



**NGWEDI (MOGWASE)
SUBSTATION &
ASSOCIATED
TRANSMISSION POWER
LINE TURN-INS PROJECT**



**ENVIRONMENTAL
MANAGEMENT PLAN**

FINAL EMP

Client:

Eskom Holdings Ltd.
Transmission Services
PO Box 1091
Johannesburg
2000

Contact:

Sebenzile Vilakazi
Tel: 011 800 4902
Fax: 011 800 3917

Consultant

Margen Industrial Services
P.O. Box 12822
Leraatsfontein
1038

Contact:

Moses Mahlangu
Tel: 013 – 656
1212
Fax: 013 – 656 2233

PBAI (SA)

PO Box 3300
Houghton
2041
Registration: 97/15300/07

Contact:

Tšepo Lepono
Tel: +27 11 726 3130/32
Fax: +27 11 726 3134

DOCUMENT CONTROL REGISTER AND DATA SHEETS

Table A1: Contact Data Sheets

Project Title:	Ngwedi (Mogwase) Substation & Associated Transmission Power Line Turn-Ins Project Environmental Management Plan (EMP)
Project Applicant:	Eskom Transmission Services
Contact Person:	Sebenzile Vilakazi
Postal Address:	Eskom Holdings Ltd. Transmission Services PO Box 1091 Johannesburg 2000 SOUTH AFRICA
Telephone No:	011 800 4902
Fax No:	086 574 0963
E-mail Address:	vilakazs@eskom.co.za
Project Location	North West Province

Table A2: Key Personnel

Profession/Role	Name	Institution	Contact Details	Remarks
Grid Planning Engineer	Mfundi Songo	Eskom	011 800 4795	Mfundi.songo@eskom.co.za
Eskom Environmental Practitioner / Advisor	Sebenzile Vilakazi	Eskom	0118004902	vilakazs@eskom.co.za
Servitude Negotiator	Phuti Makweya	Eskom	011 800 3607	phuti.makweya@eskom.co.za
Project Manager (PM)	Marcus Lengwate	Eskom	011 800 3744	marcus.lengwate@eskom.co.za
Site Manager	To be appointed			
ECO (Environmental Control Officer)	To be appointed			
Contractor	To be appointed			
CELO (Contractor Environmental Liaison Officer)	To be appointed			
CECO (Contractor Environmental Control Officer (Dedicated person appointed by the contractor))	To be appointed			
Grid Line & Servitude Manager				
Environmental Assessment Practitioner	Tsepo Lepono	Tsepo Lepono	0117263130	tsepo@pbai.co.za
Authorising Department		DEA	012 310 3911	
SAHRA – Area Representative		SAHRA	021 462 4502	
Local Fire Protection officer				
Local Security Service Provider				

ABOUT THIS DOCUMENT

This Environmental Management Plan (EMP) is to facilitate the process whereby the best environmental practices and procedures are adopted by Eskom, its' Contractors and Sub- Contractors for the planning of, the construction, operation and decommissioning of Ngwedi Substation and associated power line infrastructure.

The EMP is an evolving document that should be revised periodically to accommodate changes including modifications or inclusion of additional mitigation measures that either address, impacts that had not been foreseen by the Environmental Impact Assessment (EIA) process or those measures that have been implemented but found to be ineffective.

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ACRONYMS

CECO:	Contractor Environmental Control Officer
CELO:	Contractor Environmental Liaison Officer
CM:	Contract Manager
DWAF:	Department of Water Affairs
DEAT:	Department of Environmental Affairs and Tourism
DEA:	Department of Environmental Affairs
DWEA:	Department of Water, Agriculture and Environment
DSR:	Draft Scoping Report
EAP:	Environmental Assessment Practitioner
ECO:	Environmental Control Officer
EIA:	Environmental Impact Assessment
EIR:	Environmental Impact Assessment Report
EMP:	Environmental Management Plan
GPS:	Global Positioning System
I&AP:	Interested and affected party, refers to all those individuals and organizations that may have an interest in the detail and outcome of the EIA
MSDS:	Materials Safety Data Sheets
MW:	Mega Watt (=1,000,000 Watts), unit of measurement of power output (e.g. from power stations)
NCR:	Non-Conformance Report
PPE:	Personal Protective Equipment
RoA:	Record of Authorisation
SHE	Safety Health and Environment
ToRs:	Terms of Reference
WHO:	World Health Organisation

LIST OF UNITS

kV:	Kilo volt (=1000 volts), unit of measure of electric potential, but also a common measure of the capacity of a power line
masl:	metres above sea level (a standard measure of land altitude)

DEFINITIONS

Alternative: A possible course of action, in place of another, that would meet the same purpose and need defined by the development proposal. Alternatives considered in the EIA process can include location and/or routing alternatives, layout alternatives, process and/or design alternatives, scheduling alternatives or input alternatives.

Auditing: A systematic, documented, periodic and objective evaluation of how well the environmental management plan is performing with the aim of helping to safeguard the environment by: facilitating management control which would include meeting regulatory requirements.

Corrective (or remedial) Action: Response required addressing an environmental problem that is in conflict with the requirements of the EMP. The need for corrective action may be determined through monitoring, audits or management review.

Environmental Impact Assessment (EIA): An EIA refers to the process of identifying, predicting and assessing the potential positive and negative social, economic and biophysical impacts of a proposed development. The EIA includes an evaluation of alternatives; recommendations for appropriate management actions for minimising or avoiding negative impacts and for enhancing positive impacts; as well as proposed monitoring measures.

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 Policy Statement: Statement of intent and principles in relation to overall environmental performance, 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 to mitigate negative impacts or enhance positive impacts associated with a proposed project.

Non-conformance: Where activities relating to the construction, operation or decommissioning of the power lines do not conform to the guidelines set out in this EMP. A Non-conformance report must be completed setting out corrective actions, responsibilities and timeframes.

1. INTRODUCTION

An Environmental Management Plan (EMP) can be defined as “an environmental management tool used to ensure that any reasonably avoided impacts of the construction, operation and decommissioning of a project are prevented”. It is a dynamic document subject to revision and amendment and it specifically ensures that environmental concerns are integrated into the design, construction, operation and maintenance phases of the project. The EMP is required for Environmental Impact Assessments (EIA) conducted as part of EIA Regulation 32 of GN No. R385 of 23 April 2006.

The EMP is prepared as part of the EIA for Ngwedi Substation and associated power line Project. The EMP then has to be understood within the context of the Environmental Impact Assessment Report (EIR) for this project and it is recommended that all key players involved in the implementation of this plan have access to and review the EIR.

It is intended that this document will be reviewed and updated or amended during the life cycle of the power line, but in particular at the following milestones:

- On completion of the design phase of the line and substations expansion
- At construction tender stage
- At regular intervals during construction
- On completion of construction
- At handover to Eskom for maintenance
- At regular periods during the maintenance and operation Ngwedi Substation and associated power line infrastructure
- On decommissioning of Ngwedi Substation and associated power line infrastructure

THE EMP PROVIDES THE FOLLOWING

- Identify the specific activity or potential impact that requires management;
- Determine the mitigation measures to be implemented;
- Identify the performance indicator;
- Identify who would be responsible for the implementation; and
- Identify who would be responsible for monitoring.

2. PROJECT BACKGROUND

Eskom as the sole power supply utility in the country has a mandate to meet the demands for power in the country. Eskom generates 95% of the electricity used in the country. The power outages in 2008 have shown that the generation capacity and infrastructure can no longer support the demand. As such Eskom has embarked on a Massive Build Programme worth over R 300 billion to increase its generation, transmission and distribution infrastructure.

This planned expansion will be based on the Waterberg coalfields. Eskom currently operates the Matimba power station in the Lephalale area and it is currently constructing the Medupi Power Station. A separate Environmental Impact Assessment (EIA) for the proposed Medupi Power Station has been conducted and the Environmental Authorisation (EA) issued. Since Lephalale is not situated in close proximity of the main economic hubs (Pretoria-Witwatersrand-Vereeniging triangle) nor to other nationwide economic hubs, Eskom has had to invest in infrastructure for the transportation of the generated electricity. High voltage transmission power lines are required to transmit the power from the Medupi Power Station. The Medupi Integration Project is one of the large scale projects to support the grid system between Limpopo and the North West province.

Eskom proposes to construct Ngwedi (Mogwase) Main Transmission Substation (MTS) and associated transmission power line turn-ins in the vicinity of Sun City, in order to meet the expected future load growth for the greater Rustenburg area

The integration project diagrammatically presented in **Figure 1** below will involve the construction of:

- A 400kV transmission power line from Medupi Power Station (Matimba B) to the Marang substation located near Rustenburg.
- Two 400kV transmission power lines from Matimba looped into the Spitskop substation to Dinaledi substation located near Brits.
- Upgrading of the existing substations of Marang, Spitskop and Dinaledi to accommodate the new 400kV transmission power line.

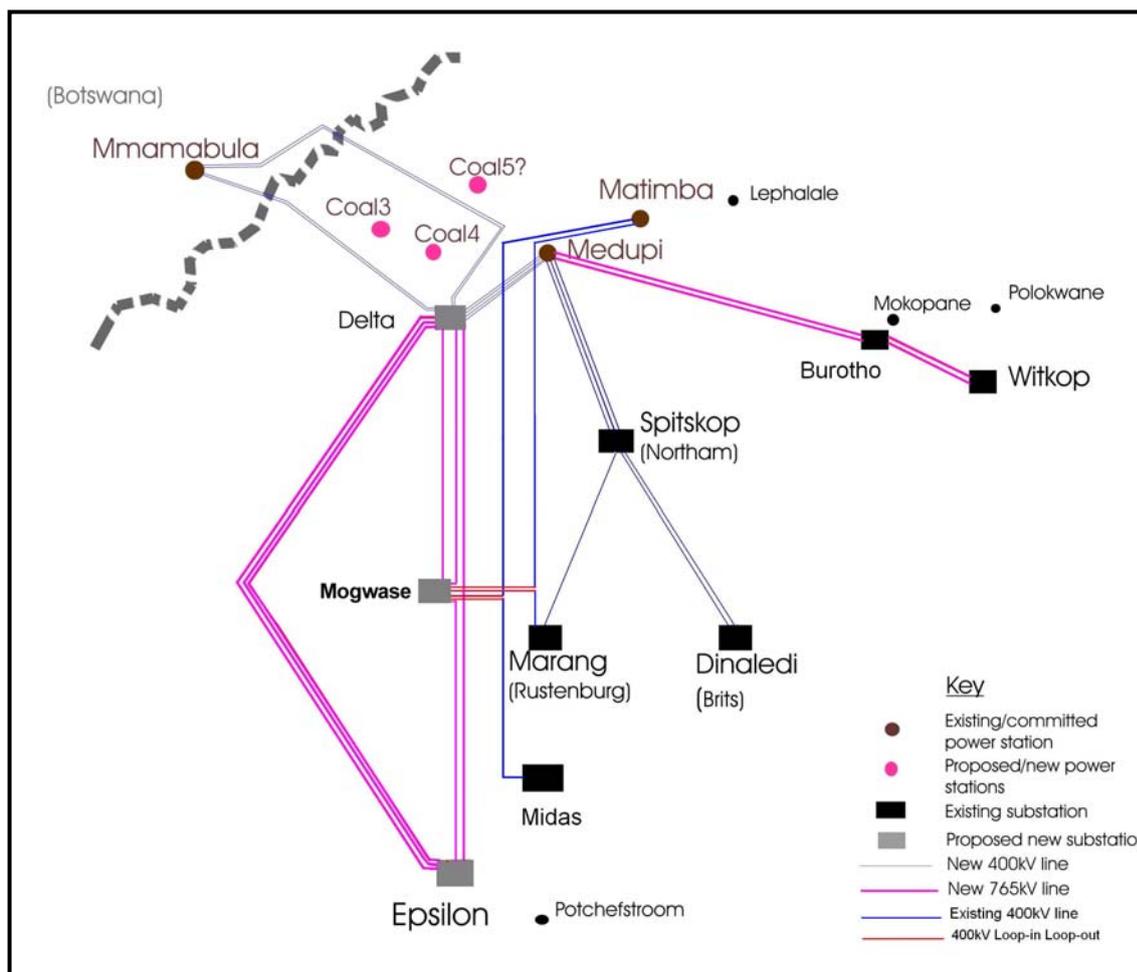


Figure 1: Schematic diagram of Medupi Integration Project

2.1. PROJECT DESCRIPTION

The proposed project is a component of the Medupi Integration Project. It will entail the construction of a Main Transmission Substation (MTS) called Ngwedi (previously Mogwase) in the Rustenburg area and associated transmission power lines. The massive coalfields in the Waterberg area situated in the Limpopo province are the new generation source that will support the Medupi Integration Project, which is Eskom's new focal for the expansion of its' generation, transmission and distribution capacity. The power generated from the Medupi Power Station currently under construction and the surplus capacity from Mmamabula Power Station in Botswana will augment Eskom's generation capacity.

An integrated power line corridor network comprising of 6 x 765kV transmission power lines from Delta (Masa) substation to Epsilon (Selomo) substation, supplemented by 3 x 400kV power lines to Rustenburg and Brits, 2 x 400kV power lines to Polokwane and the existing 400kV network will transmit the generated power to the various load centres spread throughout the country. The 6x765kV transmission power lines from Delta (Masa) substation to Epsilon (Selomo) substation are to run in two corridors (Corridor CB_3 and Corridor D) of 3 lines each. The proposed Ngwedi substation will be supplied from one of these two corridors.

2.2. PROJECT LOCATION

The study area is situated in the North West province in Rustenburg, specifically in the surrounding environs of Sun City. Three Local Municipalities (LM) namely Rustenburg, Moses Kotane and Kgetlengrivier will be affected by the proposed project. The proposed substation sites are situated in Rustenburg LM whilst the corridors traverse through all three LMs. See Figure 2 for the locality map.

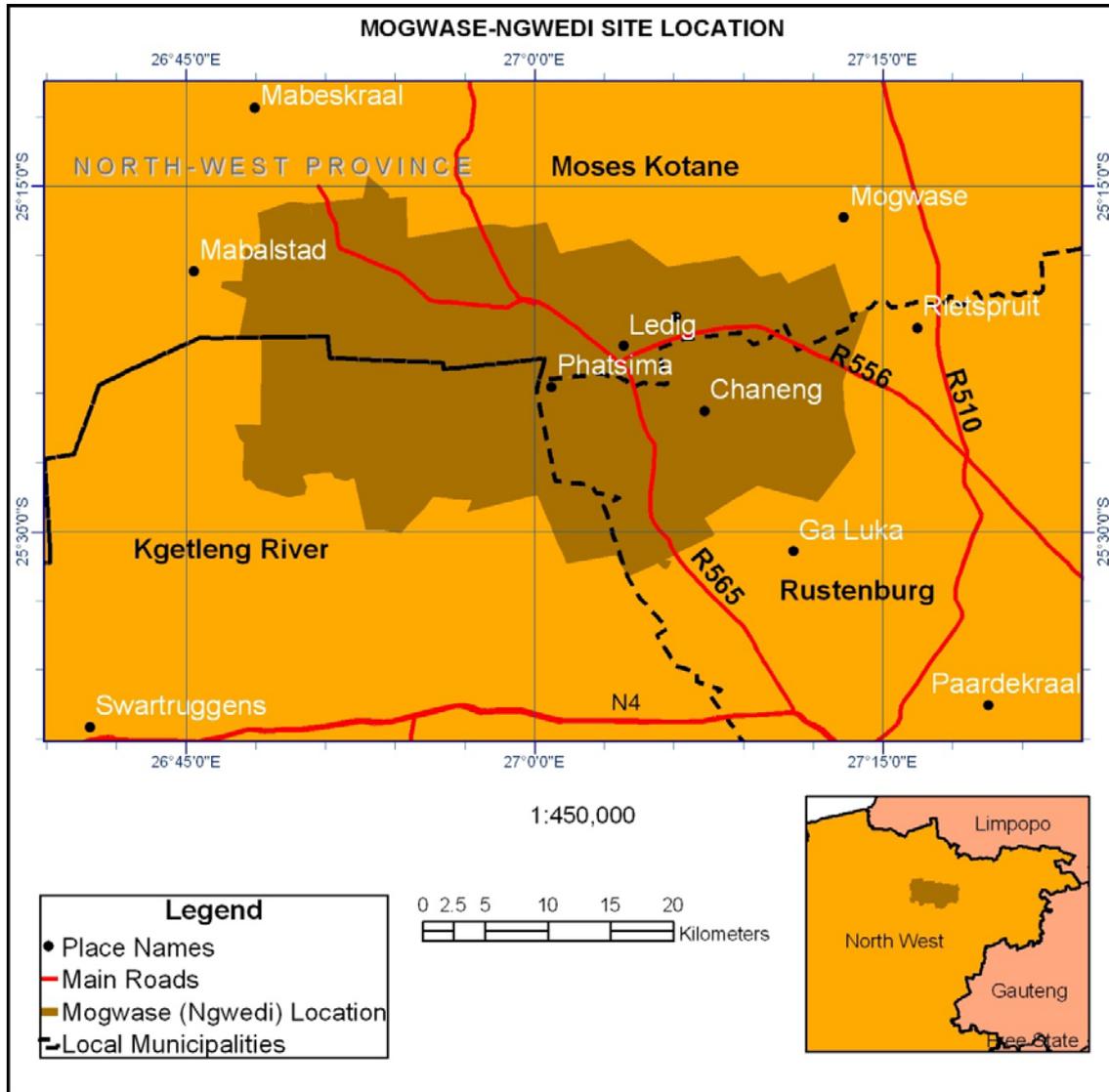


Figure 2: Locality Map

3. HOW TO USE THIS DOCUMENT

This section sets out the basic steps in using this document; it will allow the reader the opportunity to understand the prerequisite requirements that should be adopted as governing rules and the contents of the document.

Firstly, it should be understood that the onus is on Eskom as the project proponent and as the landowner to ensure the correct and timely implementation of the EMP at all prescribed project phases. The administrative structure outlined herein spells out the key players to be involved in the implementation of the EMP and their specific roles and responsibilities. Eskom personnel will be responsible for effecting some of the activities whilst others will be outsourced to external parties such as Contractor and/ or Sub- contractors.

This document comprises of three key chapters namely:

Legislative Framework: presents a summary of pieces of legislative developed for the preservation and protection of various natural resources and more specifically, those that are applicable to the proposed project and its activities. These provide the basis for the enforcement of the EMP especially with regard to health, safety and environmental project related issues.

EIA Process and Key Environmental Issues: provides the necessary background information required for the understanding of the origination of the EMP, by way of providing a summary of the EIA process followed, the outcomes in terms of the identified pertinent environmental issues / impacts of which are accordingly addressed in the EMP.

Environmental Management Plan: outlines the measures and procedures that are to address the identified project related environmental impacts. The plan itself comprises of three sections namely:

- **Part 1: Roles and Responsibilities**, which outlines the duties of key persons involved in the management, supervision, implementation and auditing of the EMP implementation process.
- **Part 2: Requisites for EMP Implementation** specifies the requisite actions required for the successful implementation of the EMP.
- **Part 3: EMP Impact Tables** outlines the management action in terms of the measures and procedures required for the enhancement, mitigation, prevention or avoidance of determined environmental impacts.

4. LEGISLATIVE FRAMEWORK

4.1. CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA ACT, ACT NO. 108 OF 1996

States that every one has a right to an environment that is not harmful to their health and wellbeing and as such Eskom should conduct its business in a manner that does not result in environmental pollution and ecological degradation, that contributes to the conservation of cultural heritage and national economic and social development.

4.2. CONVENTION ON BIOLOGICAL DIVERSITY (CBD)

South Africa is party to the Convention of Biological Diversity which therefore binds all parties to comply with its stipulations. The Convention aims for the conservation and rehabilitation of biological resources ascribed as important conservation species. In addition, rehabilitation and restoration of degraded ecosystems through the development and implementation of plans or other management strategies is also prescribed. States party to this Convention are also required to develop and maintain legislation and / or regulations for the conservation and protection of threatened species or populations.

4.3. BIODIVERSITY ACT, ACT NO. 10 OF 2004

The Act serves to enforce the conditions of the Convention on Biological Diversity on a national scale by providing a framework for the conservation and management of biodiversity, through a number of strategies including the establishment of regulatory bodies (South African Biodiversity Institute (SANBI)), the development and implementation of various tools (biodiversity management plans and agreements). The Act also calls for the listing of threatened and / or protected ecosystems, species threatened or in need of national protection and of alien and invasive species to be controlled.

Eskom should therefore align the proposed power lines in a manner that avoids threatened or protected ecosystems and should not use any plants categorised as either a weed or an invasive plant in undertaking rehabilitative work. Protected species found within the servitude and individual tower positions are to be rescued and relocated to another location before the bush clearing exercise can commence.

4.4. AIR QUALITY ACT, No. 20 OF 2004

Provides for the prevention of atmospheric pollution through a number of measures including the establishment of administrative institutions and bodies with powers to develop legislation, regulations, standards for the control, monitoring and abatement of noxious or offensive gases, smoke, vehicular smoke, dust, controlled fuels and other emitters. As such control measures to address such polluters have to be incorporated into the EMP and are to be implemented according during the appropriate project phases.

4.5. CONSERVATION OF AGRICULTURAL RESOURCES ACT, No. 43 OF 1983

The Act aims for the conservation of soil, water sources and vegetation through a number of control measures including the development of regulations for soil conservation, control of weeds and bush encroachment. The Act also prescribes a list of measures for combating the spread of weeds and invader plants. Therefore in undertaking rehabilitative work Eskom or its Contractors or Sub-contractors should not use plants that are categorised as either a weed or an invasive plant.

4.6. FENCING ACT, NO. 31 OF 1963 (AS AMENDED BY ACT 108 OF 1991)

The Act regulates matters with regard to boundary fences of farms and makes provisions for the erection, alteration, maintenance, damage and repair of. It also spells rights of owners or lease holders where the land is subject to certain servitudes and outlines procedures for settling of disputes due to wilful actions including leaving gates opened and unauthorised entry to private land. As, Eskom will have a servitude that will cross through a number of properties, the applicable provisions of the Act have been incorporated accordingly in the EMP tables.

4.7. HEALTH ACT, NO. 63 OF 1977

Promotes good health by providing the framework for rendering health services, through defining powers and duties of health personnel and the establishment of regulations pertaining to notifiable medical conditions, communicable diseases, conditions dangerous to health, food and milk, certain farming operations, water for human use and consumption. The regulations that are applicable to activities to be undertaken by Eskom are those governing the generation of nuisances and those relating to rubbish, night – soil, sewage, waste and reclaimed products.

4.8. OCCUPATIONAL HEALTH AND SAFETY AMENDMENT ACT, NO 181 OF 1998

The Act makes provision for the health and safety of persons at work and persons that are not employees against any hazards that may arise out of or in connection with the work related activities. The act has provisions regarding the maintenance and operation of plant and machinery, working conditions to the use of protective clothing and equipment. The Act therefore informs the EMP on measures and procedures to be incorporated regarding the safety and health of the persons on site.

4.9. NATIONAL ENVIRONMENTAL MANAGEMENT ACT, NO 107 OF 1998

This Act provides the legislative framework through which strategic environmental management goals and objectives are to be implemented. It is the basis through which the Environmental Impact Assessment and the Environmental Management Plan were developed and it also provides the mandate for the enforcement of the implementation of the EMP.

4.10. NATIONAL HERITAGE RESOURCES ACT, NO 25 OF 1999.

This Act provides for the protection of heritage resources, which according to the Act is a place, or an object of cultural significance, which includes a place or object of aesthetic, architectural, historical, scientific, social, spiritual, linguistic and technological value. A permit is required for the disturbance, removal or destruction of any heritage site, archaeological site or paleontological site, burial ground, grave, or any public monument or memorial that may be encountered during the construction phase. All excavation related activities are to cease if any artefacts exposed during this exercise, in addition an Archaeologist must be called to site for inspection and possible rescue. Under no circumstances is any artefact to be destroyed or removed without the consent of the South African Heritage Resource Agency.

4.11. NATIONAL WATER ACT, NO 36 OF 1998.

The purpose of the Act is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in responsible ways. The Act also calls for Eskom to adopt actions that will prevent and remedy the effects of pollution generated by its operations and those that will address emergency incidences. Activities that might be relevant to the construction of power lines

³ Republic of South Africa, National Environmental Management Act (107 of 1998). Department of Environmental Affairs and Tourism.

are according to this Act, works to riverbanks, temporary crossings, impoundments, abstractions and discharges of pollutants including soil.

4.12. DWAF MINIMUM REQUIREMENTS FOR THE HANDLING, CLASSIFICATION AND DISPOSAL OF HAZARDOUS WASTE 1998

- Duty of Care Principle
- Polluter Pays Principle
- Precautionary Principle

4.13. NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT, No 59 OF 2008

The aim of the Act is to consolidate waste management in South Africa. It requires the establishment of a national waste management strategy with norms and standards for waste management. The strategy will also include provincial norms and standards for the classification of waste, waste service delivery and tariffs for the services. The Act requires Eskom to classify the waste that will be generated from the different phases of this project. It also requires Eskom to set up methods for reduction, re-use, recycling and recovery of the waste. Specific requirements need to be followed for the storage, collection and transportation of waste and the use of authorised methods for the treatment, processing and disposal of the waste. Some of the activities that will require a waste management license include facilities for the storage, transfer, recycling, recovery, treatment and disposal of waste on land.

5. PROJECT IMPLEMENTATION PROCESS

The overall project will be implemented through a series of 19 major activities, namely:

- i. **Environmental Impact Assessment:** this EMP is submitted together with the EIR and will be refined through development of specific EMP once an RoA is issued by the DEA.
- ii. **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. Agreements on matters such as costs of required land, placement of the tower line with respective properties, matters relating access, maintenance are arrived at between the Negotiator and respective landowners. All land and land rights acquired for the purpose of this project are to be registered at the Deeds Office as either title deeds for land or servitudes for rights of access.
- iii. **Land survey to determine exact placement of the line towers:** Once Eskom has successfully secured agreements to register the servitude with the respective landowners the Surveyors will prepare a preliminary route alignment profile. The Design engineers will use this profile to finalise the power line specifications. Thereafter the profiles will be issued to the Environmental Assessment Practitioner (EAP) for the purpose of carrying out the Walk Through exercise.
- iv. **Walk Through Exercise:** The walk through is a pre- requisite activity for the design and negotiation process, whereby specialists are appointed to undertake detailed surveys of each of the proposed power line routes and tower positions as well as the substation site. The Specialist typically comprises of a botanist, archaeologist, avifauna and a social impact assessment specialists. The two primary objectives for the investigations will be to identify sensitive area in the respective fields of specialisation and to recommend local deviations to avoid these areas. These surveys are normally undertaken in the summer and winter seasons to ascertain occurrence of red data species.
- v. **Design work to produce the profiles for construction:** The information generated from the walk through exercise will be issued to the design engineers who will in turn use it to prepare the final profile of the power lines and substation site.
- vi. **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. Once the land has been secured it is recommended that an environmental scan of the site is carried out by an ECO or qualified person before the actual work to prepare the site is undertaken.
- vii. **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.
- viii. **Servitude gate installation to facilitate access to the servitude:** Gates will be installed at the agreed upon points of entry at each property.
- ix. **Bush clearing: to facilitate access, construction and the safe operation of the line:** A strip of vegetation cover has to be removed to facilitate access, construction and the safe operation of the line. However, it is not necessary for the entire servitude to be cleared off the vegetation cover. The following will be required before bush clearing can start:
 - Heritage Permits from South African Heritage Resources Agency (SAHRA)

- Biodiversity Licence to Remove or Destroy Protected Trees from the Department of Agriculture, Forestry and Fisheries; and
- Biodiversity Permits from provincial departments of Water Affairs
- A Water Use Licence Application (WULA) from the Department of Water Affairs (DWA)

x. Establishment of access roads on the servitude.

xi. Transportation of equipment, materials and personnel.

xii. 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. A Water Use Licence Application (WULA) from the Department of Water Affairs (DWA) will be required prior to installation of foundations.

xiii. Tower assembly and erection: The towers are brought to site in sections and assembled before they are erected into position using cranes.

xiv. Conductor stringing and regulation: The conductor cables are pulled up and strung from one tower to the next through the use of a pulley. Sag and tensions are checked for in order to ensure that the minimum ground clearance heights are achieved.

xv. Final inspection of the line and substation: Once the construction of power lines and substation is completed it will be tested to ensure it functions correctly.

xvi. Rehabilitation of disturbed areas: Excess material and equipment are to be removed from the project area and the campsite. The disturbed environment has to be returned to a condition close to its original state. Ideally, all restoration work should be carried out as an on-going process during the construction phase.

xvii. 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.

xviii. 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 will hand over the line to regional division for operation and maintenance.

xix. 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.

Table 1: Schedule of Activities

ACTIVITIES	PROPOSED PROGRAMME	
	START	FINISH
Environmental Impact Assessment	19/07/09	
Negotiations for the servitude – Landowners, their contact details and their special conditions are listed under section 5 of this document.		
Land survey to determine the exact routing of the line and tower placement.		
Pegging of bend tower by a Transmission surveyor.		
Profiling work to produce the profiles for construction		
Establishment of camp sites for the Contractors' workforce. An approved (by the relevant Government authorities) site Camp EMP will be used to guide the establishment of the camp site		
Negotiations with landowners for access roads to the servitude.		
Servitude gate installation to facilitate access to the servitude.		
Vegetation clearing to facilitate access, construction and the safe operation of the line.		
Establishing of access roads on the servitude where required as per design parameters in TRMSCAAC1 rev 3.		
Pegging of tower positions for construction by the contractor.		
Transportation of equipment, materials and personnel to site and stores.		
Excavation and casting of concrete for foundations for the towers.		
Tower assembly and erection.		
Conductor stringing and regulation.		
Taking over the line from the contractor for commissioning.		
Final inspection of the line, commissioning and hand over to		

ACTIVITIES	PROPOSED PROGRAMME	
	START	FINISH
the Grid Line and Servitude Manager for operation.		
Rehabilitation of disturbed areas.		
Signing off of all Landowners upon completion of the construction and rehabilitation		
Handing over and taking over of the servitude by the Grid Environmental Manager.		

The final inspection for the release of the Contractors' guarantee takes place a year after completion of the project.

6. KEY ENVIRONMENTAL ISSUES

6.1. BIOPHYSICAL

The North West Province has climatic conditions that vary from arid conditions in the west, semi- arid in the central regions to temperate in the east. The average rainfall is between 300mm to 700mm annually, however the study area is situated in the eastern parts of the province and receives an average over 600mm rainfall per annum. The majority of the rainfall occurs in the summer months peak period occurs early summer with most rainfall occurring in December. Summers are typically hot whilst winters are mild to cold. The temperatures can reach as high as 40°C although typically daily average temperatures of 32°C are common in summer. The average daily minimum temperatures in July are 9°C. Seasonal fluctuations in mean temperatures between the warmest and the coldest months range between 12°C and 15°C.

Land use patterns in the eastern parts of the province are driven mainly by the mining opportunities and by agricultural development, which required towns and cities as service centres. The land use in the study area is a mixture of different activities, which include Agriculture Mining, Conservation and Tourism and Built – up areas. The developments in the area are driven by different stakeholders namely the private landowners, mines, municipal, and tribal authorities.

6.2. AVIFAUNA

Open grassland patches, agricultural land and water bodies such as rivers, dams, and wetlands are the main micro – habitats for avifauna within the study area. Birds that use open grassland and agricultural lands within the study area includes Secretary birds, Blue Cranes, Lanner Falcon, Storks and Kohraans. Of the waterbirds likely to be found in the study area include the African – March Harrier, Yellow – billed Stork, Greater and Lesser Flamingo. Of these species the African – March Harrier, Blue Cranes, the two Flamingo species, Secretary birds and various species of Storks are Red Data species.

6.3. BIODIVERSITY

The vegetation types in the study area include Zeerust Thornveld (Vulnerable) and Gold Reef Mountain Bushveld (Least Threatened). The Elands and Leragane Rivers are present within close proximity to the proposed substation sites and some of the turn-in lines. The study also has several perennial rivers. Protected trees species known to occur in the region of the study area include *Boscia albitrunca* (Shepard's Tree) and *Erythrophysa transvaalensis* (Transvaal Red Balloon).

6.4. HERITAGE

Historically the first recorded people that settled in and around the Pilanesberg Nature Reserve area are the Batlhako, who were later joined by the Bakgatla Ba kgafela. Further south were the Bafokeng who ruled the area north of Rustenburg with the northern border demarcated by Elands River. The Batlokwa were situated south west of the Pilanesberg Mountains.

Known archaeological sites include but are not limited to large Iron Age settlement known as Marothodi, which is a Batlokwa capital and the large Late Iron Age (Sotho-Tswana) settlements in and around Pilwe Hill. Both these sites are situated between Corridor 1 and 2. There are two late Iron Age sites known as Early Moloko sites. These are located on farm Frischgewaagd 96 JQ near Substation site A.

6.5. SOCIAL ENVIRONMENT

The total population of Bojanala Platinum District Municipality as per the 2001 census was 1 185 325. Rustenburg LM had approximately 395 538 (33.37%) people, Moses Kotane LM with 236 840 people

(19.98%) and Kgetlengrivier LM with the least number of people of approximately 36 476 (3.08%). In terms of the ethnic breakdown, the Black African population account for 92.23%, with the White population at 6.92% and the Coloured, Indian and Asian accounting for less than 1% of the population. The majority of the people speak Setswana.

The land is owned by various stakeholders which include the Government, mining houses, private landowners and the tribal authorities such as the Royal Bafokeng Nation, Bakubung Ba Ratheo, Bapo II Ba Mogale, Bakgatla Ba kgafela, Baphalane and the Bakwena Ba Modimosana Ba Mmatau.

The main economic drivers in the province are mining, tourism, community services, trade and agriculture. Mining is the dominant sector of employment in both Rustenburg LM followed by the wholesale and retail sale sector. In the Moses Kotane LM mining and quarrying are the dominant employment sector followed by the community, social and personal services sector. The dominant sector providing employment in Kgetlengrivier is Agriculture, focused in the production of sunflower, groundnuts, maize, wheat and in animal rearing. Mining opportunities include platinum, gold, diamonds, nickel and slate.

6.6. VISUAL

In determining the quality of the visual resource, both the objective and the subjective or aesthetic factors associated with the landscape are considered. Many landscapes can be said to have a strong sense of place, regardless of whether they are considered to be scenically beautiful but where landscape quality, aesthetic value and a strong sense of place coincide - the visual resource or perceived value of the landscape is considered to be very high.

The landscape can be divided into basic landscape character types, each with its own set of physical, visual and aesthetic characteristics. Scenic quality ratings were assigned to each of the landscape units. The *highest* value is assigned to the mountains, main river (Elands River) and the Pilanesberg National Park. The smaller rivers and associated streams (tributaries) as well as the dams are also rated high. The combination of these natural features which is characteristic of the study site and surrounding areas create a more natural and rural environment with a strong sense of place. This scenic quality and sense of place is however diminished by activities with a lower scenic quality such as the towns / townships, infrastructure, mining activities and power lines. The agricultural activities / cultivated lands and farmsteads have a moderate scenic quality.

The landscape types with the lowest scenic quality rating are the existing infrastructure, the R556 and R565, other local and dirt roads and mining related activities and infrastructure. The towns / townships have a moderate to low scenic quality as these areas do not contribute to a higher visual resource quality but actually have more of a negative impact on the environment through activities such as the removal of plants, erosion and overgrazing. It is clear that they do not contribute to the aesthetic value of the area.

6.7. FLOOD RISK

Floodlines report will provide an assessment based on risk by flooding, and potential impact on flood lines for the project. The risk assessment has been done utilising indicative floodlines; developed using a catchment based hydrological assessment, and hydraulic surveys at selected points on the watercourse. Detailed hydraulic analysis of river reaches has not been done. Therefore, it must be noted that the floodlines developed for this report are for planning purposes only, and should not be used for design functions. This level of assessment is seen as appropriate for assessment of potential impacts, but additional detailed hydraulic analysis may be required at critical locations during the design phase of the power lines or substation.

6.8. SUMMARY OF KEY ENVIRONMENTAL IMPACTS – EIR

The key environmental impacts as identified by the specialists during the detailed EIA phase are presented as follows:

6.8.1. Specialist Studies

Ecological Aspects

- Destruction of threatened species and habitat
- Destruction of sensitive habitats and areas of high biodiversity
- Destruction of pristine habitat type
- Changes to habitat diversity

Avifauna Aspects

- Bird collision with earth wire during operations
- Habitat disturbance during construction
- Electrocutions

Heritage Aspects

- Exposure of heritage site (e.g. graves) during bush-clearing
- Destruction of heritage sites during construction and maintenance

Socio - economic Aspects

- Human settlement close to or within the servitude, (e.g. houses)
- Agricultural areas (mostly cultivated and irrigated land);
- Other structures located close to or within the servitude (e.g. landing strip)
- Possible settlement encroachment on the servitude area.
- Security
- Access to farms
- Damage to property
- Interaction of contractor staff with local communities
- Servitude maintenance.

Visual

- Visual Intrusion
- Visibility
- Visual Exposure
- Impacts of the Visual Environment and Sense of place.

6.8.2. Public Consultations

An overview of key issues raised by the stakeholders include:

- Maintenance of existing and new power lines
- Rehabilitation of disturbed sites
- Payments for re-location of structures (runway, dams and pans)
- Negotiation process, Servitude payments
- Non payment of previous servitudes
- Contracts for maintenance of servitude
- Impact of power lines on development
- Compensation for lose of income
- Impact of transmission lines on properties and the area in total

6.8.3. Specific Condition for Site Specific Construction EMP

The EMP is expected to cover the following aspects:

- Demarcation and monitoring of all sensitive area within the final negotiated route.
- Determination of the criteria to be used for the placement of the construction camp and material storage sites
- Protection of riparian and other indigenous vegetation.
- Protection of raptors.
- Safety and Security of landowners and their property.
- Preservation and Protection of identified Heritage resources.
- Carry out search, rescue and relocation of young individual protected plant species.
- Protection of wetlands found in close proximity of the negotiate route alignment. The exercise is to be proceeded by wetland de- lineation study to be carried out by wetland specialist.
- Measures for the control and management of:
 - Waste.
 - Water.
 - Ablution and housing facilities.
 - Erosion.
 - Influx of Job seekers.
- Measures to monitor and maintain:
 - Access roads
 - Traffic
- Measures for the containment and rehabilitation of:
 - Disturbed areas

- Hazardous materials spills

6.8.4. Specific Conditions for Site Specific Operational EMP

The EMP should include measures aimed at:

- Controlling erosion.
- Controlling invasive plant species and declared weeds.
- Protecting indigenous fauna and flora.
- Preservation and Protection of heritage resources.

6.9. TECHNICAL SPECIFICATIONS OF POWER LINES

6.9.1. Substation Infrastructure

Ngwedi substation is a 400/132kV step-down substation that will transform the 400kV to 132kV and it therefore link Ngwedi to the existing 132kV distribution network in the area. The technical details regarding the substation are as follows:

- The footprint size of the substation is 600m x 600m.
- The substation will initially accommodate 2x 500MVA, 400/132kV transformers.
- The initial installed capacity of the substation will be 1000MW.
- The substation yard will be fenced and secured.
- A Telecommunication tower will be 30m high.

6.9.2. 765kV Transmission Turn – ins

The technical details regarding the 765kV power lines are as follows:

- Servitude size for 1x 765kV power line = 80m
- Height of 1x 765kV power line = up to 55m
- Minimum conductor clearance = 10.4m
- Span length between towers = between 300 - 500m
- Servitude size for 3x 765kV power lines = minimum 240m

6.9.3. 400kV Transmission Turn-ins

The technical details regarding the 400kV line-in-line-out power lines are as follows:

- Single line servitude size is 55m;
- Towers are up to 38m in height.
- Distance between towers is between 350 and 500m, depending on terrain and route angles.
- Minimum conductor clearance is 8.1m, above ground.

Tower design for the 400kV and 765kV lines are most probably going to be the Guyed-V design or Cross-Rope suspension designs.

7. THE ENVIRONMENTAL MANAGEMENT PLAN

The overall broad structure of the Environmental Management Plan comprises of three sections herewith detailed below.

7.1. PART 1: ADMINISTRATIVE STRUCTURE (ROLES AND RESPONSIBILITIES)

The administrative structure provides an outline of the key personnel to be involved in the implementation of the EMP and their respective responsibilities. This section is an important component of the EMP as it defines matters that will ensure that there is accountability. Although, Eskom will not be involved with the day to day operations, as the project proponent, it has the overall responsibility for the development and implementation of the EMP and is therefore accountable for ensuring that any conditions stipulated by the Department of Environmental Affairs (DEA) are satisfied.

7.1.1. DEPARTMENT OF ENVIRONMENTAL AFFAIRS (DEA)

The Department of Environmental Affairs (DEA) as the legally mandated environmental authority in the country has a crucial role in the assessment and enforcement of this EMP. The roles of the authority are categorised as follows:

- **Review the draft EMP:** The department will review the draft EMP to assess its' adequacy. DEA can either approve the EMP with or without conditions, or request resubmission of the EMP thereby asking the Environmental Assessment Practitioner (EAP) to address certain issues and in the worst case scenario can reject the submission all together.
- **Monitor Environmental Performance:** DEA will request from Eskom periodic monitoring and audit reports to assess the level of environmental performance on site, issues regarding compliance and none compliance and matters relating to conditions of the ROA, permitting / licensing conditions by other departments.
- **Site Audits:** The authorities may perform random controls to check compliance. In case of persistent non-compliance, Eskom will be required to provide an action plan with corrective measures and have it approved by the authorities.

7.1.2. PROJECT MANAGER

Eskom must appoint a Project Manager who will represent the Clients' interests in the implementation of the entire project and this person will bear the ultimate responsibility for managing the site operations including overseeing and monitoring environmental performance. The Project Manager will ensure the implementation of this EMP through the supervision of the Environmental Control Officer (ECO, see below).

7.1.3. THE ESKOM ENVIRONMENTAL CONTROL OFFICER

The Environmental Control Officer (ECO) will be the representative for Eskom on site and will have direct responsibility of monitoring and ensuring that the requirements of the EMP are carried out accordingly. This individual is therefore required to have the appropriate training and experience. Ideally, the ECO should be appointed one month before the start of construction in order to familiarise themselves with the job requirements including reviewing the EIA and EMP for the project, preparing training material, compilation of site observations and audits record sheets. The ECO will establish audit procedures, determine the frequency of audits, undertake the audits and maintain records of audits. The ECO must remain employed until all rehabilitation measures as required are completed and the site is handed over to Eskom by the contractor for operation.

The ECO is therefore the link between Eskom's' Project Manager and the Contractor / Subcontractor. He/ She will on a periodic basis provide feedback on progress to the Project Manager and will issue directives regarding non – compliance to the respective parties, via the agreed upon channels as stated in the contract between Eskom and the party in question. In addition, the ECO may also have to work in close liaison with any CECO that may be hired directly by the principal contractor.

The duties of the ECO will include but will not be limited to the following:

- Provide induction training of all personnel about the EMP and its implementation.
- Conduct regular inspections in order to monitoring the performance of the Contractor (and Sub-contractors) and ensuring compliance with the EMP and associated method statements.
- To document current site activities and the monitoring including matters relating to non-conformance. All documents should be signed by relevant parties to make them authentic and should be kept on site and available for monitoring purposes. In summary the following documents are to be kept on site:
 - o Site daily dairy.
 - o Complaints register.
 - o Records of all remediation/rehabilitation activities.
 - o Copies of bi-weekly reports to the Transmission Engineering Environmental Advisor for auditing purposes.
 - o Copy of the Environmental Management Programme.
 - o Minutes of site meetings including discussions on environmental issues.
- Provide feedback on progress to the Project Manager of an agreed upon timeframes.
- Hold regular site meetings with relevant Contractor representatives to discuss safety, health and environment matters.
- In collaboration with the CELO to maintain and monitor the stakeholder liaison register, keeping a record of complaints, responses to complaints, response times etc. All matters with landowners and other third parties will be addressed directly by an Eskom representative, typically the ECO.
- Validating the regular site reports prepared by the Contractor;
- Checking the Contractor's record of environmental incidents (spills, impacts, legal transgressions etc) as well as corrective and preventive actions taken;
- Checking the public complaints register in which all complaints are recorded, as well as action taken;
- Issuing of site instructions to the Contractor for corrective actions required;
- Conducting regular audits to ensure that the system for implementing the EMP is operating effectively.

7.1.4. CONTRACTOR

Eskom following a tender process will appoint a principal Contractor for the construction of the transmission power lines. Ideally in order to facilitate commitment to environmental performance certain prerequisites are required; for example the request for proposals should require that tenderers

to show their approach and budget breakdown for the implementation of the EMP and in addition, the contract to the appointed Contractor should include clauses that will bind the Contractor to this objective and should also include the EMP document.

The Contractor will be responsible for the day-to-day operations and therefore directly involved in the implementation of the measures and procedures in the EMP. The Contractor will assign key people with positions of authority to supervise various aspects of the implementation activities that will be responsible for signing off tasks that have been completed and monitoring progress.

It is increasingly common for developments of this nature for the principal Contractor to engage a full time environmental officer who will be expected to work closely with these supervisory staff and Eskom's ECO.

7.1.5. CONTRACTOR ENVIRONMENTAL LIAISON OFFICER (CELO)

The Contractor Environmental Liaison Officer (CELO) is the Contractor's environmental representative on site. This individual has to ensure that the EMP and the legal requirements are met by the contractor. The individual will conduct this by monitoring and auditing the EMP implementation process on behalf of the Contractor.

In addition to reporting on progress, as part of the continued public consultation process, the CELO will also be responsible for liaising with various stakeholders on matters relating to the project and the environment. This process will be undertaken to afford stakeholders an opportunity to define and shape the project by way of the issues raised and where there is merit, their input should be taken into account and incorporated, as they have local knowledge, understand the social norms and dynamics. This may only lead to improvements including that of relations between Eskom, the Contractor and stakeholders.

The identification of relevant stakeholders can in part be determined from the database compiled by the Environmental Assessment Practitioner (EAP) during the EIA process. However some of the key stakeholders of which can be contacted on a periodic basis include:

- **Permitting and Licensing Authorities:** This may include both central and local government institutions with legislative mandates governing some activities likely to impact on various components of the environment or the use of some natural resources. They often have mandates to issue approvals, permits or licenses.
- **Service providers:** It is important that other service providers particularly those with infrastructure within the project area are kept abreast about the project and where necessary establish collaborations to ensure that the transmission lines do not result in the destruction of existing infrastructure or obstruct the construction of other infrastructure that is already planned and in the pipeline.
- **Local Stakeholders:** This includes persons within the project area and those who are most likely to be affected given their proximity. The important stakeholders may include tribal authorities, farmers associations, landowners and local communities. Communication with these parties can be conducted in the form of regular meetings, newsletters or notices.

7.2. PART 2: PRE- REQUISITES FOR EMP IMPLEMENTATION

7.2.1. Tender and Contractual Requirements

Tender Process: Eskom to incorporate the EMP into the Tender Bid Documents to allow for the bidding contractors to submit a proposal that incorporates a method statement for the implementation of the EMP and costing for the exercise.

Contractual Obligations: Contracts by Eskom to either the Contractor or Sub – Contractors has to contain contractual obligations that obliges these parties to implement the EMP and which also spells out possible ramifications for non-adherence.

Appendix 8 is an example of a pro-forma for Eskom and the Contractor's Project Managers to sign for the purpose of ensuring the implementation of the EMP.

7.2.2. Induction and Training

As stated above the ECO will be responsible for conducting the environmental induction-training course so as to equip the site employees with an understanding of Eskom's policies regarding safety, health and environmental issues. This includes the overall objective of the EMP and of their roles and responsibilities. Ideally this activity should be undertaken in the initial stages such that good practices are adopted from the onset.

Environmental training must include:

- A site induction
- Emergency response training
- Familiarisation with site environmental controls, and
- Specific environmental training for relevant employees e.g. requirements for installing erosion and sedimentation controls, conducting daily checks to maintain controls, cleaning up spills.
- Bring to attention of employee areas of environmental sensitivity and procedure with regard to these areas, for example, clearly demarcate, etc.

7.2.3. Monitoring and Auditing

An ECO will be responsible for conducting regular inspections and undertaking periodic audits and depending on observations made, the ECO may request the Contractor to address certain areas, suggest alternative measures or procedures to address certain problematic areas, request feedback on areas of non-conformance.

According to its mandate, DEA may in addition visit the project area to assess progress with regards to the implementation of the EMP implementation and to determine whether it has been undertaken according to planned arrangements. The DEA may also request an independent audit for cross checking and verification purposes.

7.2.4. Documentation and Reporting

The following **Key Performance Indicators** must be reported on by the ECO:

- Complaints received from affected parties and actions taken;
- Environmental incidents, such as oil spills, etc. and actions taken;
- Incidents possibly leading to litigation and legal contraventions; and
- Environmental damage that needs specialised rehabilitation measures to be taken.

Monthly environmental compliance reports are to be submitted to the Project Manager (appointed per project) with all information relating to environmental matters. This should be used to highlight issues such as achievements, areas of non-compliance, obstacles encountered, changes to the EMP etc.

7.2.5. Non-conformance Reporting Procedures

Complaints and non-conformances involving landowners and community must be reported to Eskom and copied to the DEA according to the following procedure:

Eskom should maintain the Complaints Register; this should be kept at an accessible location. The complainant has the right to request assistance from the security staff to complete the register. The complainant can also forward a copy of Complaint Registration to Eskom at:

Attention: The Information Officer

Eskom
Megawatt Park
Maxwell Drive
Sunninghill
Sandton

Postal Address:

Eskom
PO Box 1091
Johannesburg
2001

- The Complaint Registration Form will then be forwarded to the ECO. The ECO will forward completed Complaint Registration Forms to the relevant line function manager for appropriate action.
- The ECO will write to the complainant to –
 - Acknowledge receipt of the Complaint Registration Form within 5 working days; and
 - Advise the complainant of a target completion date.
 - Advise the complainant of the outcome in writing.
- Documentation, including investigation outcomes, will be placed on the confidential file held by the Project Manager.

7.2.6. EMP Review and Update

The EMP will be reviewed periodically as new information is made available, this includes

- New construction sites and sites under rehabilitation
- Changes in the activity
- New environmental issues
- Latest landowner liaison
- Inspections, audits and visits by authorities
- Major incidents

The extent and detail of the review of an EMP will need to be determined on a case-by-case basis. All the stakeholders identified could potentially participate in the review of the EMP.

7.3. PART 3: EMP TABLES

The tables are designed to address the environmental issues as identified by the EIA process and Walkthrough exercise whilst also incorporating the issues that come out of the activities undertaken in the respective project phases. Therefore prior to presenting the tables, this section provides a brief outline of the project phases taken into consideration for the EMP.

7.3.1. Pre- Construction Phase

It is assumed that the pre- construction phase will incorporate all those activities required for the preparation of the construction phase. Activities include the selection and establishment of the construction site, vegetation clearing at the campsite and storage facilities area.

7.3.2. Construction Phase

Most impacts to the environment are expected to occur in the Construction phase and as such much focus is given to the activities undertaken during this phase, associated environmental issues and proposed environmental controls which form key components of the EMP, however in addition the roles, responsibilities and lines of communication have to be clearly spelled out.

The following is a summary of key actions for this phase of the project:

- Construction camp location to be finalised and approved by ECO.
- Communicate summary of construction programme and list of responsible persons (with contact details) to the affected landowners and interested community. The EIA stakeholder database will provide an effective basis for this.
- Training and informing all persons with all persons active in the construction process is a vital aspect in the implementation of the EMP. Initiate environmental information sessions with all personnel and the Eskom ECO is to ensure all personnel sign off attendance of such sessions.
- Procedures for recording and documenting environmental incidents, decisions, an agreement with landowners, etc. is to be established by the ECO and agreed with the principle Contractor.
- Regular reviews of the content and implementation of the EMP are to be undertaken by the ECO. Update the EMP and supporting documentation as required.
- Rehabilitation is to run in parallel with construction activities and not left to the very end of construction. The ECO should oversee the integration of rehabilitation activities where reasonably possible.
- The Eskom should undertake monthly audits of the EMP implementation.
- Project Manager to undertake final inspections with ECO and Principal Contractor.
- ECO to finalise update of EMP documentation and handover to responsible officer for the Operations Phase.

7.3.3. Operational Phase

The operations phase will be important for ensuring the stabilisation of the construction sites and the success of the rehabilitation works, as well as the long-term stability of the environment around the infrastructure during the operation of the lines as well as maintenance of power lines and servitudes.

The key actions are summarised as follows:

- Establish responsible persons for this phase and communicate these (with contact details) to landowners and interested parties.
- Initiate environmental information sessions with all personnel and the Eskom ECO are to ensure all personnel sign off attendance of such sessions.
- Establish monitoring and reporting procedures for critical environmental aspects as prescribed by the latest version of the EMP. (Such aspects may include erosion and road maintenance, bird collisions, rehabilitation of grasslands, removal of invader species, etc.). Report to relevant authorities where appropriate.
- Oversee maintenance and any rehabilitation works.
- Update EMP as required.

7.3.4. Decommissioning Phase

The procedures for decommissioning are not well tested for power supply infrastructure in South Africa. However, it is reasonably assumed that the process will be similar to the reverse of the construction process, and the same procedures are therefore recommended. These should be reviewed prior to decommissioning.

7.4. EMP Table

The EMP table has been set up according to the different phase of the project. This is mainly:

- Pre-Construction
- Construction
- Operations and Decommissioning

PRE-CONSTRUCTION	CONSTRUCTION	OPERATION & DECOMMISSIONING
Grievance procedure	Vegetation clearing	Grievance procedure
Compensation claim assessment	Use of ablution facilities and kitchen facilities	Compensation claim assessment
Compensation procedure	Use of vehicles for material, equipment and personnel transportation	Compensation procedure
Vegetation clearing	Fuel Storage facilities	Use of vehicles for material, equipment and personnel transportation
Appoint contractor, labourers, etc.	Maintenance of Roads	Maintenance of Roads
Conduct Environmental Induction and Training	Set up batching plant Power line Crossing	Access Roads
Relocation of People	Road Crossing	Fire Control
Set up living quarters, site office, assembly area and workshops	River/ Wetland Crossing	Solid waste management
Vegetation Clearing	Gate installation	Liquid waste management
Use of ablution facilities and kitchen facilities	Access Roads	Rehabilitation of Servitudes
Use of vehicles for material, equipment and personnel transportation	Borrow pits for Construction (Roads/ Building) Material from Quarries	
Fuel Storage facilities	Tower construction	
Set up batching plant	Stringing Operation	
	Noise	
	Fire Control	
	Cultural Heritage & Archaeological Resources	
	Avifauna	
	Solid waste management	
	Liquid waste management	
	Liquid waste management at camp	
	Hazardous waste management	
	Rehabilitation of Servitudes	
	Landowner relations	

Table 2: EMP Impact Table

PRE CONSTRUCTION PHASE								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Es kom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
7.4.1 Grievance procedure	<ul style="list-style-type: none"> Establish grievance procedure Provide contact details of the developer 	<ul style="list-style-type: none"> Effective grievance process allows problem areas to be addressed timeously, avoiding project delays It is a good communication tool Required for IFC compliance 	NEMA	<p>Objective: Establish a procedure whereby the public can express concerns and be sure they are addressed.</p> <p>Mechanism:</p> <ul style="list-style-type: none"> Provide dedicated contact telephone number, fax, e-mail, address for receipt of complaints. Provide a site register (main camps) for “walk in” queries & complaints Ensure construction crews have a record book to receive queries & complaints from passers by. Ensure a minimum 48hrs for acknowledgement of complaint and a commitment on when full response will be sent to the complainant. 	<p>Number of complaints received.</p> <p><i>Note: few complaints may mean that the method of communication is not appropriate for the environment.</i></p>	Inspect complaints register	Project Manager, ECO	<ul style="list-style-type: none"> Must be operational from first site clearing to final rehabilitation Megawatt Park office grievance register to operate beyond final rehabilitation (min 6 months).
7.4.2 Compensation claim assessments	Fair assessment and compensation to loss of property	Claim for damages in remote areas are sometimes difficult to prove without evidence of “before” and “after” the event. This can lead to extended disputes.	Eskom's Compensation Policy	<p>Objective: To aid the assessment of claims and minimise disputes.</p> <p>Mechanism:</p> <ul style="list-style-type: none"> Photo records of facilities before construction activities take place. Record of movement of all construction crews and personnel. Photos of all repairs and rehabilitation. 	<p>Photo record, with date and GPS reference (<i>and duration of construction activities if they have started</i>) for all parts of the environment including:</p> <ul style="list-style-type: none"> Roads Boreholes Fences and farm gates Watercourses All other 3rd party facilities. 	<ul style="list-style-type: none"> Compensation agreements Assessment records <p>Photographic record of the site to be kept before construction activities commence. This will support any disputes relating to damages and will support the rehabilitation process after construction.</p>	<ul style="list-style-type: none"> ECO Project manager Camp manager 	<ul style="list-style-type: none"> Operational from first field visits until final rehabilitation.

PRE CONSTRUCTION PHASE								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
7.4.3 Compensation procedure	<ul style="list-style-type: none"> Implement compensation policy Ensure all land owners are compensated for damages as a result of construction processes 	<ul style="list-style-type: none"> Compensation to farmers, communities and affected parties may be due to destruction of property or loss of business. Disputes may develop Lack of evidence may complicate the assessment Relationship with public in general may be affected Project delays and even court cases may arise. 	Eskom's Compensation Policy	<p>Objective: To minimise the loss of assets due to the implementation of the project.</p> <p>Mechanism: Implement compensation policy.</p>	Record all claims and settlements.	<ul style="list-style-type: none"> Compensation agreements Assessment records Compensate policy 	<ul style="list-style-type: none"> Project Manager ECO 	To be operational from the time of the first works on the ground until a minimum of 6 months after completion of the rehabilitation programme
	<ul style="list-style-type: none"> Settling of all outstanding claims Signing off all landowners 	<ul style="list-style-type: none"> Landowners happy Servitude ready for handover to Grid 		<p>Objective: Minimize claims and litigation from landowners</p> <p>Mechanism:</p> <ul style="list-style-type: none"> All damage to commercial crops shall be recorded immediately. The ECO The date, time of damage, type of damage and reason for the damage shall be recorded in full to ensure the responsible party is held liable. All claims for compensation emanating from crop damage should be directed to the ECO for appraisal. The Contractor shall be held liable for all unnecessary damage to the environment and 	<ul style="list-style-type: none"> Successful completion of the contract with all landowners signing the release form six months after completion of the project All claims investigated and dealt with in one month No litigation due to unsettled claims 	Site visit	ECO Eskom Envir. Advisor / Negotiator	After completion

PRE CONSTRUCTION PHASE								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Es kom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
				<p>crops.</p> <ul style="list-style-type: none"> A register shall be kept of all complaints from Landowners. All claims shall be handled immediately to ensure timeous rectification / payment. 				
7.4.4 Appoint contractor, labourers, etc.	Employment	Temporary job creation		<p>Objective: Where appropriate and possible, preference must be given to the local communities in the awarding of contracts and other job opportunities. Establish the responsible individuals required as key personnel for the different aspects of the EMP</p> <p>Mechanism:</p> <ul style="list-style-type: none"> It will be a specific condition in the contractor's contracts that local labour be used wherever possible. All reasonable attempts will be made to appoint people from the local communities as temporary labourers for non-specialised tasks. 	Number of local people employed	Inspection of employment records	Construction Contractor and ECO	Weekly

PRE CONSTRUCTION PHASE								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Es kom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
7.4.5 Conduct Environmental Induction and Training	<ul style="list-style-type: none"> Employees, contractors and project team First Aid plan and fire safety procedure Emergency preparedness plan Accident procedure Site awareness 	<ul style="list-style-type: none"> Poor health and safety procedure Non-conformance with audits 	<ul style="list-style-type: none"> Eskom's SHE plan IFC guidelines OHSA HA AQA 	<p>Objective: To equip the site employees with Eskom's policy regarding health, safety and environment. To also conduct environmental induction training on the EMP requirements.</p> <p>Mechanism:</p> <ul style="list-style-type: none"> The EMP will be included in all contracts and signed by every contractor and sub-contractors All the employees will be trained on emergency preparedness Adopt good practices for safety, health and environmental issues 	<ul style="list-style-type: none"> Signed EMP pro-forma Signed list of all employees that attended the induction Defined Health & Safety plan 	Conduct audits on EMP implementation	<ul style="list-style-type: none"> ECO Project Manager 	Before commencement of the project
7.4.6 Relocation of People	Resettlement of people and their property	<ul style="list-style-type: none"> Displacement of people. Loss of property. 	<ul style="list-style-type: none"> Eskom's Resettlement policy International Finance Corporation (IFC) Guidelines 	<p>Objective: To manage the relocation by way of providing appropriate compensation and grievance procedures.</p> <p>Mechanism:</p> <ul style="list-style-type: none"> Residents should be sufficiently compensated and assisted with the relocation process. A formal grievance procedure should be implemented and communicated to affected parties. 	<ul style="list-style-type: none"> Number of people relocated Number of grievances Independent evaluator's report 	Inspection of resettlement agreements	<ul style="list-style-type: none"> Independent Evaluator Eskom's Negotiator Project Manager ECO 	Before commencement of the project
7.4.7 Set up living quarters, site office, assembly area and workshops	<ul style="list-style-type: none"> Bush clearing and levelling, Install Concrete floor Install Waste Collection Area, Cast concrete slabs for buildings & concrete bundled area for servicing vehicles Appointment of 	<ul style="list-style-type: none"> Camp site located in sensitive areas Indiscriminate environmental degradation Damage to protected / endangered vegetation Damage to topsoil / waste concrete 	<ul style="list-style-type: none"> NEMA BDA CARA LRA SDA CTB 	<p>Objective: To minimise environmental degradation and social disruptions.</p> <p>Mechanism:</p> <ul style="list-style-type: none"> Environmental Scan to be conducted on the identified site. Additional specialist studies may be identified by ECO. Preparation of plan showing site alternatives and environmental sensitivities. Topsoil must be conserved and stockpiled for rehabilitation 	Environmental Management Plan for the Scan.	<ul style="list-style-type: none"> Report on all NCRs identified Perform Spot Audits regularly Conduct final audit before site handover to the asset owner 	<ul style="list-style-type: none"> Site Operations Manager ECO 	<ul style="list-style-type: none"> Before ground works start to establish new camp Specialist studies may be season sensitive, therefore allow

PRE CONSTRUCTION PHASE								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Es kom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
	contractors labourers	<ul style="list-style-type: none"> Compacting of ground 		<ul style="list-style-type: none"> Minimise scarring of the soil surface and land features Minimise disturbance and loss of topsoil Rehabilitate all disturbed areas Minimise damage to vegetation Minimise possibility of erosion due to removal of vegetation Disturbed areas must be rehabilitated immediately to prevent soil erosion Site establishment shall take place in an orderly manner and all amenities shall be installed at Camp sites before the main workforce move onto site. The Contractor camp shall have the necessary ablution facilities with chemical toilets where such facilities are not available at commencement of construction. The Contractor shall supply a wastewater management system that will comply with legal requirements and be acceptable to Eskom. 				adequate planning
				<ul style="list-style-type: none"> Location of construction camp will be negotiated with the affected landowner prior to occupation. Camp site will be fenced off and kept locked at all times <p>Compacted ground shall be rehabilitated by ripping to a minimum depth of 600mm</p>				
7.4.8 Vegetation Clearing	<ul style="list-style-type: none"> Clearing of vegetation, especially protected species 	<ul style="list-style-type: none"> Unnecessary destruction of sensitive species, habitats and ecosystems Soil erosion 	BDA NHRA ROD	<p>Objective:</p> <ul style="list-style-type: none"> To minimise the loss of biodiversity through restricting the removal of vegetation to the footprint of the development. Keep servitude as natural looking as possible Minimise interference by vegetation to flow of electricity Minimise possibility of erosion due to removal of vegetation Eradication of alien invader and densifier species that cause a fire hazard 	<ul style="list-style-type: none"> Site layout plan showing demarcations of areas to be cleared, fire breaks, trees and shrubs not to be removed. Amount of stumps of vegetation on river and stream embankments Visible herbicide damage to the vegetation along the servitude one year after 	<ul style="list-style-type: none"> Site Inspection 	<ul style="list-style-type: none"> ECO Eskom Envir. Advisor 	Prior to construction

Photographic record of the site to be kept before construction activities commence. This will support any disputes relating to damages and will support the rehabilitation process after construction.

PRE CONSTRUCTION PHASE								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Es kom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
				<p>Mechanism:</p> <ul style="list-style-type: none"> Follow procedures for site identification (see above). Adhere to site clearing limits set out in this EMP Extent & method of clearing to be mapped & agreed by ECO prior to construction Locate and map all plants and natural features to be protected. Do not remove any tree or large shrub without permission from the ECO. No vegetative matter may be removed for firewood. No natural materials may be harvested for construction purposes, with the exception of those found within the site footprint. Any exotics that are encountered are to be removed immediately, making use of mechanical methods If a suspected Red Data Species is encountered, construction activities are to stop immediately. ECO/DEA authority needs to be contacted for identification and way forward. Only 8m vegetation cleared along the centre of the servitude for access purposes 	<ul style="list-style-type: none"> completion of the contract due to incorrect herbicide use Litigation due to unauthorised removal of vegetation 			

PRE CONSTRUCTION PHASE								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Es kom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
				<ul style="list-style-type: none"> Protected or endangered species of plants shall not be removed unless they are interfering with a structure. Where such species have to be removed due to interference with a structure, the necessary permission and permits shall be obtained from Provincial Nature Conservation. All protected species not to be removed must be clearly marked and such areas fenced off if required. No vegetation clearing in the form of de-stumping, scalping or uprooting shall be allowed on river- and stream banks. Vegetation shall only be cut to allow for the passage of the pilot-cables and headboard. <p>Contractor requirements:</p> <ul style="list-style-type: none"> Contractor must be in possession of a valid herbicide applicators licence Contractor to have necessary knowledge to identify protected species as well as species not interfering with operation of the line due to their height and growth rate Contractor to be able to identify all declared weeds & alien species that can be totally eradicated 				
<div style="border: 1px solid black; padding: 5px; background-color: #f2f2f2;"> Photographic record of the site to be kept before construction activities commence. This will support any disputes relating to damages and will support the rehabilitation process after construction. </div>								

PRE CONSTRUCTION PHASE								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Es kom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
7.4.9 Use of ablution facilities and kitchen facilities	Install drainage system for toilets, waste water, water supply Use veld for toilet	<ul style="list-style-type: none"> Ground water pollution and impact on vegetation Pollution of ground water and soil Health risk spreading of diseases 	NWA OHSA NEMA TRMSCAAC1 REV 3 CTB OHSA	<p>Objective: To ensure proper sanitation is achieved and minimise the spread of diseases</p> <p>Mechanism:</p> <ul style="list-style-type: none"> The Contractor shall install mobile chemical toilets on site Staff shall be sensitised to the fact that they should use these toilets at all times No use of the veld shall be allowed, as this always create problems with the landowners and lead to claims for problems with stock diseases Toilet paper is also a source of littering in the veld, and the Contractor shall be forced to clean up any litter The Contractor shall take all the necessary precautions against the spreading of disease, especially under livestock. 	Number of complaints received from landowners regarding sanitation	<ul style="list-style-type: none"> A record shall be kept of drugs administered and the dates when this was done. This should be available on site. A record of all complaints should be available on request. ECO officer to keep records 	ECO Eskom Envir. Advisor	As and when required
7.4.10 Use of vehicles for material, equipment and personnel transportation	<ul style="list-style-type: none"> Trucks delivering material to store area Servicing vehicles resulting in draining oil and removing filters & Emergency repairs due to breakages Transport of personnel and material to site Air pollution from exhaust fumes 	<ul style="list-style-type: none"> Oil, lubricants or fuel spills Waste material containers packaging 	NWA ECA NEMA HSA ROD AQA	<p>Objectives:</p> <ul style="list-style-type: none"> To prevent and minimise pollution to the environment. Prevent transgressing acts that governs pollution The hierarchical approach to integrated waste management with the preferred option being reduction, reuse and recycling followed by treatment and disposal, must be adopted <p>Mechanism:</p> <ul style="list-style-type: none"> Where possible and practical all maintenance of vehicles and equipment shall take place in the workshop area. During servicing of vehicles or equipment, a suitable drip tray shall be used to prevent spills onto the soil, especially where emergency repairs are effected outside the workshop area. 	<ul style="list-style-type: none"> Oil spillages A register shall be kept on all substances and be available for inspection at all times. Areas shall be monitored for spills and any spills shall be recorded rehabilitated immediately 	Monitor register	ECO Eskom Envir. Advisor	Daily Weekly

PRE CONSTRUCTION PHASE								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Es kom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
				<ul style="list-style-type: none"> Leaking equipment shall be repaired immediately or be removed from site to facilitate repair. All potentially hazardous and non-degradable waste shall be collected and removed to a registered waste site. A certificate of disposal shall be obtained by the Contractor and kept on file Workshop areas shall be monitored for oil and fuel spills and such spills shall be cleaned and re-mediated to the satisfaction of the ECO. The Contractor shall be in possession of an emergency spill kit that must be complete and available at all times on site, 				
				<ul style="list-style-type: none"> All hazardous substances shall be stored in suitable containers and storage areas shall be banded. This includes all carbon substances like fuel and oil as well as herbicides and battery acid. Any leaking containers shall be repaired or removed from site (See above actions for spills). 				
7.4.11 Fuel Storage facilities	<ul style="list-style-type: none"> Fuel storage facility Fuel handling 	Pollution from accidental spillage events, leakage, theft, etc.	NEMA HSA ROD	<ul style="list-style-type: none"> Fuels include diesel, petrol, paraffin, and lubricating oils. All fuels to be stored in secure areas (lockable sites) Security control required at all times Register of usage to be maintained at all times and monitored for loss (leakage, theft, etc.) Fuel storage tanks to be contained in walled (banded) sites with a minimum storage capacity of 1.2 times the volume of the tank. The base and walls of the site must be impervious and strong enough to prevent puncture. Regular monitoring (daily) for spillage, theft or leakage. Visual inspection of all container areas. Emergency procedures to be available at all sites for fuel containment and cleanup in the event of an accidental spillage. 	<ul style="list-style-type: none"> Design of containment areas Security control Emergency procedures Record of inspection 	Number of leakage incidents using a leakage detector and visual inspections	Workshop manager ECO Project manager	<ul style="list-style-type: none"> Before establishment of workshop or fuel storage facility Daily during operational phase

PRE CONSTRUCTION PHASE								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Es kom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
7.4.12 Landowner relations	Communication with landowner	Landowner refusing entry to his/her property	TRMPVACV2 REV1	<p>Objective: Maintain good relations with Landowners</p> <p>Mechanism:</p> <ul style="list-style-type: none"> • Access to farms must be properly regulated • No Eskom Holdings employee or contractor shall enter land over which Eskom Transmission holds a servitude without prior notification of the ECO. • Landowners shall as far as possible be notified prior to the intended visit. The Lands and Rights will assist in the notification of landowners. Where landowners cannot be reached, notification should be given via other appropriate security or community structures that exist in the area. The notification should include description of vehicles, the number of people and the time and intention of the visit 	<ul style="list-style-type: none"> • No delays in the project due to Landowner interference • Number of claims or litigations from landowner • Signed landowners' final release forms 		ECO Eskom Advisor Envir.	Daily Weekly

PRE CONSTRUCTION PHASE								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Es kom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
7.4.13 Set up batching plant	<ul style="list-style-type: none"> Negotiate the site for batching plant. Dust and Noise Management during site establishment 	<ul style="list-style-type: none"> Damage to top soil Dust nuisance from the excavated and stockpiled material 	TRMSCAAC1 REV 3 ROD	<p>Objective:</p> <ul style="list-style-type: none"> To ensure all agreements with Landowners are adhered to Prevention of complaints from Landowners Successful rehabilitation of disturbed areas To avoid dust nuisance from excavated material and avoid noise nuisance from operating construction equipment <p>Mechanism:</p> <p>The siting of batching plants shall be done in conjunction with the landowner and ecologist/botanist and archaeologist.</p> <ul style="list-style-type: none"> The batching plant area shall be operated in such a way as to prevent contaminated water to run off the site and polluting nearby streams or water bodies. To this effect diversion berms can be installed to direct all wastewater to a catchment area. Implement dust suppression measures e.g. regular watering Concrete mixing to be carried out away from sensitive areas The mixing of cement, concrete, chemicals and other materials must be done in designated areas on concrete aprons or protected linings, with the necessary provision made to contain spillage and overflows The residues of these materials must be removed and the area rehabilitated once the work is complete Develop and implement dust monitoring programme Limit working hours of noisy equipment to daylight hours (06:00-18:00) Fit silencers to equipments 	<ul style="list-style-type: none"> Complaints from Land Owners All disturbed areas to be rehabilitated successfully, three months after construction Use water bowsers to suppress the dust 	Landowner to sign off after completion of project.	ECO Eskom Envir. Advisor	Daily Weekly after construction

Photographic record of the site to be kept before construction activities commence. This will support any disputes relating to damages and will support the rehabilitation process after construction.

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
7.4.14 Vegetation Clearing	<ul style="list-style-type: none"> Clearing of vegetation, especially protected species 	<ul style="list-style-type: none"> Unnecessary destruction of sensitive species, habitats and ecosystems Soil erosion 	BDA NHRA ROD	<p>Objective:</p> <ul style="list-style-type: none"> To minimise the loss of biodiversity through restricting the removal of vegetation to the footprint of the development. Keep servitude as natural looking as possible Minimise interference by vegetation to flow of electricity Minimise possibility of erosion due to removal of vegetation Eradication of alien invader and densifier species that cause a fire hazard <p>Mechanism:</p> <ul style="list-style-type: none"> Follow procedures for site identification (see above). Adhere to site clearing limits set out in this EMP Extent & method of clearing to be mapped & agreed by ECO prior to construction Locate and map all plants and natural features to be protected. Do not remove any tree or large shrub without permission from the ECO. No vegetative matter may be removed for firewood. No natural materials may be harvested for construction purposes, with the exception of those found within the site footprint. Any exotics that are encountered are to be removed immediately, making use of mechanical methods If a suspected Red Data Species is encountered, construction activities are to stop immediately. ECO/DEA authority needs to be contacted for identification and way forward. Only 8m vegetation cleared along the centre of the servitude for access purposes 	<ul style="list-style-type: none"> Site layout plan showing demarcations of areas to be cleared, fire breaks, trees and shrubs not to be removed. Amount of stumps of vegetation on river and stream embankments Visible herbicide damage to the vegetation along the servitude one year after completion of the contract due to incorrect herbicide use Litigation due to unauthorised removal of vegetation 	<ul style="list-style-type: none"> Site Inspection 	<ul style="list-style-type: none"> ECO Eskom Envir. Advisor 	Prior to construction

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
				<ul style="list-style-type: none"> Protected or endangered species of plants shall not be removed unless they are interfering with a structure. Where such species have to be removed due to interference with a structure, the necessary permission and permits shall be obtained from Provincial Nature Conservation. All protected species not to be removed must be clearly marked and such areas fenced off if required. No vegetation clearing in the form of de-stumping, scalping or uprooting shall be allowed on river- and stream banks. Vegetation shall only be cut to allow for the passage of the pilot-cables and headboard. <p>Contractor requirements:</p> <ul style="list-style-type: none"> Contractor must be in possession of a valid herbicide applicators licence Contractor to have necessary knowledge to identify protected species as well as species not interfering with operation of the line due to their height and growth rate Contractor to be able to identify all declared weeds & alien species that can be totally eradicated 				
<p>Photographic record of the site to be kept before construction activities commence. This will support any disputes relating to damages and will support the rehabilitation process after construction.</p>								

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
7.4.15 Use of ablution facilities and kitchen facilities	<ul style="list-style-type: none"> Install drainage system for toilets, waste water, water supply Use veld for toilet 	<ul style="list-style-type: none"> Ground water pollution and impact on vegetation Pollution of ground water and soil Health risk spreading of diseases 	NWA OHSA NEMA TRMSCAAC1 REV 3 CTB OHSA	<p>Objective: To ensure proper sanitation is achieved and minimise the spread of diseases</p> <p>Mechanism:</p> <ul style="list-style-type: none"> The Contractor shall install mobile chemical toilets on site Staff shall be sensitised to the fact that they should use these toilets at all times No use of the veld shall be allowed, as this always create problems with the landowners and lead to claims for problems with stock diseases Toilet paper is also a source of littering in the veld, and the Contractor shall be forced to clean up any litter The Contractor shall take all the necessary precautions against the spreading of disease, especially under livestock. 	Number of complaints received from landowners regarding sanitation	<ul style="list-style-type: none"> A record shall be kept of drugs administered and the dates when this was done. This should be available on site. A record of all complaints should be available on request. ECO officer to keep records 	ECO Eskom Envir. Advisor	As and when required
7.4.16 Use of vehicles for material, equipment and personnel transportation	<ul style="list-style-type: none"> Trucks delivering material to store area Servicing vehicles resulting in draining oil and removing filters & Emergency repairs due to breakages Transport of personnel and material to site Air pollution from exhaust fumes 	<ul style="list-style-type: none"> Oil, lubricants or fuel spills Waste material containers packaging 	NWA ECA NEMA HSA ROD AQA	<p>Objectives:</p> <ul style="list-style-type: none"> To prevent and minimise pollution to the environment. Prevent transgressing acts that governs pollution The hierarchical approach to integrated waste management with the preferred option being reduction, reuse and recycling followed by treatment and disposal, must be adopted <p>Mechanism:</p> <ul style="list-style-type: none"> Where possible and practical all maintenance of vehicles and equipment shall take place in the workshop area. During servicing of vehicles or equipment, a suitable drip tray shall be used to prevent spills onto the soil, especially where emergency repairs are effected outside the workshop area. 	<ul style="list-style-type: none"> Oil spillages A register shall be kept on all substances and be available for inspection at all times. Areas shall be monitored for spills and any spills shall be recorded rehabilitated immediately 	Monitor register	ECO Eskom Envir. Advisor	Daily Weekly

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
				<ul style="list-style-type: none"> Leaking equipment shall be repaired immediately or be removed from site to facilitate repair. All potentially hazardous and non-degradable waste shall be collected and removed to a registered waste site. A certificate of disposal shall be obtained by the Contractor and kept on file Workshop areas shall be monitored for oil and fuel spills and such spills shall be cleaned and re-mediated to the satisfaction of the ECO. The Contractor shall be in possession of an emergency spill kit that must be complete and available at all times on site, 				
				<ul style="list-style-type: none"> All hazardous substances shall be stored in suitable containers and storage areas shall be bunded. This includes all carbon substances like fuel and oil as well as herbicides and battery acid. Any leaking containers shall be repaired or removed from site (See above actions for spills). 				
7.4.17 Fuel Storage facilities	<ul style="list-style-type: none"> Fuel storage facility Fuel handling 	Pollution from accidental spillage events, leakage, theft, etc.	NEMA HSA ROD	<ul style="list-style-type: none"> Fuels include diesel, petrol, paraffin, and lubricating oils. All fuels to be stored in secure areas (lockable sites) Security control required at all times Register of usage to be maintained at all times and monitored for loss (leakage, theft, etc.) Fuel storage tanks to be contained in walled (bunded) sites with a minimum storage capacity of 1.2 times the volume of the tank. The base and walls of the site must be impervious and strong enough to prevent puncture. Regular monitoring (daily) for spillage, theft or leakage. Visual inspection of all container areas. Emergency procedures to be available at all sites for fuel containment and cleanup in the 	<ul style="list-style-type: none"> Design of containment areas Security control Emergency procedures Record of inspection 	Number of leakage incidents using a leakage detector and visual inspections	Workshop manager ECO Project manager	<ul style="list-style-type: none"> Before establishment of workshop or fuel storage facility Daily during operational phase

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/ Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
				event of an accidental spillage.				
7.4.18 Maintenance of Roads	<ul style="list-style-type: none"> Regular maintenance of access roads Erosion Dust 	<ul style="list-style-type: none"> Erosion may be accelerated by inappropriate location of new roads and access tracks. Damage to original road surfaces that will limit use by farmers and the public. Excessive generation of dust 	NEMA	<p>Objective:</p> <ul style="list-style-type: none"> To minimise the risks and inconvenience to other road users. <p>Mechanism:</p> <ul style="list-style-type: none"> Road and track will be planned such that it is limited to the minimum necessary for safe and workable access. Develop a Road Maintenance Plan detailing method to be used and the frequency Undertake regular maintenance of roads and tracks as per the Road Maintenance Plan. All damage to existing roads due to construction traffic to be repaired immediately. The construction of any new road should be preceded by an environmental scan. Road rehabilitation to begin as soon as construction activities cease. During wet weather the use of any road or track must be restricted to prevent damage to the road or track. Dust monitoring must be employed, especially 	<ul style="list-style-type: none"> Maintenance programme Incident reports 	Road maintenance report	Site Supervisor ECO	Monthly
<div style="border: 1px solid black; background-color: #d9ead3; padding: 5px; margin-bottom: 5px;"> Photographic record of the site to be kept before construction activities commence. This will support any disputes relating to damages and will support the rehabilitation process after construction. </div> <div style="border: 1px solid black; padding: 5px;"> <p>Golden Rule: Never make new tracks where there are existing tracks (or roads). Always rehabilitate existing tracks for use instead of creating new ones.</p> </div>								

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
				where the roads are within 500m of villages or dwellings.				

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
7.4.19 Set up batching plant	<ul style="list-style-type: none"> Negotiate the site for batching plant. Dust and Noise Management during site establishment 	<ul style="list-style-type: none"> Damage to top soil Dust nuisance from the excavated and stockpiled material 	<p>TRMSCAAC1 REV 3</p> <p>ROD</p>	<p>Objective:</p> <ul style="list-style-type: none"> To ensure all agreements with Landowners are adhered to Prevention of complaints from Landowners Successful rehabilitation of disturbed areas To avoid dust nuisance from excavated material and avoid noise nuisance from operating construction equipment <p>Mechanism:</p> <p>The siting of batching plants shall be done in conjunction with the landowner and ecologist/botanist and archaeologist.</p> <ul style="list-style-type: none"> The batching plant area shall be operated in such a way as to prevent contaminated water to run off the site and polluting nearby streams or water bodies. To this effect diversion berms can be installed to direct all wastewater to a catchment area. Implement dust suppression measures e.g. regular watering Concrete mixing to be carried out away from sensitive areas The mixing of cement, concrete, chemicals and other materials must be done in designated areas on concrete aprons or protected linings, with the necessary provision made to contain spillage and overflows The residues of these materials must be removed and the area rehabilitated once the work is complete Develop and implement dust monitoring programme Limit working hours of noisy equipment to daylight hours (06:00-18:00) Fit silencers to equipments 	<ul style="list-style-type: none"> Complaints from Land Owners All disturbed areas to be rehabilitated successfully, three months after construction Use water bowsers to suppress the dust 	Landowner to sign off after completion of project.	<p>ECO</p> <p>Eskom Advisor Envir.</p>	<p>Daily</p> <p>Weekly after construction</p>

Photographic record of the site to be kept before construction activities commence. This will support any disputes relating to damages and will support the rehabilitation process after construction.

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
7.4.20 Tower Pegging	<ul style="list-style-type: none"> Vehicle driving in veld Surveyor pegging towers 	<ul style="list-style-type: none"> Damage to protected / endangered vegetation Oil Spills Littering of packaging & pegging materials 	BDA NHRA NWA ROD NEMA ECA	<p>Objective: To minimise environmental impact</p> <p>Mechanism:</p> <ul style="list-style-type: none"> Re-seeding shall be done on disturbed areas as directed by the Environmental Control Officer. In accordance with the Conservation of Slopes in excess of 2% must be contoured and slopes in excess of 12% must be terraced. Other methods of rehabilitation of tower sites may also be used at the discretion of the ECO, e.g. stone pitching, logging, etc. Contour banks shall be spaced according to the slope on tower sites. The type of soil shall also be taken into consideration. Vehicle access to the power line servitude must be limited to existing roads. Vehicle access to the power line servitude must be limited to existing roads. Refer to littering under site establishment. 	Visual assessment of disturbed areas and packaging materials	Site inspection	ECO Eskom's Advisor Envir.	Daily Weekly
<div style="border: 1px solid black; background-color: #d9ead3; padding: 5px; width: fit-content; margin: 0 auto;"> Photographic record of the site to be kept before construction activities commence. This will support any disputes relating to damages and will support the rehabilitation process after construction. </div>								
7.4.21 Power Line Crossing	New power line crossing an existing power line	<ul style="list-style-type: none"> Electrical flash over Power supply interruption 		<p>Objective: To minimise power supply interruptions</p> <p>Mechanism: Refer to Eskom Guidelines</p>	Number of power outages as a result of flash over caused by power line crossings		ECO Eskom's Advisor Envir	During construction where crossing occurs
7.4.22 Road Crossing	New power line crossing a road	Traffic flow interruption		<p>Objective: To minimise traffic flow and to minimise number of accidents as a result of power line construction</p> <p>Mechanism:</p> <ul style="list-style-type: none"> Contact provincial Roads Dept 	Number of accidents resulting from construction activities	Number of accidents	ECO Eskom's Advisor Envir	During construction where crossing occurs

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
7.4.23 River/Wetland Crossing	New power line crossing waterbody	<ul style="list-style-type: none"> Damage to protected / endangered vegetation Impact on aquatic fauna and flora Potential siltation of the water body 	ROD NEMA ECA	<p>Objective: No streams or wetlands of particular importance were noted along the power line route. However, the design, construction and operation phases should take all waterbodies into consideration to avoid or minimise impact.</p> <p>Mechanism:</p> <ul style="list-style-type: none"> Avoid construction in wetland areas or 100m within a river/stream. However, should this not be possible, an engineer with experience in construction in wetlands, and a wetland specialist, should be appointed to advise during the design and construction phases. Maintenance vehicles to avoid driving through wetlands or close to the banks of water bodies Obtain a water use licence from DWAF 	Disturbed areas near the water courses	Water Use Licence	ECO Eskom Enviro Advisor	Daily

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
7.4.24 Gate installation	<ul style="list-style-type: none"> Flattening of fences to gain access Tying off fence and straining fence wires Dig holes Insert gate and pour concrete Installation of concrete sill in Vermin proof fence 	<ul style="list-style-type: none"> Damage to fences Damage to electrical fencing Wire off cuts and broken fences Disturbance of topsoil Waste concrete 	<p>FA</p> <p>TRMPVACV2 REV1</p> <p>TRMSCAAC1 REV 3</p> <p>CARA</p>	<p>Objective:</p> <ul style="list-style-type: none"> To install gates to allow access for construction Minimise damage to existing fences and gates To limit access to Eskom & contractor employees by using keys All fences properly tied off to the gate posts All fences properly and neatly installed according to specifications The hierarchical approach to integrated waste management with the preferred option being reduction, reuse and recycling followed by treatment and disposal, must be adopted <p>Mechanism:</p> <ul style="list-style-type: none"> No waste material shall be left on site that may harm man or animals. Surplus concrete may not be dumped indiscriminately on site, but shall be disposed of in designated areas as agreed by the Landowner. Concrete trucks shall not be washed on site after depositing concrete into foundations. Any spilled concrete shall be cleaned up immediately The Landowners shall be kept abreast of all developments and shall be kept informed about the progress and phases of the contract. All gates shall be fitted with locks and be kept locked at all times during the construction phase. Gates shall only be left open on request of the Landowner if he accepts partial responsibility for such gates in writing, once the Contractor have left site and the gates are fitted with Eskom locks. 	<ul style="list-style-type: none"> Litigation records Number of complaints from land owners 	Site inspection	<p>ECO</p> <p>Eskom Envir. Advisor</p>	<p>Daily</p> <p>Weekly</p>
<p>Photographic record of the site to be kept before construction activities commence. This will support any disputes relating to damages and will support the rehabilitation process after construction.</p>								

CONSTRUCTION									
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency	
				<ul style="list-style-type: none"> Such gates shall be clearly marked by painting the posts green. All claims arising from gates left open shall be investigated and settled in full by the Contractor. Game gates, drawing 0.00/10280 Rev 0, shall be installed where necessary. All gates installed in electrified fencing shall be re-electrified. The Environmental Control Officer shall approve gate positions. All gate positions shall be three (3) metres off centre to allow for continued access when stringing takes place. <p>Mechanism:</p> <ul style="list-style-type: none"> At any gate poles where conventional foundations are installed, the Contractor shall remove the topsoil separately and store it for later use during rehabilitation. During backfilling operations, the Contractor shall take care not to dump the topsoil in the bottom of the foundation and then put spoil on top of that. 					

Photographic record of the site to be kept before construction activities commence. This will support any disputes relating to damages and will support the rehabilitation process after construction.

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
7.4.25 Access Roads	<ul style="list-style-type: none"> Mark access roads Vehicles driving off servitude road Illegal use of private roads 	<ul style="list-style-type: none"> Damage to protected / endangered vegetation Damage to drifts and bridges & irrigation lines Damage to protected / endangered vegetation Damage to heritage sites, Damage to private roads 	BDA ROD	<p>Objective:</p> <ul style="list-style-type: none"> Minimise damage to embankments. Minimise erosion of embankments Vehicle access to the power line servitude must be limited to existing roads <p>Mechanism:</p> <ul style="list-style-type: none"> A physical access plan along the servitude shall be compiled and the Contractor shall adhere to this plan at all times. Proper planning when the physical access plan is drawn up by the ECO in conjunction with the Contractor shall be necessary to ensure access to all tower sites. New access roads will be subjected to a separate assessment including inspection and reporting by qualified botanist. All access roads will be marked Agreed on Access to be used at all times. No illegal use of private roads during construction due to damage anticipated as a result of heavy vehicles and equipment All existing private access roads used for construction purposes, shall be maintained at all times to ensure that the local people have free access to and from their properties. Speed limits shall be enforced in such areas and all drivers shall be sensitised to this effect. Upon completion of the project all roads shall be repaired to their original state. No roads shall be cut through river- and stream banks as this may lead to erosion causing siltation of streams and downstream dams. 	<ul style="list-style-type: none"> Access plan approved by ECO Number of complaints from residents and landowners 	Site inspection	ECO Eskom Envir. Advisor	Daily Weekly
Photographic record of the site to be kept before construction activities commence. This will support any disputes relating to damages and will support the rehabilitation process after construction.								

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
	Bulldozer blading access roads	<ul style="list-style-type: none"> Damage to protected / endangered vegetation Damage to heritage sites, Damage to private roads 	BDA NHRA ROD	<p>Objective: If red data flora or fauna occurs in the servitude, it must be demarcated as no-go areas for construction workers.</p> <p>Mechanism:</p> <ul style="list-style-type: none"> No scalping shall be allowed on any part of the servitude road unless absolutely necessary. The removal of all economically valuable trees or vegetation shall be negotiated with the Landowner before such vegetation is removed. All trees and vegetation cleared from the site shall be cut into manageable lengths and neatly stacked at regular intervals along the line. No vegetation shall be pushed into heaps or left lying all over the servitude. Protected or endangered species of plants shall not be removed unless they are interfering with a structure. Where such species have to be removed due to interference with a structure, the necessary permission and permits shall be obtained from Provincial Nature Conservation 	Environmental scan report	Site inspection	ECO Eskom Advisor Envir.	Daily Weekly
	Blading of access roads through dongas	Causing erodable areas, Erosion and loss of topsoil	CARA	<p>Objective: Minimise destabilisation of banks which could result in loss of top soil.</p> <p>Mechanism:</p> <ul style="list-style-type: none"> Vegetation clearing must be kept to a minimum. Big trees with large root systems shall be cut manually and removed, as the use of a bulldozer will cause major damage to the soil when the root systems are removed. 	<ul style="list-style-type: none"> Only 8m vegetation cleared along the centre of the servitude for access purposes Litigation due to unauthorised removal of vegetation Litigation due to unauthorised removal of vegetation 	Site inspection	ECO Eskom Advisor Envir.	Daily Weekly

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
				<ul style="list-style-type: none"> Stumps shall be treated with herbicide. Smaller vegetation can be flattened with a machine, but the blade should be kept above ground level to prevent scalping. Any vegetation cleared shall be removed or flattened and not be pushed to form an embankment. 				
7.4.26 Borrow pits for Construction (Roads/ Building) Material from Quarries	Excavations	<ul style="list-style-type: none"> Erosion Aesthetic value of the burrowed area Loss of biodiversity Risk to the safety of people and animals. 		<p>Objective: To reduce the proliferation of burrow pits that results in:</p> <ul style="list-style-type: none"> the scarring of the landscape risks to the safety of both people and animals. <p>Mechanism: All borrow pits are subject to environmental laws and must receive government authorization before use. As a guide, the following will be needed:</p> <ul style="list-style-type: none"> Undertake environmental scan Geotechnical Investigations Rehabilitation Plan 	Environmental scan report		Project Manager	Prior to sourcing burrow / fill material
						Photographic record of the site to be kept before construction activities commence. This will support any disputes relating to damages and will support the rehabilitation process after construction.		

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
7.4.27 Tower Construction	Excavation of foundation	Disturbance of topsoil and vegetation Loss of topsoil with seedbank	CARA TRMSCAAC1 REV 3 ROD	<p>Objective:</p> <ul style="list-style-type: none"> Disturbed areas must be rehabilitated immediately to prevent soil erosion <p>Mechanism:</p> <ul style="list-style-type: none"> Disturbance of topsoil on tower sites with severe slopes shall be minimised at all costs. At any tower sites where conventional foundations are installed, the Contractor shall remove the topsoil separately and store it for later use during rehabilitation of such tower sites. During backfilling operations, the Contractor shall take care not to dump the topsoil in the bottom of the foundation and then put spoil on top of that Re-seeding shall be done on disturbed areas as directed by the Environmental Control Officer. Slopes in excess of 2% must be contoured and slopes in excess of 12% must be terraced. Other methods of rehabilitation of tower sites may also be used at the discretion of the Environmental Control Officer, e.g. stone pitching, logging, etc. Contour banks shall be spaced according to the slope on tower sites. The type of soil shall also be taken into consideration. 	Photographic record of soil storage	Site inspection	ECO/ Eskom Envir. Advisor	Daily Weekly
<div style="border: 1px solid black; background-color: #d9ead3; padding: 5px; width: fit-content; margin: 0 auto;"> Photographic record of the site to be kept before construction activities commence. This will support any disputes relating to damages and will support the rehabilitation process after construction. </div>								

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
	Drilling of foundation	Noise and dust pollution	NEMA ECA	<p>Objective: To avoid dust nuisance from excavated material And avoid noise nuisance from operating construction equipment</p> <p>Mechanism:</p> <ul style="list-style-type: none"> Implement dust suppression measures e.g. regular watering Develop and implement dust monitoring programme Limit working hours of noisy equipment to daylight hours (06:00-18:00) Fit silencers to equipments 	Number of complaints from landowners	Site inspection	ECO/ Eskom Advisor Envir.	Daily Weekly
	Installation of steel reinforcing	Waste material	NEMA ECA ROD CTB	<p>Objective:</p> <ul style="list-style-type: none"> Proper waste management on site The hierarchical approach to integrated waste management with the preferred option being reduction, reuse and recycling followed by treatment and disposal, must be adopted. <p>Mechanism:</p> <ul style="list-style-type: none"> No waste material shall be left on site that may harm man or animals. Any broken insulators shall be removed and all shards picked up. Broken, damaged and unused nuts, bolts and washers shall be picked up and removed from site. 	Amount of visible waste material on site after activity		ECO/ Eskom Advisor Envir.	Daily Weekly
	<ul style="list-style-type: none"> Casting of concrete & washing of concrete truck on site 	Waste concrete	NEMA ECA TCB ROD CTB	<p>Objective:</p> <ul style="list-style-type: none"> Proper waste management on site The hierarchical approach to integrated waste management with the preferred option being reduction, reuse and recycling followed by treatment and disposal, must be adopted <p>Mechanism:</p> <ul style="list-style-type: none"> Surplus concrete may not be dumped 	Amount of visible waste material on site after activity	Site inspection	ECO Eskom Advisor Envir.	Daily Weekly

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
				<p>indiscriminately on site, but shall be disposed of in designated areas as agreed by the Landowner.</p> <ul style="list-style-type: none"> Concrete trucks shall not be washed on site after depositing concrete into foundations. Any spilled concrete shall be cleaned up immediately Surplus concrete may not be dumped indiscriminately on site, but shall be disposed of in designated areas as agreed by the Landowner 				
	<ul style="list-style-type: none"> Assembling of towers Dressing of towers with hardware and insulators 	<ul style="list-style-type: none"> Waste bolts and nuts Insulator breakage littering glass shards in veld 	<p>NEMA</p> <p>ECA</p> <p>ROD</p> <p>CTB</p>	<p>Objective:</p> <ul style="list-style-type: none"> Proper waste management on site The hierarchical approach to integrated waste management with the preferred option being reduction, reuse and recycling followed by treatment and disposal, must be adopted <p>Mechanism:</p> <ul style="list-style-type: none"> No waste material shall be left on site that may harm man or animals. Any broken insulators shall be removed and all shards picked up. Broken, damaged and unused nuts, bolts and washers shall be picked up and removed from site. 	Amount of visible waste material on site after activity	Site inspection	<p>ECO</p> <p>Eskom Advisor</p> <p>Envir.</p>	<p>Daily</p> <p>Weekly</p>

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
7.4.28 Stringing Operations	Installation of phase and earth conductors	Damage to structures and agricultural crops	TRMSCAAC1 REV 3	<p>Objective:</p> <ul style="list-style-type: none"> Prevent damage to expensive structures and crops, Prevent disruption of services <p>Mechanism:</p> <ul style="list-style-type: none"> The necessary scaffolding / protection measures must be installed to prevent damage to structures supporting certain high yield agricultural crops as well as the crops itself All structures supplying services such as telephone and smaller power lines, as well as main and farm roads, shall be safeguarded by measures to prevent disruption of services Use of "rugby" posts to protect roads and telephone lines are sufficient. 	<ul style="list-style-type: none"> Number of claims emanating from damage to supporting structures and crops Number of complaints or claims arising from disruption of services 	Site inspection	ECO Eskom Envir. Advisor	Daily Weekly
Photographic record of the site to be kept before construction activities commence. This will support any disputes relating to damages and will support the rehabilitation process after construction.								

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
	<ul style="list-style-type: none"> Clearing of drum, tensioner and winch stations Creating fire breaks around drum stations 	Damage to protected / endangered vegetation	BDA	<p>Objective:</p> <ul style="list-style-type: none"> Minimise damage to vegetation Minimise damage to topsoil Successful rehabilitation of barren areas <p>Mechanism:</p> <ul style="list-style-type: none"> The siting of winch and tensioner stations shall be done in conjunction with the landowner and ecologist/botanist and archaeologist that participated in the compilation of the EMP where necessary. Specifications require the protection of Eskom supplied material on site, especially conductor drums. This normally means that a firebreak is bladed around a drum station in the veld. These areas are left to rehabilitate on their own which could be disastrous. Once the stringing of conductor has been completed in a certain area, the winch- and tensioner stations shall be rehabilitated where necessary. If the area was badly damaged, re-seeding shall be done and fencing in of the area shall be considered and carried out. 	<ul style="list-style-type: none"> Extent of damage to vegetation outside the servitude 	Site inspection	ECO Eskom Envir. Advisor	

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
	Using bulldozer for tension purposes	Damage to heritage sites, Disturbance of topsoil and vegetation	NHRA BDA CARA ROD	<p>Objective:</p> <ul style="list-style-type: none"> Protection of archaeological sites and land considered to be of cultural value Protection of known sites against vandalism, destruction and theft The preservation and appropriate management of new archaeological finds should these be discovered during construction Protection of sites and land considered to be of cultural value The preservation and appropriate management of new finds should these be discovered during construction <p>Mechanism:</p> <ul style="list-style-type: none"> The position of known sites will be shown on the final profiles. Such areas shall be marked as no go areas. Artefacts shall not be removed under any circumstances. Any destruction of a site can only be allowed once a permit is obtained and the site has been mapped and noted. Permits shall be obtained from the South African Heritage Resources Association (SAHRA) should the proposed line affect any world heritage sites or if any sites are to be destroyed or altered. No dolomite, breccia or stromatolites may be removed or disturbed without the required permits from SAHRA. Any graves shall be clearly marked and treated as no go areas. Should it be necessary to remove any graves, the necessary procedures shall be followed and permits obtained. 	<ul style="list-style-type: none"> Management of existing sites and new discoveries in accordance with the recommendations of the Archaeologists Number of litigations due to destruction of sites 	Site inspection	ECO Eskom Advisor Envir.	Daily Weekly

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
	<ul style="list-style-type: none"> Jointing and crimping of conductors Discarding wooden cable drum material on site 	Waste material littering in veld	NEMA ECA ROD CTB	<p>Objective:</p> <ul style="list-style-type: none"> Proper waste management on site The hierarchical approach to integrated waste management with the preferred option being reduction, reuse and recycling followed by treatment and disposal, must be adopted <p>Mechanism:</p> <p>Any broken insulators shall be removed and all shards picked up. Broken, damaged and unused nuts, bolts and washers shall be picked up and removed from site.</p>	Amount of waste material on site that may harm man or animals.	Site inspection	ECO Eskom Envir. Advisor	Daily Weekly
	No protection for fences during stringing	Damage to fences	FA	<p>Objective:</p> <p>No damage to fences</p> <p>Mechanism:</p> <ul style="list-style-type: none"> All fences shall be protected against damage during stringing operations. All damage to be repaired immediately and to the satisfaction of the landowner. 	Visible damage to fences Number of complaints from landowners	Site inspection	ECO Eskom Envir. Advisor	Daily Weekly
	Tractor pulling out pilot wire	Damage to protected / endangered vegetation	BDA					
7.4.29 Noise	Noise from construction equipment	<ul style="list-style-type: none"> Amenity of neighbours may be disturbed. Game and livestock may be affected Nuisance to wildlife <p>In certain locations where construction</p>		<p>Objective:</p> <p>To contain noise within reasonable limit so as to minimise disturbances to ambient conditions.</p> <p>Mechanism:</p> <ul style="list-style-type: none"> Operations may be limited to 06:00 – 18:00 Monday to Saturday in noise sensitive areas. Operations outside these hours to be with the consent of potentially affected public. All equipment brought onto the site (including compressors and vehicles) to be in good working order with factory fitted silencers. 	Noise monitoring results	Noise measurements	<ul style="list-style-type: none"> ECO Site Supervisor 	Monthly review

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
		activities approach closer than 500m to any dwelling, farm house or village, these management precautions will apply						
7.4.30 Fire control	<ul style="list-style-type: none"> Making fires in winter due to cold weather Cooking food on site / smoking 	Veld fires	NVFFA FA	<p>Objective: No fires allowed</p> <p>Mechanism:</p> <ul style="list-style-type: none"> No open fires shall be allowed on site under any circumstance except in designated cooking areas The Contractor shall have fire-fighting equipment available on all vehicles working on site, especially during the winter months. 	The Contractor shall have fire-fighting equipment available on all vehicles working on site, especially during the winter months	<ul style="list-style-type: none"> Inventory of fire fighting equipment Evidence of open fires 	ECO Eskom Envir. Advisor	Daily Weekly
7.4.31 Cultural Heritage & Archaeological Resources	Destruction of archaeological sites	Damage to archaeological sites or artefacts	NHA ROD NEMA	<p>Objective: To minimise damage to cultural and heritage resources</p> <p>Mechanism:</p> <ul style="list-style-type: none"> Construction supervisors and crews must be trained to recognise archaeological or cultural-historical 'chance finds' during construction. If finds are encountered, then these will not be disturbed, damaged or removed, but will be brought to the immediate attention of the ECO. An archaeologist will be brought in to assess the finds, and who will make specific recommendations at that time. All work around the site should be immediately discontinued so as to avoid damage to the site until the specialist has given the go-ahead for work to continue. 	<ul style="list-style-type: none"> Training report Training manual Certification of competence Records of archaeological finds 	<ul style="list-style-type: none"> Number of artefacts and heritage sites 	<ul style="list-style-type: none"> ECO Site Supervisor Operators 	<ul style="list-style-type: none"> Training on archaeological awareness to be conducted prior to the commencement of the excavation work. On the discovery of any archaeological material.
7.4.32 Avifauna	<ul style="list-style-type: none"> Electrocutions Collisions 	Collision with earth wire.	ROD	Objective: To minimise bird mortality.	<ul style="list-style-type: none"> Environmental scan 	<ul style="list-style-type: none"> Bird mortality incidences 	ECO	<ul style="list-style-type: none"> Weekly reporting

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
		<ul style="list-style-type: none"> • Electrocutions • Habitat Disturbance 	NEMA	<p>Mechanism:</p> <ul style="list-style-type: none"> • Fit Double Loop Bird Flight Diverter (or equivalent) as specified by bird specialist. • Construction work to be confined to servitude in order to minimise habitat destruction. 		<ul style="list-style-type: none"> • Inspection of bird flight diverters and other devices designed to mitigate bird mortalities 		<ul style="list-style-type: none"> • on bird mortalities • Monthly inspection of bird mortality mitigation devices
7.4.33 Dangerous Animals	Injury/death	Injury or death due to animal attack	None	<p>Objective:</p> <p>To avoid injury or death resulting from attack by dangerous animals such as venomous snakes, predators and disease vectors etc.</p> <p>Mechanism:</p> <ul style="list-style-type: none"> • Avoid direct contact with dangerous animals; carefully walk away if you encounter a dangerous animal. Don't make sudden thrashing movements. Contact a ranger or ECO. • Follow the rules pertaining to wildlife within your working area. • Wear protective clothing. • First aid kit should always be kept in the working areas. This should be administered by the Health and Safety Officer. • Do not feed wild animals. • Do not kill or intimidate wild life. 	<ul style="list-style-type: none"> • Rules and regulations on handling wildlife and other dangerous animals 	<p>Number of injuries due to attacks or bites.</p>	<ul style="list-style-type: none"> • ECO • Site supervisor 	<ul style="list-style-type: none"> • Monthly incidence reports.
7.4.34 Solid Waste Management	Environmental degradation due to pollution from waste	Pollution due to improper storage and disposal of solid waste.	NEMA ROD	<p>Objective:</p> <p>To manage solid waste as means of minimising environmental degradation.</p> <p>Mechanism:</p> <ul style="list-style-type: none"> • Develop a waste management plan, to be signed off by the Project manager • If all waste is collected and removed off-site for disposal at a licensed landfill site, then a record of all deliveries is to be kept. • <i>Collection and Disposal of Solid Waste</i> 	<ul style="list-style-type: none"> • Waste management plan • No solid waste left at construction sites (including removal of all concrete) • Evidence of bush defecation (toilet paper exhumed by jackal, etc.) 	<p>Record of waste disposal at a landfill site or any registered waste disposal site</p>	<ul style="list-style-type: none"> • ECO • Labourers • Truck drivers • Operators for the earth moving machinery 	<ul style="list-style-type: none"> • Weekly collection and disposal of waste

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
				<ul style="list-style-type: none"> Collection and disposal of household waste to be carried out through a registered waste carrier, and covered at all times. Inert construction rubble may be disposed of at selected and approved burrow pits. Sites should be rehabilitated. 				
7.4.35 Liquid Waste Management	Environmental degradation due to pollution from waste	Pollution due to improper storage and disposal of liquid waste.	NEMA ROD	<ul style="list-style-type: none"> Provide portable toilets at all Work Sites unless acceptable pit latrines can be established <p>Work shops</p> <ul style="list-style-type: none"> Ensure that the maintenance of all vehicles and equipment, including oil and lubricant changes, takes place at maintenance yards or workshops All fuel waste, oils and wash effluent to be collected and disposed at a licensed site. Collect contaminated runoff emanating from within a closed system (sump) for later disposal in the appropriate manner. Ensure that adequate numbers of conveniently located site toilets are available on all Work Sites at all times in quantities related to the number of users (1 toilet per 20 users is the norm). 	<ul style="list-style-type: none"> Liquid waste storage facility Vehicle workshop and lubricant storage facility including marked drums Toilets 	<ul style="list-style-type: none"> Record of liquid disposal at a landfill site or any registered waste disposal site 	<ul style="list-style-type: none"> ECO Truck drivers Operators for motorized equipment 	Weekly collection and disposal of waste
7.4.36 Liquid Waste Management at camps	Environmental degradation due to pollution from waste	Pollution of environment, including groundwater	RoD NEMA	<p>Ablution facilities:</p> <ul style="list-style-type: none"> Soakage systems, pit latrines and septic tanks to be designed in accordance with soil conditions and watercourses in the area. Ablutions to be designed for the correct number of camp staff Groundwater table to be established before ablation facility located. Soakage systems, etc., closer than 100m to a borehole or watercourse will need approval. All nearby boreholes and surface water 	<ul style="list-style-type: none"> Assessment for location of waste water facilities (ablutions etc.) Monitoring data for nearby boreholes and surface water (if any) Visual inspection reports of contamination Storage facilities for kitchen liquid waste Disposal records 	Water quality monitoring equipment	<ul style="list-style-type: none"> Camp manager ECO 	<p>Assessment & design reports before operation of camp</p> <p>Regular inspections during operation of camp</p>

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
				streams/springs to be monitored (monthly) for change in contamination. Kitchen facilities: <ul style="list-style-type: none"> All kitchen liquid waste to be collected on-site and disposed off-site. This included cooking oils, detergent wastewater (unless biodegradable detergents are used) 				
7.4.37 Hazardous Waste Management	<ul style="list-style-type: none"> Injury due to hazardous waste Pollution 	Pollution due to improper storage and disposal of hazardous waste.	Basel Convention	<ul style="list-style-type: none"> Eskom should acquire the Directive regarding hazardous waste. Materials Safety Data Sheets (MSDSs) will be kept at a defined location for all materials brought to sites, including those carried by contractors. Liquid materials will be clearly labelled and stored in appropriate containers. An inventory will be carried for all quantities of oils, fuels and chemicals at all sites. Spill control and clean-up kits will be made available for all sites and mobile plant where risks of spills exist. All wastes classified as hazardous must be collected by a licensed contractor for disposal at an approved facility. 	<ul style="list-style-type: none"> Directive for Hazardous waste Develop a database of hazardous waste as derived from Basel Convention On site register for all hazardous waste (should facilitate tracking of the waste therefore include: <ul style="list-style-type: none"> Place of origin Labelling of storage containers Transportation route tracking Place of destination 	<ul style="list-style-type: none"> Regular review of on site hazardous waste inventory 	<ul style="list-style-type: none"> ECO Truck drivers 	Storage of on – site of hazardous waste over a period of six months thereafter has to be exported to the appropriate hazardous waste disposal facility (non exist in Botswana)

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
7.4.38 Rehabilitation of Servitudes	Fixing of fences	Waste material littering in veld	NEMA ECA CTB	<p>Objective:</p> <ul style="list-style-type: none"> Minimise damage to topsoil and environment at tower positions Successful rehabilitation of all damaged areas Maintain ecological integrity of the project area Prevention of erosion <p>Mechanism:</p> <ul style="list-style-type: none"> Re-seeding shall be done on disturbed areas as directed by the ECO. Slopes in excess of 2% must be contoured and slopes in excess of 12% must be terraced. Other methods of rehabilitation of tower sites may also be used at the discretion of the ECO e.g. stone pitching, logging, etc. Contour banks shall be spaced according to the slope on tower sites. The type of soil shall also be taken into consideration. A mixture of seed can be used provided the mixture is carefully selected to ensure the following: <ul style="list-style-type: none"> Annual and perennial plants are chosen Pioneer species are included All the plants shall not be edible Species chosen will grow in the area without many problems. Root systems must have a binding effect on the soil. The final product should not cause an ecological imbalance in the area. Re-seeding, as well as fencing in of badly damaged areas, will always be at the discretion of the ECO, unless specifically requested by a Landowner. Areas to be rehabilitated must be planted with a mixture of endemic pioneer grass species 	Signs of damage on fences	Site inspection	ECO Eskom Advisor Envir.	Daily

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
	Re-seeding of barren areas	Wrong seed used	BDA FA TRMSCAAC1 REV 3 ROD		<ul style="list-style-type: none"> Evidence of loss of topsoil due to construction activities All disturbed areas successfully rehabilitated within three months of completion of the contract Evidence of visible erosion scars three months after completion of the contract 	Site inspection	ECO Eskom Envir. Advisor	Weekly Weekly
	Picking up and proper disposal all rubble and litter	Servitude left clean and neat	NEMA ECA HAS CTB ROD CTB	<ul style="list-style-type: none"> To get the best results in a specific area, it is that a vegetation specialist or the local extension officer of the Dept of Agriculture be consulted The Contractor shall dispose of all excess material on site in an appropriate manner and at a designated place. All packaging material shall be removed from site and disposed of and not burned on site. No landfill may be used without the consent from the Landowner. Should a landfill be used for biodegradable materials only, the rubble shall be compacted and at least 1m of soil shall cover the waste material. No hazardous material, e.g. oil or diesel fuel shall be disposed of in any unregistered waste site. 			ECO Eskom Envir. Practitioner / Advisor	Daily Weekly
		Unauthorised access		No camping shall be allowed on any private property. If the Contractor wants to leave guards on site, it shall only be done with the written consent of the Landowners involved				

CONSTRUCTION								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
7.4.39 Landowner relations	Communication with landowner	Landowner refusing entry to his/her property	TRMPVACV2 REV1	<p>Objective: Maintain good relations with Landowners</p> <p>Mechanism:</p> <ul style="list-style-type: none"> • Access to farms must be properly regulated • No Eskom Holdings employee or contractor shall enter land over which Eskom Transmission holds a servitude without prior notification of the ECO. • Landowners shall as far as possible be notified prior to the intended visit. The Lands and Rights will assist in the notification of landowners. Where landowners cannot be reached, notification should be given via other appropriate security or community structures that exist in the area. The notification should include description of vehicles, the number of people and the time and intention of the visit 	<ul style="list-style-type: none"> • No delays in the project due to Landowner interference • Number of claims or litigations from landowner • Signed landowners' final release forms 		ECO Eskom Advisor Envir.	Daily Weekly

OPERATIONS & DECOMMISSIONING								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
7.4.40 Use of vehicles for material, equipment and personnel transportation	<ul style="list-style-type: none"> Trucks delivering material to store area Servicing vehicles resulting in draining oil and removing filters & Emergency repairs due to breakages Transport of personnel and material to site Air pollution from exhaust fumes 	<ul style="list-style-type: none"> Oil, lubricants or fuel spills Waste material containers packaging 	NWA ECA NEMA HSA ROD AQA	<p>Objectives:</p> <ul style="list-style-type: none"> To prevent and minimise pollution to the environment. Prevent transgressing acts that governs pollution The hierarchical approach to integrated waste management with the preferred option being reduction, reuse and recycling followed by treatment and disposal, must be adopted <p>Mechanism:</p> <ul style="list-style-type: none"> Where possible and practical all maintenance of vehicles and equipment shall take place in the workshop area. During servicing of vehicles or equipment, a suitable drip tray shall be used to prevent spills onto the soil, especially where emergency repairs are effected outside the workshop area. Leaking equipment shall be repaired immediately or be removed from site to facilitate repair. All potentially hazardous and non-degradable waste shall be collected and removed to a registered waste site. A certificate of disposal shall be obtained by the Contractor and kept on file Workshop areas shall be monitored for oil and fuel spills and such spills shall be cleaned and re-mediated to the satisfaction of the ECO. The Contractor shall be in possession of an emergency spill kit that must be complete and available at all times on site, 	<ul style="list-style-type: none"> Oil spillages A register shall be kept on all substances and be available for inspection at all times. Areas shall be monitored for spills and any spills shall be recorded rehabilitated immediately 	Monitor register	ECO Eskom Envir. Advisor	Daily Weekly
				<ul style="list-style-type: none"> All hazardous substances shall be stored in suitable containers and storage areas shall be bunded. This includes all carbon substances like fuel and oil as well as herbicides and battery acid. 				

OPERATIONS & DECOMMISSIONING								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
				<ul style="list-style-type: none"> Any leaking containers shall be repaired or removed from site (See above actions for spills). 				
7.4.41 Maintenance of Roads	<ul style="list-style-type: none"> Regular maintenance of access roads Erosion Dust 	<ul style="list-style-type: none"> Erosion may be accelerated by inappropriate location of new roads and access tracks. Damage to original road surfaces that will limit use by farmers and the public. Excessive generation of dust 	NEMA	<p>Objective:</p> <ul style="list-style-type: none"> To minimise the risks and inconvenience to other road users. <p>Mechanism:</p> <ul style="list-style-type: none"> Road and track will be planned such that it is limited to the minimum necessary for safe and workable access. Develop a Road Maintenance Plan detailing method to be used and the frequency Undertake regular maintenance of roads and tracks as per the Road Maintenance Plan. All damage to existing roads due to construction traffic to be repaired immediately. The construction of any new road should be preceded by an environmental scan. Road rehabilitation to begin as soon as construction activities cease. During wet weather the use of any road or track must be restricted to prevent damage to the road or track. Dust monitoring must be employed, especially where the roads are within 500m of villages or dwellings. 	<ul style="list-style-type: none"> Maintenance programme Incident reports 	Road maintenance report	Site Supervisor ECO	Monthly
					Photographic record of the site to be kept before construction activities commence. This will support any disputes relating to damages and will support the rehabilitation process after construction.			
					<p>Golden Rule: Never make new tracks where there are existing tracks (or roads). Always rehabilitate existing tracks for use instead of creating new ones.</p>			

OPERATIONS & DECOMMISSIONING								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
7.4.42 Access Roads	<ul style="list-style-type: none"> Mark access roads Vehicles driving off servitude road Illegal use of private roads 	<ul style="list-style-type: none"> Damage to protected / endangered vegetation Damage to drifts and bridges & irrigation lines Damage to protected / endangered vegetation Damage to heritage sites, Damage to private roads 	BDA ROD	<p>Objective:</p> <ul style="list-style-type: none"> Minimise damage to embankments. Minimise erosion of embankments Vehicle access to the power line servitude must be limited to existing roads <p>Mechanism:</p> <ul style="list-style-type: none"> A physical access plan along the servitude shall be compiled and the Contractor shall adhere to this plan at all times. Proper planning when the physical access plan is drawn up by the ECO in conjunction with the Contractor shall be necessary to ensure access to all tower sites. New access roads will be subjected to a separate assessment including inspection and reporting by qualified botanist. All access roads will be marked Agreed on Access to be used at all times. No illegal use of private roads during construction due to damage anticipated as a result of heavy vehicles and equipment All existing private access roads used for construction purposes, shall be maintained at all times to ensure that the local people have free access to and from their properties. Speed limits shall be enforced in such areas and all drivers shall be sensitised to this effect. Upon completion of the project all roads shall be repaired to their original state. No roads shall be cut through river- and stream banks as this may lead to erosion causing siltation of streams and downstream dams. 	<ul style="list-style-type: none"> Access plan approved by ECO Number of complaints from residents and landowners 	Site inspection	ECO Eskom Envir. Advisor	Daily Weekly
<p>Photographic record of the site to be kept before construction activities commence. This will support any disputes relating to damages and will support the rehabilitation process after construction.</p>								

OPERATIONS & DECOMMISSIONING								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
	Bulldozer blading access roads	<ul style="list-style-type: none"> Damage to protected / endangered vegetation Damage to heritage sites, Damage to private roads 	BDA NHRA ROD	<p>Objective: If red data flora or fauna occurs in the servitude, it must be demarcated as no-go areas for construction workers.</p> <p>Mechanism:</p> <ul style="list-style-type: none"> No scalping shall be allowed on any part of the servitude road unless absolutely necessary. The removal of all economically valuable trees or vegetation shall be negotiated with the Landowner before such vegetation is removed. All trees and vegetation cleared from the site shall be cut into manageable lengths and neatly stacked at regular intervals along the line. No vegetation shall be pushed into heaps or left lying all over the servitude. Protected or endangered species of plants shall not be removed unless they are interfering with a structure. Where such species have to be removed due to interference with a structure, the necessary permission and permits shall be obtained from Provincial Nature Conservation 	Environmental scan report	Site inspection	ECO Eskom Envir. Advisor	Daily Weekly
	Blading of access roads through dongas	Causing erodable areas, Erosion and loss of topsoil	CARA	<p>Objective: Minimise destabilisation of banks which could result in loss of top soil.</p> <p>Mechanism:</p> <ul style="list-style-type: none"> Vegetation clearing must be kept to a minimum. Big trees with large root systems shall be cut manually and removed, as the use of a bulldozer will cause major damage to the soil when the root systems are removed. 	<ul style="list-style-type: none"> Only 8m vegetation cleared along the centre of the servitude for access purposes Litigation due to unauthorised removal of vegetation Litigation due to unauthorised removal of vegetation 	Site inspection	ECO Eskom Envir. Advisor	Daily Weekly

OPERATIONS & DECOMMISSIONING								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
				<ul style="list-style-type: none"> Stumps shall be treated with herbicide. Smaller vegetation can be flattened with a machine, but the blade should be kept above ground level to prevent scalping. Any vegetation cleared shall be removed or flattened and not be pushed to form an embankment. 				
7.4.43 Fire control	<ul style="list-style-type: none"> Making fires in winter due to cold weather Cooking food on site / smoking 	Veld fires	NVFFA FA	<p>Objective: No fires allowed</p> <p>Mechanism:</p> <ul style="list-style-type: none"> No open fires shall be allowed on site under any circumstance except in designated cooking areas The Contractor shall have fire-fighting equipment available on all vehicles working on site, especially during the winter months. 	The Contractor shall have fire-fighting equipment available on all vehicles working on site, especially during the winter months	<ul style="list-style-type: none"> Inventory of fire fighting equipment Evidence of open fires 	ECO Eskom Envir. Advisor	Daily Weekly
7.4.44 Avifauna	<ul style="list-style-type: none"> Electrocutions Collisions 	<ul style="list-style-type: none"> Collision with earth wire. Electrocutions Habitat Disturbance 	ROD NEMA	<p>Objective: To minimise bird mortality.</p> <p>Mechanism:</p> <ul style="list-style-type: none"> Fit Double Loop Bird Flight Diverter (or equivalent) as specified by bird specialist. Construction work to be confined to servitude in order to minimise habitat destruction. 	<ul style="list-style-type: none"> Environmental scan 	<ul style="list-style-type: none"> Bird mortality incidences Inspection of bird flight diverters and other devices designed to mitigate bird mortalities 	<ul style="list-style-type: none"> ECO 	<ul style="list-style-type: none"> Weekly reporting on bird mortalities Monthly inspection of bird mortality mitigation devices
7.4.45 Dangerous Animals	Injury/death	Injury or death due to animal attack	None	<p>Objective: To avoid injury or death resulting from attack by dangerous animals such as venomous snakes, predators and disease vectors etc.</p> <p>Mechanism:</p> <ul style="list-style-type: none"> Avoid direct contact with dangerous animals; 	<ul style="list-style-type: none"> Rules and regulations on handling wildlife and other dangerous animals 	Number of injuries due to attacks or bites.	<ul style="list-style-type: none"> ECO Site supervisor 	<ul style="list-style-type: none"> Monthly incidence reports.

OPERATIONS & DECOMMISSIONING								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
				<p>carefully walk away if you encounter a dangerous animal. Don't make sudden thrashing movements. Contact a ranger or ECO.</p> <ul style="list-style-type: none"> Follow the rules pertaining to wildlife within your working area. Wear protective clothing. First aid kit should always be kept in the working areas. This should be administered by the Health and Safety Officer. Do not feed wild animals. Do not kill or intimidate wild life. 				
7.4.46 Solid Waste Management	Environmental degradation due to pollution from waste	Pollution due to improper storage and disposal of solid waste.	NEMA ROD	<p>Objective: To manage solid waste as means of minimising environmental degradation.</p> <p>Mechanism:</p> <ul style="list-style-type: none"> Develop a waste management plan, to be signed off by the Project manager If all waste is collected and removed off-site for disposal at a licensed landfill site, then a record of all deliveries is to be kept. <i>Collection and Disposal of Solid Waste</i> <ul style="list-style-type: none"> Collection and disposal of household waste to be carried out through a registered waste carrier, and covered at all times. Inert construction rubble may be disposed of at selected and approved burrow pits. Sites should be rehabilitated. 	<ul style="list-style-type: none"> Waste management plan No solid waste left at construction sites (including removal of all concrete) Evidence of bush defecation (toilet paper exhumed by jackal, etc.) 	Record of waste disposal at a landfill site or any registered waste disposal site	<ul style="list-style-type: none"> ECO Labourers Truck drivers Operators for the earth moving machinery 	<ul style="list-style-type: none"> Weekly collection and disposal of waste
7.4.47 Liquid Waste Management	Environmental degradation due to pollution from waste	Pollution due to improper storage and disposal of liquid waste.	NEMA ROD	<ul style="list-style-type: none"> Provide portable toilets at all Work Sites unless acceptable pit latrines can be established <p>Work shops</p> <ul style="list-style-type: none"> Ensure that the maintenance of all vehicles and equipment, including oil and lubricant changes, takes place at maintenance yards or workshops 	<ul style="list-style-type: none"> Liquid waste storage facility Vehicle workshop and lubricant storage facility including marked drums Toilets 	Record of liquid disposal at a landfill site or any registered waste disposal site	<ul style="list-style-type: none"> ECO Truck drivers Operators for motorized equipment 	Weekly collection and disposal of waste

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Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
				<ul style="list-style-type: none"> All fuel waste, oils and wash effluent to be collected and disposed at a licensed site. Collect contaminated runoff emanating from within a closed system (sump) for later disposal in the appropriate manner. Ensure that adequate numbers of conveniently located site toilets are available on all Work Sites at all times in quantities related to the number of users (1 toilet per 20 users is the norm). 				

OPERATIONS & DECOMMISSIONING								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
7.4.48 Rehabilitation of Servitudes	Fixing of fences	Waste material littering in veld	NEMA ECA CTB	<p>Objective:</p> <ul style="list-style-type: none"> Minimise damage to topsoil and environment at tower positions Successful rehabilitation of all damaged areas Maintain ecological integrity of the project area Prevention of erosion <p>Mechanism:</p> <ul style="list-style-type: none"> Re-seeding shall be done on disturbed areas as directed by the ECO. Slopes in excess of 2% must be contoured and slopes in excess of 12% must be terraced. Other methods of rehabilitation of tower sites may also be used at the discretion of the ECO e.g. stone pitching, logging, etc. Contour banks shall be spaced according to the slope on tower sites. The type of soil shall also be taken into consideration. A mixture of seed can be used provided the mixture is carefully selected to ensure the following: <ul style="list-style-type: none"> Annual and perennial plants are chosen Pioneer species are included All the plants shall not be edible Species chosen will grow in the area without many problems. Root systems must have a binding effect on the soil. The final product should not cause an ecological imbalance in the area. Re-seeding, as well as fencing in of badly damaged areas, will always be at the discretion of the ECO, unless specifically requested by a Landowner. Areas to be rehabilitated must be planted with a mixture of endemic pioneer grass species endemic to the area as soon as the new 	Signs of damage on fences	Site inspection	ECO Eskom Envir. Advisor	Daily

OPERATIONS & DECOMMISSIONING								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
	Re-seeding of barren areas	Wrong seed used	BDA FA TRMSCAAC1 REV 3 ROD		<ul style="list-style-type: none"> Evidence of loss of topsoil due to construction activities All disturbed areas successfully rehabilitated within three months of completion of the contract Evidence of visible erosion scars three months after completion of the contract 	Site inspection	ECO Eskom Envir. Advisor	Weekly Weekly
	Picking up and proper disposal all rubble and litter	Servitude left clean and neat	NEMA ECA HAS CTB ROD CTB	<ul style="list-style-type: none"> To get the best results in a specific area, it is that a vegetation specialist or the local extension officer of the Dept of Agriculture be consulted The Contractor shall dispose of all excess material on site in an appropriate manner and at a designated place. All packaging material shall be removed from site and disposed of and not burned on site. No landfill may be used without the consent from the Landowner. Should a landfill be used for biodegradable materials only, the rubble shall be compacted and at least 1m of soil shall cover the waste material. No hazardous material, e.g. oil or diesel fuel shall be disposed of in any unregistered waste site. 			ECO Eskom Envir. Practitioner / Advisor	Daily Weekly
		Unauthorised access		No camping shall be allowed on any private property. If the Contractor wants to leave guards on site, it shall only be done with the written consent of the Landowners involved				

OPERATIONS & DECOMMISSIONING								
Activity/Issue & Phase	Aspects	Potential impact	Relevant Legislation/Eskom Spec	Management Measures & Procedures	Key Performance Indicators	Monitoring Method	Responsibility	Schedule /Frequency
7.4.49 Landowner relations	Communication with landowner	Landowner refusing entry to his/her property	TRMPVACV2 REV1	<p>Objective: Maintain good relations with Landowners</p> <p>Mechanism:</p> <ul style="list-style-type: none"> • Access to farms must be properly regulated • No Eskom Holdings employee or contractor shall enter land over which Eskom Transmission holds a servitude without prior notification of the ECO. • Landowners shall as far as possible be notified prior to the intended visit. The Lands and Rights will assist in the notification of landowners. Where landowners cannot be reached, notification should be given via other appropriate security or community structures that exist in the area. The notification should include description of vehicles, the number of people and the time and intention of the visit 	<ul style="list-style-type: none"> • No delays in the project due to Landowner interference • Number of claims or litigations from landowner • Signed landowners' final release forms 		ECO Eskom Advisor Envir.	Daily Weekly

8. METHOD STATEMENTS FOR THE CONTRACT

The Contractor shall supply method statements for all works required as stated throughout this document **as per specific contract requirement**. All agreements regarding **extra works for environmental compliance** shall be in writing and well documented. Work shall only commence upon approval by Eskom.

The ECO shall ensure that all works are in accordance with method statements and contract specifications (**Refer to Appendix 9 for example of method statement and incident template**).

9. LEGAL & CLIENT GUIDELINE REGISTER

Name of Act / Eskom Specification/ Procedure	Abbreviation
Access to Farms	TRMPVACV2 REV1
Agricultural Pests Act of 1983 (Act No. 36 of 1983)	APA
Air Quality Act of 2004 (Act No 39 of 2004)	NAQA
Animals Protection Act of 1962 (Act No. 71 of 1962)	APA
Atmospheric Pollution Prevention Act of 1965 (Act No. 45 of 1965)	APPA
Biodiversity Act of 2004 (Act No. 10 of 2004)	BDA
Bush Clearing	ESKASABG3
Conservation of Agricultural Resources Act of 1993 (Act No. 43 of 1983)	CARA
Contractor Environmental Control Officer	CECO
Department of Environmental Affairs and Tourism	DEAT
Department of Water Affairs	DWA
Environment Conservation Act of 1989 (Act NO. 73 of 1989)	ECA
Eskom Manual on Storage and Handling of Flammable and Combustible Liquids	ESKAMAAD1
Eskom Herbicide Management	ESKPBAAD4 Rev 0
Eskom Environmental Policy	ESKPBAAD6 Rev 6
Eskom Environmental Management Procedure	ESKPVAAZ1 Rev 1
Fencing Act of 1963 (Act No. 31 of 1963)	FA
Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act,	FFFAS

Name of Act / Eskom Specification/ Procedure	Abbreviation
1947 (Act No. 36 of 1947)	
Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act of 1947 (Act No. 36 of 1947)	FFASA
Game Theft Act of 1991 (Act No. 105 of 1991)	GTA
Hazardous Substances Act of 1973 (Act No. 15 of 1973)	HAS
Labour Relations Act of 1995 (Act No.66 of 1995)	LRA
Mineral and Petroleum Resources Development Act of 2002 (Act No. 28 of 2002)	MPRDA
Mountain Catchment Areas Act of 1970 (Act No. 63 of 1970)	MCAA
National Environmental Management Act of 1998 (Act No. 107 of 1998)	NEMA
National Forests Act of 1998 (Act No. 84 of 1998)	NFA
National Veld and Forest Fire Act 1998 (Act No. 101 of 1998)	NVFFA
National Water Act of 1998 (Act No. 36 of 1998)	NWA
Natural Heritage Resources Act of 1999 (Act No. 25 of 1999)	NHRA
Eskom Nesting Guideline	TRMAGAAZ3
Eskom Guideline for Herbicide Use	TRR/S91/032
Occupational Health and Safety Act of 1993 (Act No. 85 of 1993)	OHSA
Protected Areas Act of 2003 (Act No. 57 of 2003)	PAA
Protected Areas Amendment Act of 2004 (Act 31 of 2004)	PAAA
Skills Development Act of 1998 (Act No. 97 of 1998)	SDA
Standard passive fire protection for oil-filled equipment in High Voltage yards	TRMASAAQ8 Rev 4
Transmission Line Towers and Line Construction	TRMSCAAC1 REV3
Water Services Act of 1997 (Act 108 of 1997)	WSA
World Heritage Convention Act of 1999 (Act No. 49 of 1999)	WHCA