub-station and power line must be strictly regulated, preventing disturbances to the surrounding environment.</p> <p>2. Weeds and alien invasive vegetation should be removed and prevented from spreading into newly disturbed areas or</p>	ECO, Ecologist	Weekly



	<p>areas recently cleared of vegetation.</p> <p>3. Exotic tree species should be replaced with suitable indigenous tree or shrub species.</p> <p>4. Materials should not be delivered to the site prematurely which could result in additional areas being cleared or affected.</p> <p>5. No vegetation to be used for firewood.</p> <p>6. All alien invasive species including species surrounding the site should be removed to prevent further invasion and replaced with indigenous tree, grass and plant species.</p> <p>7. Horticultural activities should be severely restricted and only allowed around certain predetermined areas.</p> <p>8. Gardens or landscaped areas around the proposed development (extremely limited), should be planted with indigenous (preferably using endemic or local species from the area) grasses, forbs, shrubs and trees, which are water wise and require minimal horticultural practices.</p> <p><b><u>Rehabilitation</u></b></p> <p>9. Re-vegetation and rehabilitation Manual should be prepared for use of contractors. Where herbicides are used to clear vegetation, specimen specific chemicals should be applied to individual plants only. General spraying should be</p>		
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	<p>prohibited. All alien vegetation should be eradicated over five year period. Invasive species should be given the highest priority.</p> <p>10. Where the removal of alien species may leave soil exposed, alternative indigenous species should be established before eradication takes place. Individual property owners along the powerline should be encouraged to plant indigenous non-invasive plants.</p> <p>11. All damaged areas shall be rehabilitated upon completion of the contract in accordance with ECO satisfaction. Slopes in excess of 2% must be contoured and slopes in excess of 12% must be terraced. Extra seed shall be sown on disturbed areas as directed by the ECO (see below for specifications). Other methods of rehabilitating disturbed sites may also be used at the discretion of the Project Manager to comply with the conditions of the EMP, e.g. stone pitching, logging, etc. Contour banks shall be spaced according to the slopes. The type of soil shall also be taken into consideration.</p> <p>12. A mixture of vegetation seed can be used, provided the mixture is carefully selected to ensure the following:</p> <ul style="list-style-type: none"> <li>• Annual and perennial species are chosen.</li> <li>• Pioneer species are included.</li> <li>• All the species shall not be edible.</li> </ul>		
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	<ul style="list-style-type: none"> <li>• Species chosen will grow in the area under natural conditions.</li> <li>• Root systems must have a binding effect on the soil.</li> <li>• The final product should not cause an ecological imbalance in the area.</li> </ul> <p>13. All natural areas impacted during construction must be rehabilitated with locally indigenous grasses typical of the representative botanical unit.</p> <p>14. Fragmentation must be kept to a minimum.</p> <p>15. Rehabilitation must take place as soon as construction is complete to avoid the edge effect, the infiltration of alien species and soil erosion within the servitude.</p> <p>16. Rehabilitation process must make use of species indigenous to the area. Seeds from surrounding seed banks can be used for re seeding.</p> <p><b><u>Demarcation of construction area</u></b></p> <p>17. The construction area must be well demarcated and no construction activities must be allowed outside of this demarcated footprint.</p>		
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	<p>18. Areas which are identified by the ECO as being ecologically sensitive and which are adjacent to any construction work are to be suitably demarcated to prevent damage by labour and equipment.</p> <p>19. Only vegetation within the construction area must be removed.</p> <p>20. Vegetation removal must be phased in order to reduce impact of construction.</p> <p>21. The construction site office and laydown areas must be clearly demarcated and no encroachment must occur beyond demarcated areas.</p> <p>22. Strict and regular auditing of the servitude to ensure containment of the construction activities.</p> <p>23. Where the route passes intact vegetation (but does not impact on it), a buffer zone should be established to ensure that construction activities do not extend into these areas.</p> <p>24. Construction areas must be well demarcated and these areas strictly adhered to.</p> <p>25. Soils must be kept free of petrochemical solutions that may be kept on site during construction. Spillage can result in a loss of soil functionality thus limiting the re-establishment of flora.</p>		
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	<p><b><u>Utilisation of resources</u></b></p> <p>26. Gathering of firewood or any other natural material onsite or in areas adjacent to the site is prohibited.</p> <p><b><u>Exotic vegetation</u></b></p> <p>27. All exotic vegetation must be removed from site.</p> <p>28. Alien vegetation on the site will need to be removed.</p> <p>29. The contractor should be responsible for implementing a programme of weed control (particularly in areas where soil has been disturbed); and grassing of any remaining stockpiles to prevent weed invasion.</p> <p>30. The spread of exotic species occurring throughout the site should be controlled.</p> <p><b><u>Construction schedule</u></b></p> <p>31. Where possible, construction should take place during winter i.e. the dormant stage to minimise impacts on vegetation during the growing season.</p> <p><b><u>Removal of Vegetation</u></b></p> <p>32. All vegetation within the footprint of the construction trench must be removed immediately prior to the onset of excavation</p>		
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	<p>Sensitive area mitigation measures</p> <p>33. Intensive environmental compliance monitoring must be conducted by an independent party during this construction period</p>		
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10.13. Fauna

Phase	Mitigation	Responsibility	Frequency/Monitoring Requirements
Construction	<p><b><u>Faunal Species</u></b></p> <p>1. The contractor must ensure that no faunal species are disturbed, trapped, hunted or killed during the construction phase.</p> <p>2. Containment of construction servitudes through identified sensitive areas.</p> <p>3. The steel monopoles that should be fitted with a bird perch at the top of the pole. This will provide additional safe perching space to birds and will draw them away from the dangerous areas on the insulators.</p> <p>4. The earth wire of the line should be fitted with Bird Flight Diverters.</p>	ECO	Weekly

	<p>5. As a precautionary mitigation measure it is recommended that Eskom and construction contractor as well as an independent environmental control officer should be made aware of the possible presence of certain threatened animal species prior to the commencement of construction activities. In the event that any of the above-mentioned species are discovered relevant conservation authorities should be informed and activities surrounding the site suspended until further investigations have been conducted.</p> <p>6. All necessary mitigation measures must be implemented to minimise impacts on the environment.</p>		
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10.14. Waste Management

Phase	Mitigation	Responsibility	Frequency/Monitoring Requirements
	<p><b><u>Construction rubble</u></b></p> <p>1. Construction rubble shall be disposed of in pre – agreed, demarcated spoil dumps that have been approved by the relevant Municipality.</p> <p>Litter management</p> <p>2. Refuse bins must be placed at strategic positions to ensure that litter does not accumulate within the construction site.</p>	ECO	Weekly

	<p>3. A housekeeping team should be appointed to regularly maintain the litter and rubble situation on the construction site.</p> <p>4. Waste disposal will need to take place in terms of Section 20 of the Environmental Conservation Act (Act No. 73 of 1989).</p> <p>5. If possible and feasible, all waste generated on site must be separated into glass, plastic, paper, metal and wood and recycled. An independent contractor can be appointed to conduct this recycling.</p> <p>6. Littering by the employees of the Contractor shall not be allowed under any circumstances. The ECO shall monitor the neatness of the work sites as well as the Contractor campsite.</p> <p>7. Skip waste containers should be maintained on site. These should be kept covered and arrangements made for them to be collected regularly from the site by the local council.</p> <p>8. All waste must be removed from the site and transported to a landfill site as approved by the relevant Municipality.</p> <p>9. Waybills providing disposal at each site shall be provided to the ECO's inspection.</p> <p><b><u>Hazardous waste</u></b></p>		
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	<p>10. All waste hazardous materials must be carefully stored as advised by the ECO, and then disposed of off site at a licensed landfill site.</p> <p>11. Contaminants to be stored safely to avoid spillage</p> <p>12. Machinery must be properly maintained to keep oil leaks in check.</p> <p><b><u>Sanitation</u></b></p> <p>13. The Contractor shall install mobile chemical toilets on the site.</p> <p>14. Staff shall be sensitised to the fact that they should use these facilities at all times. No indiscriminate sanitary activities on site shall be allowed.</p> <p>15. Ablution facilities shall be within 100m from workplaces but not closer than 50m from any natural water bodies or boreholes. There should be enough toilets available to accommodate the workforce. Male and females must be accommodated separately where possible.</p> <p>16. Potable water must be provided for all construction staff.</p> <p><b><u>Remedial actions</u></b></p> <p>17. Depending on the nature and extent of the spill, contaminated soil must be either excavated or treated on-</p>		
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	<p>site.</p> <p>18. Excavation of contaminated soil must involve careful removal of soil using appropriate tools/machinery to storage containers until treated or disposed of at a licensed hazardous landfill site.</p> <p>19. The ECO must determine the precise method of treatment of polluted soil. This could involve the application of soil absorbent materials as well as oil-digestive powders to the contaminated soil.</p>		
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10.15. Health and Safety

Phase	Mitigation	Responsibility	Frequency/Monitoring Requirements
Construction	<p><b><u>Worker safety</u></b></p> <p>1. Implementation of safety measures, work procedures and first aid must be implemented on site.</p> <p>2. A health and safety plan in terms of the Occupational Health and Safety Act (Act No. 85 of 1993) must be drawn up to ensure worker safety.</p> <p>3. Workers should be thoroughly trained in using potentially dangerous equipment.</p> <p>4. Contractors must ensure that all equipment is maintained</p>	ECO	Weekly

	<p>in a safe operating condition.</p> <p>5. A safety officer must be appointed.</p> <p>6. A record of health and safety incidents must be kept on site.</p> <p>7. Any health and safety incidents must be reported to the project manager immediately.</p> <p>8. First aid facilities must be available on site at all times.</p> <p>9. Workers have the right to refuse work in unsafe conditions.</p> <p>10. The Contractor shall take all the necessary precautions against the spreading of disease such as measles, etc. especially under livestock.</p> <p>11. A record shall be kept of drugs administered or precautions taken and the time and dates when this was done. This can then be used as evidence in court should any claims be instituted against Eskom or Contractor.</p> <p>12. The contractor must ensure that all construction workers are well educated about HIV/ AIDS and the risks surrounding this disease.</p> <p>13. Material stockpiles or stacks, such as, pipes must be stable and well secured to avoid collapse and possible injury to site workers.</p>		
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	<p><b><u>Worker facilities</u></b></p> <p>14. Eating areas should be regularly serviced and cleaned to ensure the highest possible standards of hygiene and cleanliness</p> <p>15. Fires are not to be allowed.</p> <p><b><u>Protective gear</u></b></p> <p>16. Personal Protective Equipment (PPE) must be made available to all construction staff and must be compulsory. Hard hats and safety shoes must be worn at all times and other PPE worn were necessary i.e. dust masks, ear plugs etc.</p> <p>17. No person is to enter the site without the necessary PPE.</p> <p><b><u>Site safety</u></b></p> <p>18. The construction camp must remain fenced for the entire construction period.</p> <p>19. Potentially hazardous areas such as trenches are to be demarcated and clearly marked</p> <p>20. Adequate warning signs of hazardous working areas.</p> <p>21. Uncovered manholes and excavations must be clearly demarcated.</p>		
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	<p>22. Emergency numbers for local police and fire department etc must be placed in a prominent area.</p> <p>23. Fire fighting equipment must be placed in prominent positions across the site where it is easily accessible. This includes fire extinguishers, a fire blanket as well as a water tank.</p> <p>24. Suitable conspicuous warning signs in English and all other applicable languages must be placed at all entrances to the site.</p> <p>25. All speed limits must be adhered to.</p> <p><b><u>Hazardous Material Storage</u></b></p> <p>26. Staff that will be handling hazardous materials must be trained to do so.</p> <p>27. Any hazardous materials (apart from fuel) must be stored within a lockable store with a sealed floor.</p> <p>28. All storage tanks containing hazardous materials must be placed in bounded containment areas with sealed surfaces. The bund walls must be high enough to contain 110% of the total volume of the stored hazardous material.</p> <p>29. The bund walls for the transformer oil containers must be in place before the installation of these containers.</p> <p>30. The provisions of the Hazardous Chemical Substances</p>		
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	<p>Regulations promulgated in terms of the Occupational Health and Safety Act 85 of 1993 and the SABS Code of Practice must be adhered to. This applies to solvents and other chemicals possibly used in the construction time.</p> <p>33. The immediate response must be to contain the spill.</p> <p>34. The source of the spill must be identified, controlled, treated or removed.</p> <p><b><u>Fire management</u></b></p> <p>35. Fire fighting equipment should be present on site at all times as per OHSA.</p> <p>36. All construction staff must be trained in fire hazard control and fire fighting techniques.</p> <p>37. All flammable substances must be stored in dry areas which do not pose an ignition risk to the said substances.</p> <p>38. No open fires will be allowed on site.</p> <p>39. Smoking may only be conducted in demarcated areas.</p> <p><b><u>Procedure in the event of a petrochemical spill</u></b></p> <p>31. The individual responsible for or who discovers the petrochemical spill must report the incident to the Project Manager, ECO or</p>		
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	Contractor.		
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10.16. Security

Phase	Mitigation	Responsibility	Frequency/Monitoring Requirements
Construction	<p><b><u>Security</u></b></p> <ol style="list-style-type: none"> <li>1. Access to the construction site should be strictly controlled by a security company.</li> <li>2. 24 hour security on-site.</li> <li>3. Unsocial activities such as consumption or illegal selling of alcohol, drug utilisation or selling on site should be prohibited. Any persons found to be engaged in such activities shall receive disciplinary or criminal action taken against them.</li> <li>4. No person shall enter the site unless authorised to do so by the contractor, project manager and ECO</li> <li>5. If any fencing interferes with the construction process, such fencing shall be deviated until construction is completed. The deviation of fences shall be negotiated and agreed with the landowner in writing.</li> </ol>	Main Contractor, ECO	Weekly

	<p>6. Construction staff is to make use of the facilities provided for them, as opposed to ad-hoc alternatives (e.g. fires for cooking, the use of surrounding bush as a toilet facility are forbidden).</p> <p>7. Trespassing on private / commercial properties adjoining the site is forbidden.</p> <p>8. Driving under the influence of alcohol is prohibited.</p> <p>9. All employees must undergo the necessary safety training and wear the necessary protective clothing.</p> <p>10. Secure the site in order to reduce the opportunity for criminal activity in the locality of the construction site</p> <p>11. Care <b><u>MUST</u></b> be taken to ensure the safety of the faunal species that are susceptible to poaching.</p>		
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10.17. **Social Environment**

Phase	Mitigation	Responsibility	Frequency/Monitoring Requirements
Construction	<p><b><u>Social Environment</u></b></p> <p>1. All contact with the affected parties shall be courteous at all times.</p> <p>The rights of the affected parties shall be respected at all</p>	Main Contractor, ECO	Weekly



	<p>times.</p> <p>2. A complaints register should be kept on site. Details of complaints should be incorporated into the audits as part of the monitoring process. This register is to be tabled during monthly site meetings</p> <p>3. Where possible unskilled job opportunities should be afforded to local community members.</p> <p>4. Equal opportunities for employment should be created to ensure that the local female population also have access to these opportunities. Females should be encouraged to apply for positions.</p> <p>5. Payment should comply with applicable Labour Law legislation in terms of minimum wages.</p>		
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**10.18. Cultural and Heritage Artefacts**

Phase	Mitigation	Responsibility	Frequency/Monitoring Requirement
Construction	<p><b><u>Cultural and Heritage Artefacts</u></b></p> <p>1. Any finds must be reported to the nearest National Monuments office to comply with the National Heritage Resources Act (Act No 25 of 1999)</p> <p>2. Local museums as well as the South African Heritage</p>	Main Contractor, ECO	Weekly

	<p>Resource Agency (SAHRA) should be informed if any artefacts are uncovered in the affected area.</p> <p>3. The contractor must ensure that his workforce is aware of the necessity of reporting any possible historical or archaeological find to the ECO so that appropriate action can be taken.</p> <p>4. Any discovered artefacts shall not be removed under any circumstances. Any destruction of a site can only be allowed once a permit is obtained and the site has been mapped and noted. Permits shall be obtained from the South African Heritage Resources</p>		
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10.19. Powerline Operation and Maintenance

Phase	Mitigation	Responsibility	Frequency/Monitoring Requirements
Operational	<p><b><u>Maintenance</u></b></p> <p>1. All applicable standards, legislation, policies and procedures must be adhered to during operation.</p> <p>2. Regular inspection of the power line must take place to monitor their status.</p>	Eskom, Project Manager	Monthly

10.20. Biodiversity (Fauna and Flora)

Phase	Mitigation	Responsibility	Frequency/Monitoring Requirements
Operational	<p><b><u>Vegetation</u></b></p> <p>1. Indigenous vegetation must be maintained on the servitude on an annual basis and all exotics removed as they appear and disposed off appropriately.</p> <p>Other fauna</p> <p>2. No faunal species must harmed by construction staff during any routine checks of the power lines.</p>	Eskom	Annually

10.21. Construction Site Decommissioning

Phase	Mitigation	Responsibility	Frequency/Monitoring Requirement
Decommissioning phase	<p><b><u>Removal of equipment</u></b></p> <p>1. All structures comprising the construction camp are to be removed from site.</p> <p>2. The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint,</p>	Main Contractor, Eskom, ECO	Weekly

	<p>etc, and these shall be cleaned up.</p> <p>3. All hardened surfaces within the construction camp area should be ripped, all imported materials removed, and the area shall be top soiled and regressed.</p> <p>Temporary services</p> <p>4. The Contractor must arrange the cancellation of all temporary services.</p> <p>5. A copy of all way bridge certificates from waste disposed are to be presented to the ECO.</p> <p>6. Temporary roads must be closed and access across these, blocked.</p> <p>7. All areas where temporary services were installed are to be rehabilitated to the satisfaction of the ECO.</p> <p><b><u>Associated infrastructure</u></b></p> <p>8. Surfaces are to be checked for waste products from activities such as concreting and cleared in a manner approved by the ECO.</p> <p>9. All surfaces hardened due to construction activities are to be ripped and imported material thereon removed.</p> <p>10. All rubble is to be removed from the site to an</p>		
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	<p>approved disposal site as approved by the ECO. Burying of rubble on site is prohibited.</p> <p>11. The site is to be cleared of all litter.</p> <p>12. The Contractor is to check that all watercourses are free from building rubble, spoil materials and waste materials.</p> <p>13. Fences, barriers and demarcations associated with the construction phase are to be removed from the site.</p> <p>14. All residual stockpiles must be removed to spoil or spread on site as directed by the ECO.</p> <p>15. All leftover building materials must be returned to the depot or removed from the site.</p> <p>16. The Contractor must repair any damage that the construction works has caused to neighbouring properties, specifically, but not limited to, damage caused by poor storm water management.</p>		
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### **11. Conclusion and Recommendations**

This Environmental Management Programme (EMPr) should be used as an on-site reference document during all phases of this development, and monthly auditing should take place in order to determine compliance with this EMPr. Parties responsible for transgression of this EMPr shall be held responsible for any rehabilitation that may need to be undertaken. Parties responsible for environmental degradation through irresponsible behaviour or negligence should receive penalties.

The EIA process facilitated the identification of relevant and practical mitigation measures, which may be used by the construction team and Eskom to draw up and respond to Tender documentation. It is thus key to this process that this document be included during tendering to allow all potential bidders for this work to seriously consider and cost for such mitigation. This will ensure that the document receives the necessary buy in that it requires from the outset of the project

In order to have records of environmental incidences and the handling thereof, it is suggested that Emergency Plan for Incidents (refer to **Appendix A**) be filled in by the Environmental Control Officer or Environmental Liaison Officer. The contract manager needs to be informed of such incidences and further actions need to be taken, should the need arise.

**APPENDIX A: EMERGENCY INCIDENTS PLAN**

<b>ENVIRONMENTAL INCIDENT LOG</b>				
<b>Date</b>	<b>Env. Condition</b>	<b>Comments</b>  (Include any possible explanations for current condition and possible responsible parties. Include photographs, records etc. if available)	<b>Corrective Action Taken</b>  (Give details and attach documentation as far as possible)	<b>Signature</b>




**APPENDIX B: METHODS OF STATEMENT**

**METHOD STATEMENT:** **Solid Waste Management** (SAMPLE)

**CONTRACT:**..... **DATE:**.....

**WHAT WORK IS TO BE UNDERTAKEN?** [Give a brief description of the works to be undertaken on site that will generate waste (hazardous and non-hazardous wastes)]: \* Note: please attach extra pages if more space is required.

**\*Insert additional pages as required**

**WHERE ARE THE WORKS TO BE UNDERTAKEN?** (Where possible, provide an annotated Program and a full description of the extent of the works): \* Note: please attach extra pages if more space is required

**\*Insert additional pages as required**

**START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:**

**Start Date:**                      **End Date:**.....

**HOW IS WASTE TO BE MANAGED ON SITE?** (Provide as much detail as possible, including annotated sketches and plans where possible): \* Note: please attach extra pages if more space is required

**\*Insert additional pages as required**

**1) ENGINEER**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

(Signed) \_\_\_\_\_ (Print name)

Dated: \_\_\_\_\_

**2) ECO**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

(Signed) \_\_\_\_\_ (Print name)

Dated: \_\_\_\_\_

**2) CONTRACTOR**

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to and

with approval by the Engineer, and that the SHE Coordinator, Construction Manager and ECO will audit my compliance with the contents of this Method Statement

(Signed) \_\_\_\_\_ (Print name)

Dated: \_\_\_\_\_

**APPENDIX C: REPORTING AND CORRECTING NON-CONFORMITY**

COMPLAINTS RECORD SHEET	
DATE:	FILE REFERENCE NUMBER:
COMPLAINT RAISED BY:	
CAPACITY OF COMPLAINANT:	
COMPLAINT RECORDED BY:	
COMPLAINT:	
COMPLAINT RAISED BY:	
•	
ECO'S PROPOSED REMEDIAL ACTION	
•	
•	
ECO Signature: ..... Date:.....	SITE MANAGER Signature: ..... Date:.....

**APPENDIX D: DECLARATION OF UNDERSTANDING BY DEVELOPER, ENGINEER AND CONTRACTOR**

**DECLARATION OF UNDERSTANDING BY THE DEVELOPER**

I, \_\_\_\_\_

Representing \_\_\_\_\_

Declare that I have read and understood the contents of the Environmental Management Program for:

Contract \_\_\_\_\_

I also declare that I understand my responsibilities in terms of enforcing and implementing the Environmental Specifications for the aforementioned Contract.

Signed: \_\_\_\_\_

Place: \_\_\_\_\_

Date: \_\_\_\_\_

Witness 1: \_\_\_\_\_

Witness2: \_\_\_\_\_