ENVIRONMENTAL IMPACT ASSESSMENT
FOR ESKOM'S NORTHERN KWAZULU-NATAL STRENGTHENING PROJECT

NORMANDIE-IPHIVA 400 KV POWERLINE

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME - APRIL 2018

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Title:	Draft Environmental Management Programme for Eskom's Northern KwaZulu-Natal Strengthening Project: Normandie – Iphiva 400 kV Powerline
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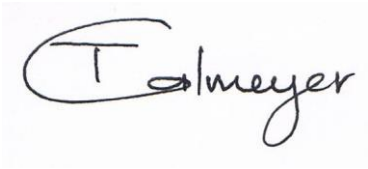
Approved for NAKO ILISO by:



Clint Koopman

Chief Executive Officer

PREFACE

Eskom Holdings SOC Limited (Eskom) has commissioned an Environmental Impact Assessment to investigate the potential environmental impacts of the proposed project to strengthen the supply of electricity to northern KwaZulu-Natal (KZN). The proposed project consists of the new Iphiva 400/132 kV Substation (Iphiva Substation) near the town of Mkhuze in KZN, which will be integrated into the 400 kV Transmission network by two 400 kV Transmission powerlines, namely the approximately 150 km Normandie-Iphiva, the approximately 130 km Iphiva-Duma 400 kV Transmission powerlines and approximately 165 km of 132 kV Distribution powerlines that will link into the Iphiva Substation. The Environmental Impact Assessment (EIA) is being undertaken by NAKO ILISO as an independent Environmental Assessment Practitioner (EAP), and is being done in terms of the National Environmental Management Act (No 107 of 1998) (as amended), in particular Regulations GN. R982, R983, R984 and R985 promulgated in December 2014, as amended.

This Draft Environmental Management Programme (EMPr) deals with the proposed new Normandie-Iphiva 400 kV powerline. Separate EMPrs have been prepared for the Iphiva Substation, the Iphiva-Duma 400 kV powerline and the Distribution Powerlines.

In keeping with environmental legislation, it is the responsibility of the EAP to ensure that the public is provided the opportunity to review reports before they are submitted to the Competent Authority (CA). Accordingly, Interested and Affected Parties (I&APs) have been invited to review this Draft EMPr. The comments received during this period will be incorporated into the Final EMPr, and submitted to the DEA who will consider the document for approval.

DRAFT ENVIRONEMENTAL MANAGEMENT PROGRAMME DISTRIBUTION

The Draft EMPr will be distributed to key stakeholders and left in the following public places in the project area from 26 April to 29 May 2018:

Area	Venue	Address	Contact Details
Piet Retief	Piet Retief Public Library	Cnr Market and Retief Street, Piet Retief, 2380	Tel: 017 826 8153
Pongola	Pongola Public Library	61 Martin St, Pongola, 3170	Tel: 034 413 1540
Mkhuze	Ghost Mountain Inn	Fish Eagle Street, Mkuze	Tel: 035 573 1025
Hluhluwe	Hluhluwe Public Library	163 Zebra Street, Hluhluwe	Tel: 035 562 0040

KEY STAKEHOLDER MEETINGS

The Draft EMPr will be presented at key stakeholder and authorities meetings as listed in the table below:

AREA	DATE	VENUES	TIME
Piet Retief	Monday, 07 May 2018	Commondale Farmers Association Hall	15H00 – 17H30
Piet Retief	Tuesday, 08 May 2018	Moolman Farmers Association TWK Agri Office, 11 De Wet Street	10H00 – 12H30
Pongola	Wednesday, 09 May 2018	Pongola Country Lodge	10H00 – 12H30
Mkhuze	Thursday, 10 May 2018	Ghost Mountain Inn	10H00 – 12H30

Advertisements announcing the availability of the Draft EMPr were placed in the following newspapers:

Newspaper	Geographics	Language	Areas covered	Insertion Date
The Mercury	Regional	English	Mkhuze, Pongola, Paulpietersburg, Duma and Vryheid	26 April 2018
Excelsior News	Local	English	Piet Retief	27 April 2018
Isolezwe	Regional	Zulu	Northern KwaZulu-Natal	26 April 2018
Ilanga	Regional	Zulu	Northern KwaZulu-Natal	26 April 2018

The Draft EMPr has also been placed on the NAKO ILISO website www.iliso.com.

APPRECIATION TO INTERESTED AND AFFECTED PARTIES FOR THEIR PARTICIPATION

The Environmental Impact Assessment Team would like to express its sincere thanks and appreciation to all stakeholders that have registered as I&APs, attended meetings and provided input and comments by other means.

ESKOM'S NORTHERN KWAZULU-NATAL STRENGTHENING PROJECT:

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LIST OF ACRONYMS AND ABBREVIATIONS

AIS	Alien Invasive Species
Amafa	Provincial heritage agency for KZN
CA	Competent Authority
cEO	Contractors Environmental Officer
CLO	Community Liaison Officer
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
dEO	Developer Environmental Officer
DOH	Department of Health
DOT	Department of Transport
DWS	Department of Water and Sanitation
ECO	Environmental Control Officer
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
EAP	Environmental Assessment Practitioner
FPA	Fire Protection Agency
IAIA	International Association of Impact Assessment
I&APs	Interested and Affected Parties
KZN	KwaZulu-Natal
KZNHA	KwaZulu-Natal Heritage Act (Act 4 of 2008)
MSDS	Material Safety Data Sheet
NEMA	National Environmental Management Act (Act 107 of 1998)
NHRA	National Heritage Resources Act (Act 25 of 1999)
SAHRA	South African Heritage Resources Agency
SANRAL	South African National Roads Agency Limited

DEFINITION AND TERMINOLOGY

In this Environmental Management Programme (EMPr) any word or expression to which a meaning has been assigned in the NEMA or EIA has that meaning, and unless the context requires otherwise.

Clearing means the clearing and removal of vegetation, whether partially or in whole, including trees and shrubs, as specified;

Construction camp is the area designated for key construction infrastructure and services, including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management;

Method Statement means a written submission by the Contractor to the Developer in response to this EMPr or a request by the Developer and the Environmental Control Officer (ECO). The Method Statement must set out the equipment, materials, labour and method(s) the Contractor proposes using to carry out an activity identified by the Developer when requesting the Method Statement. This must be done in such detail that the Developer and ECO is able to assess whether the Contractor's proposal is in accordance with this specification and/or will produce results in accordance with this specification;

The Method Statement shall cover applicable details with regard to:

(i) Construction procedures;
(ii) Plant, materials and equipment to be used;
(iii) Transporting the equipment to and from site;
(iv) How the plant/ material/ equipment will be moved while on site;
(v) How and where the plant/ material/ equipment will be stored;
(vi) The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
(vii) Timing and location of activities;
(viii) Compliance/ non-compliance; and
(ix) Any other information deemed necessary by the Project Manager.

Hazardous Substances is a substance governed by the Hazardous Substances Act, 1973 (Act No. 15 of 1973) as well as the Hazardous Chemical and Substances Regulations, 1995;

Slope means the inclination of a surface expressed as one unit of rise or fall for so many horizontal units;

Solid waste means all solid waste, including construction debris, hazardous waste, excess cement/ concrete, wrapping materials, timber, cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers);

Spoil means excavated material which is unsuitable for use as material in the construction works or is material which is surplus to the requirements of the construction works;

Topsoil means a varying depth (up to 300 mm) of the soil profile irrespective of the fertility, appearance, structure, agricultural potential, fertility and composition of the soil;

Works means the Works to be executed in terms of the Contract.

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1. INTRODUCTION

1.1 BACKGROUND

ESKOM Holdings SOC Ltd (Eskom) plans to construct the new Normandie-Iphiva 400 kV Powerline from the existing Normandie Substation located 18 km south east of the town of Piet Retief in the Gert Sibande District Municipality in Mpumalanga to the new Iphiva Substation close to Mkuze in the Zululand District Municipality in KwaZulu-Natal (KZN).

1.2 PURPOSE OF THE ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

The National Environmental Management Act 107 of 1998 (NEMA) requires that an EMPr be submitted where an Environmental Impact Assessment (EIA) must be utilised as the basis for a decision on an application for Environmental Authorisation (EA).

There is a reliance on the EMPr to ensure that a project's actual environmental impacts are consistent with those evaluated in the EIA process. The EMPr is therefore fundamental to the EIA process and should ensure that commitments given at a project's planning and assessment stage are carried through the construction and/ or operation stage.

The EMPr, as contemplated in Chapter 5 Section 24 N (1A) of NEMA, plays a vital role in the implementation of consistent and continued environmental management for the duration of a project life cycle.

Cognisance has been taken of the draft Generic EMPr for the development and expansion of infrastructure for the overhead transmission and distribution of electricity published by the Department of Environmental Affairs (DEA) as a proposed template for a generic EMPr to be gazetted by the Minister in a government notice (DEA, 2017).

1.3 DETAILS OF THE APPLICANT

The applicant is **Eskom Holdings SOC Ltd.**

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1.4 DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

The EAP that compiled this EMPr is **Terry Calmeyer** (see Curriculum Vitae in **Appendix A**) from MDT Environmental (Pty) Ltd. Eskom has contracted NAKO ILISO to undertake the EIA for the project and compile the associated EMPrs, who have sub-contracted MDT Environmental as the EAP.

Terry is certified with the Interim Certification Board as an EAP (No. 0067/05), has a Master of Arts (Environment and Society) from the University of Pretoria and over 20 years of EIA experience. She is the Past President of the South African Affiliation of the International Association of Impact Assessment (IAIAsa), serves on the Training and Professional Committee of IAIA (international) and is a member of the Environmental Law Association. She has been involved in a variety of different types of EIAs including for Transmission powerlines, substations, water supply projects, dams, roads, railways, waste water treatment works and airports, in South Africa, Uganda, Lesotho, Botswana, Namibia and Mozambique. She has led public participation programmes on a number of projects, and has provided strategic environmental input on transportation planning projects. Terry has also been responsible for compiling and updating EMPrs, the management of ECOs and Environmental Officers and providing environmental project implementation advice. Terry has co-ordinated, lectured for and moderated examinations for several tertiary education courses and presented at external workshops and conferences.

1.5 STRUCTURE OF THIS REPORT

The location of the project is presented in **Chapter 2** of this report. The legal requirements are presented in **Chapter 3**. The pre-construction phase of the project is covered in **Chapter 4** and in **Chapter 5** the construction phase is addressed. **Chapter 6** covers operational phase. **Chapter 7** presents a list of references.

1.6 COMPLIANCE WITH THE EIA REGULATIONS

Section 2 of Appendix 4 of GN R982, as amended by GN R326 gazetted on 7 April 2017, specifies the content requirements for an EMPr. **Table 1.1** indicates how this document complies with these requirements.

Table 1.1: Regulatory content requirements for the EMPr

Section of GN R.982		Section in EMPr
(a) (i)	details of- the EAP who prepared the report;	Chapter 1.4
(ii)	the expertise of the EAP, including a curriculum vitae;	Chapter 1.4 and Appendix A
(b)	a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Chapter 2
(c)	a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers	Figure 2.1

Section of GN R.982		Section in EMPr
(d)	a description of the impact management outcomes, including management statements, identifying the **impacts and risks** that need to be avoided, managed and mitigated as identified through the EIA process for all phases of the development including– (i) planning and design; (ii) pre-construction activities; (iii) construction activities; (iv) rehabilitation of the environment after construction and where applicable post closure; and (v) where relevant, operation activities;	Chapter 4 (Planning, Design and Pre-construction), Chapter 5 (Construction), and 5 (Operational Phase). Chapter 4 Chapter 4
(e)	a description and identification of **impact management outcomes** required for the aspects contemplated in paragraph (d);	
(f)	a description of proposed impact **management actions**, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to — (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) comply with any prescribed environmental management standards or practices; (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable;	
(g)	the **method of monitoring** the implementation of the impact management actions contemplated in paragraph (f);	
(h)	the **frequency of monitoring** the implementation of the impact management actions contemplated in paragraph (f);	
(i)	an indication of the **persons who will be responsible** for the implementation of the impact management actions;	
(j)	the **time periods** within which the impact management actions contemplated in paragraph (f) must be implemented;	
(k)	the **mechanism for monitoring** compliance with the impact management actions contemplated in paragraph (f);	
(l)	a **program for reporting** on compliance, taking into account the requirements as prescribed by the Regulations;	
(m)	an **environmental awareness plan** describing the manner in which— (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Chapter 5
(n)	any specific information that may be required by the Competent Authority (CA).	

1.7 SUMMARY OF THE FINDINGS OF THE ENVIRONMENTAL IMPACT ASSESSMENT

The following key issues were identified in the Scoping Phase of the EIA:

- Impacts on areas protected by National and Provincial legislation resulting in loss of plants and animals of conservation value and a loss in the income from and value of the facilities, primarily due to visual impacts;
- Impacts on the rich and diverse fauna and flora (specifically large birds);
- Impacts on land use, particularly for sugar cane farmers and forestry;
- Impacts on heritage resources;
- Social impacts;
- Economic,
- Impacts on the biophysical environment resulting from access roads;
- Construction impacts; and
- Cumulative impacts.

Activities, Aspects and Impacts

Environmental impacts occur as a result of an activity, that through the associated aspects bring about changes in the environment (**Figure 1.1**). The significance of such changes is a direct function of the intensity of the aspects in combination with the sensitivity or vulnerability of the receiving environment. Environmental impacts are defined as 'changes' in the environment, where the requirement of an EIA process is to characterise the changes and the significance of the changes for decision-making.

Environmental aspects can be understood as resource use, such as land, water, fuels etc., waste and pollution such as dust, noise, solid waste, spills etc., and social aspects such as jobs and spending (**Table 1.2**).

Specialist Studies

This EIA Report uses input from specialists to assess the key impacts, determine their significance, and recommend appropriate measures to mitigate negative impacts and enhance benefits. The specialist studies that have been undertaken are summarised below. Mitigation measures recommended have been included in the Draft EMPr.

An assessment of the local **flora and fauna** communities associated with the proposed powerlines was undertaken. This study predicted that:

- The direct loss of floral species/vegetation types and biodiversity will have a moderate significance after mitigations;
- The loss of species of special concern (protected species) would have a minor impact after mitigation; and
- The impact of alien vegetation establishment will be negligible after mitigation.

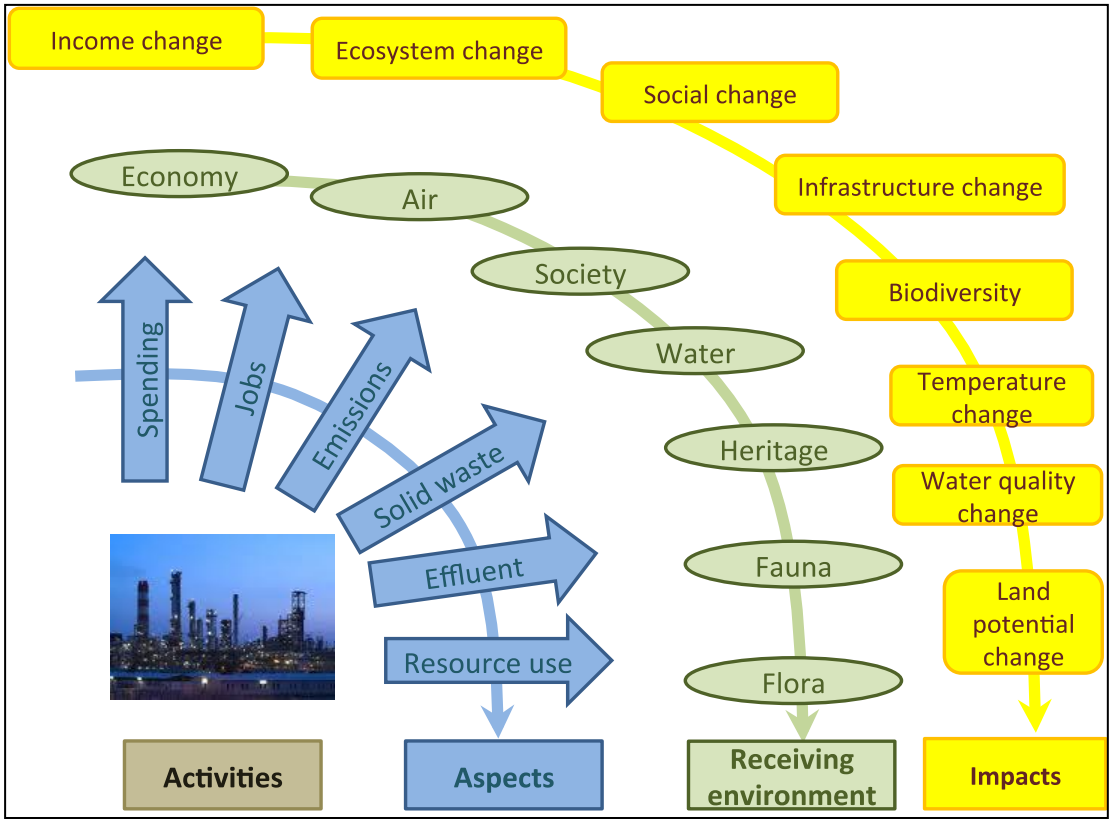


Figure 1.1: Schematic presentation of how activities bring about environmental and social aspects, which result in changes to the receiving environment, which are defined as impacts

Source: O'Beirne, S: Draft Good Practice Manual, prepared for IAIAsa, 2017

The aspects have been identified for the project are listed in **Table 1.2**.

Table 1.2: Aspects affected by the project

Aspect Category	Aspect
Resource use	Water
	Energy
	Land (land transformation)
	Raw materials

Aspect Category	Aspect
Waste and pollution	Atmospheric emissions
	Effluent
	Solid/liquid wastes
	Energy emitted (noise, light)
Socio-Economic	Jobs
	Spending
	Skills

The following recommendations/mitigations were suggested:

- A walk through of the servitudes should be conducted by suitably qualified ecologist, once the tower positions have been determined, in order to ascertain the presence of any threatened, protected, or endemic plant or animal species, animal burrows (including spiders and scorpions);
- Search and rescue of species of special concern;
- Removal of plants should be restricted to only those trees that pose a risk to the powerline;
- Protected trees within the servitude will necessitate that appropriate permits are applied for before these trees are damaged or removed;
- Avoid any physical damage to natural vegetation on the periphery of the servitude, in all riparian areas and areas with steep slopes;
- Water Use Licences/Registrations must be obtained for any construction in an area regulated by the National Water Act (below 1:100 year floodline or 100 m from a watercourse and 500 m from a wetland); and
- No hunting permitted by Eskom employees or contractors.

Impacts on **birds** that could be associated with a project of this nature include collision of birds with the overhead conductors; electrocution; destruction of habitat; and disturbance of birds. Collisions are the biggest potential risk to avifauna, while habitat destruction is also expected to be an important impact of this project.

The consideration of alternative corridors from an avifaunal perspective, was primarily determined by the ecological sensitivity present based on:

- Presence or absence of Red Data or protected bird species;
- Presence or absence of exceptional Avifaunal species diversity;

- Extent of intact habitat in good ecological condition in the absence of disturbance; and
- Presence or absence of important ecosystems protected areas, such as Important Bird Areas, Protected Areas, areas demarcated for future protected area status (NPAES) and wetlands.

The avi-fauna specialist accepts the economic need of the Eskom expansion and is in support of this strategy. The proposed powerline could have very high impacts on the Avifauna Species of Special Concern in the area. A walkdown of the servitude once the tower positions have been determined, prior to any construction activities, must be undertaken by a suitably qualified bird specialist. The specialist should recommend feasible design changes (i.e. moving tower positions within the approved corridor, preferably within the servitude if already negotiated) to further reduce impacts and identify the sections of the powerlines that require bird diverters and towers that require bird guards. These findings must be documented on powerline profiles and incorporated into the EMPr. With the historic success that the mitigation measure has had on previous projects, the main issues can be mitigated to an acceptable level. In this case the project can go ahead.

A desktop assessment of **wetlands** associated with the powerlines was undertaken. The following baseline and background information was researched and used to understand the study area:

- The Ramsar Convention;
- National Freshwater Ecosystem Priority Areas (NFEPA) (Nel et al., 2011);
- Water Management Areas (WMA) and Quaternary Catchments; and
- The KZN 2012 Critical Biodiversity Areas Map.

Desktop delineations based on the available contour and topographic data, as well as detailed aerial imagery were applied to the proposed powerline corridors to provide an indication of the potential extent of the wetland areas likely to be present. Limited in-field verification of these systems took place.

Eskom avoids placing towers in wetlands for technical reasons. Most of the wetlands are narrow enough for the conductors to be strung over them. Direct loss of wetlands, increased sedimentation, compaction of wetland soils, altered wetland hydrology, onset of erosion, and the establishment of alien invasive plant species is expected to result from the clearing of

vegetation for the construction of access roads and towers foundations, as well as the increased vehicular activity associated with the stringing of the powerlines.

During the operational phase, no direct impacts to wetlands are expected to occur, however, potential risks include hydrocarbon spills and indirect risk of poaching and fires.

The significance of the impacts of site access and disturbance and clearing after mitigation was assessed to be negligible for both the construction and operational phases.

The investigation of **agricultural potential** involved the collation of climate, geology, topography information and determining the broad soil groups of the area as background for further interpretation. Properties of the soil groups, soil depth, clay content, soil restrictions as well as land capability classes were considered. The soil investigation was based on a field investigation and additional available information from the Land Type Survey of the Institute of Soil Climate and Water, as well as other relevant information.

The soils in the project area were then classed in four land capability/potential classes, namely:

- Soils of intermediate suitability for arable agriculture;
- Soils not suitable for arable agriculture, but suitable for forestry or grazing;
- Soils of poor suitability for arable agriculture; and
- No dominant class.

Properties like clay content and susceptibility to erosion is highly dependent on the parent material. The mudstone underlying this area can give rise to soils severely susceptible to erosion when exposed. Exposed surfaces should therefore be limited or prevented. It should be covered with any vegetation even for short periods.

Arable crop production is not restricted by the climate of the area but may become risky in the areas with lower and irregular rainfall patterns.

No areas with a high potential agricultural value were identified in the corridor. Approximately 52 % of the Normandie-Iphiva Corridors have soils not suitable for arable agriculture, but suitable for forestry or grazing covers.

The **Heritage** Impact Assessment complies in part with the KwaZulu-Natal Heritage Act, (No 4 of 2008) (KZNHA) and National Heritage Resources Act, (No 25 of 1999) (NHRA). The greater cultural landscape is expected to contain heritage resources spanning from palaeontological through to contemporary living heritage resources. Various resource types are anticipated to occur. These include but are not limited to archaeological resources from various time periods; and burial grounds and graves.

Earth moving activities, such as vegetation and surface clearing, or excavation for the relevant infrastructures, construction and/or upgrading of access roads and stringing of conductors have the greatest likelihood of direct impacts on heritage resources.

Various resource types are anticipated to occur within the proposed corridors. These include but are not limited to:

- Archaeological resources from various time periods; and
- Burial grounds and graves.

Varying levels of anthropogenic disturbances such as rural settlements, subsistence and commercial agricultural fields, and municipal infrastructures were noted in the study area. Direct impacts to archaeological resources, burial grounds and graves with a high or medium Cultural Significance have a negligible positive significance after mitigation.

The **visual** specialist study is based on the Oberholzer (2005) guideline that draws on best practice in EIA and provides guidance applicable to visual specialist assessments. Projects-specific receptor (viewer) sensitivity is based on accepted international practice, previous experience of the visual specialists, social specialist and the economic specialist.

Guest houses, game lodges and nature-based tourism in protected areas dependent upon a pristine visual resource for tourism value are considered to have a High viewer sensitivity. rural (commercial farming) homesteads a Moderate viewer sensitivity, and National / provincial road users where other infrastructure is present and transformation has already taken place, Formal settlements (such as Pongola and Mkuze) and informal settlements / villages (likely considers Transmission powerlines as a sign of progress) a Low viewer sensitivity.

The greatest factor that influenced visual impact for this project was the presence of conservation areas, due to their dependence upon the landscape as visual resource as

income generator for tourism-related activities. The avoidance and minimisation of the visual impact was mostly focused around reducing impact on these areas.

Impacts were identified for each of the viewer groups against each of the infrastructure components. Visibility and visual exposure were combined in the GIS viewsheds generated. These aspects and visual intrusion were combined to calculate the intensity / magnitude of each impact. The visual intensity was then combined with pre-defined impact assessment aspects such as the nature, duration, extent to determine the significance of each impact before and after mitigation.

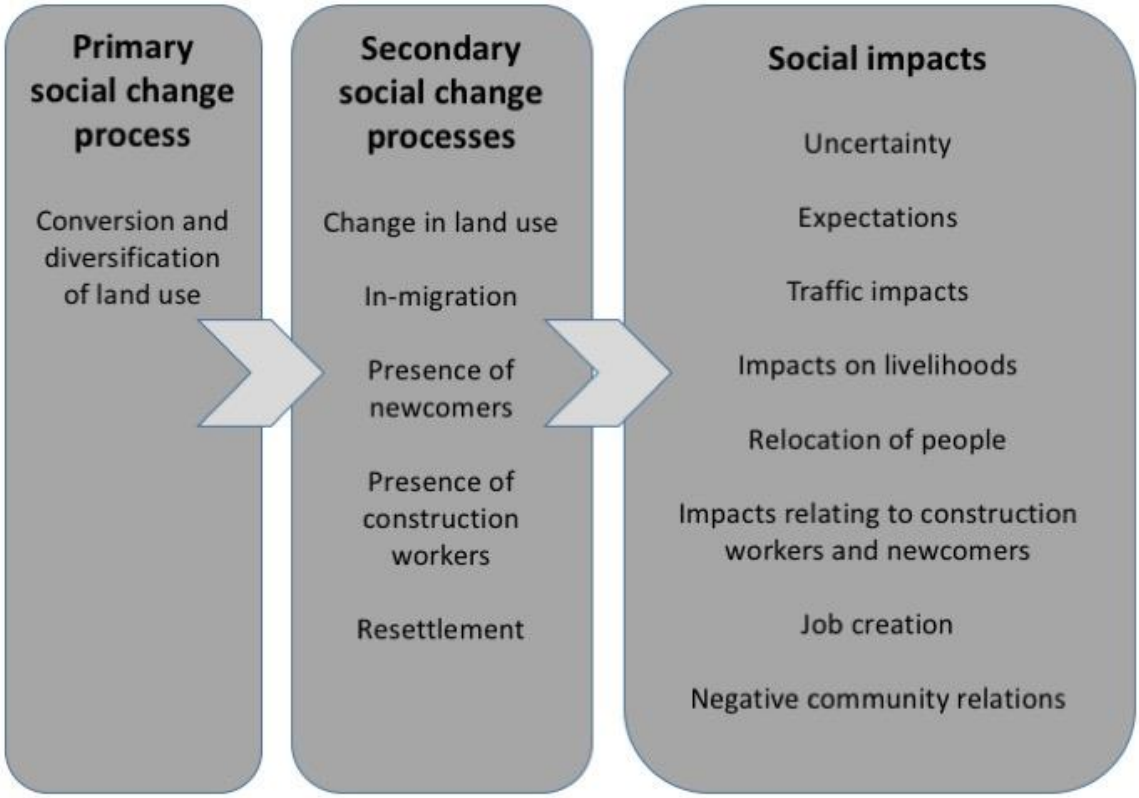
The potential visual impacts associated with powerlines and associated infrastructure are related to alignment close to sensitive areas such as elevated ridges, koppies and wetlands that could be conserved as visual assets for tourist related activities. This was considered in the route selection process, where visual sensitivity was considered as a constraint to route alignment, thereby meeting the first step in the mitigation hierarchy, namely that of avoidance of the impact. Visual impacts are best mitigated in the planning and design phase, and to a lesser extent the construction phase

Demographic, economic, geographic, institutional, legal, emancipatory, empowerment, and socio-cultural processes were investigated in the **Social** Impact Assessment: The social specialist identified the following key stakeholder groups potentially impacted by the project:

- Communities under traditional authority;
- Commercial farming;
- Tourism establishments; and
- Surrounding urban areas.

The proposed project activities set into motion certain social change processes, and these change processes can lead to the experience of social impacts. Social impacts are context specific and may be experienced differently by different groups in the area. The social environment is very dynamic and is constantly changing.

The following change processes and impacts have been identified for the proposed project:



The social specialist concluded that the project will make an important contribution to the supply of electricity in northern KZN and will be of service to many previously disadvantaged communities. She therefore recommends that the project as a whole should proceed, but in the process attempt to minimise negative social impacts to the immediate environment, keeping in mind the current economic climate and broader societal picture in terms of expenditure.

One of the key issues that landowners affected by the proposed project have raised, is the impact on the eco-tourism activities and knock-on effects including decline in property values, loss of jobs, and reduced budgets for conservation of animals. The socio-economic specialist study only allowed for this to be assessed on a qualitative level. Interaction with the landowners has highlighted that the project could be opposed should this aspect not be adequately addressed. The inclusion of a more detailed **economic** assessment was therefore commissioned.

Tourism is not an economic sector in its own right but is a complex and composite sector comprising mainly of accommodation, transportation, food and beverages, cultural and recreational activities. The activities undertaken by the tourist relate with the travel,

destination, and entertainment activities and expenditure that tourists make. The tourism sector contributes approximately 6 % to the value of economic activity for all goods and services produced within the area. This is slightly higher than the national average. The total number of people employed in tourism amounts to approximately 4.6 % of all employment within the regional economy. The tourism value of the region is estimated at R 1.9 billion for the geographical area for 2016, and employment amounts to approximately 9 831 for the corresponding year.

The development of the powerlines will be a significant investment for and have a positive impact on the economy. This is related to the construction and maintenance of the infrastructure as well as positive spin-off impact due to increased electricity supply.

The economic specialist found that the agglomeration of eco- and nature-based tourism is high within this region and a large share of these establishments cater for the international tourism market and even state their tariffs in Euro and Dollar instead of South African Rand. The intensity of the economic impact for tourism activity will be different for each property/activity and depends on inter alia the:

- Land use type – property with tourism activity, such as game farming, lodges, protected areas and nature reserves should, as far possible, be eliminated from the preferred alignment.
- Powerline route – The route should be on the boundary of farms and not transcend properties diagonally or through the middle.
- Size of the property – A powerline that transcend properties diagonally or through the middle, for property smaller than 200 ha – tips an argument for expropriation
- Existing infrastructure – Do not place powerlines over or in close proximity to tourism infrastructure.
- Visibility of the new structure - Place the powerlines / pylons and the substation in areas where it is not visible from tourism areas/hides/etc.
- Market related compensation for the affected property should be provided where the powerline is developed.
- Landowners should be consulted about their preferred configuration if their property is affected.

Once a servitude for the powerlines is finalised it will be possible to quantify the impact on individual property values. A registered property valuer should assess each individual affected property to determine the value impact, if any.

The impact on tourism activity is in most cases higher than other land uses and varies between -5% and -30% of the existing property value and production level. The tourism value for game reserves/lodges/private game reserves within the regional economy is estimated to be approximately R6 303 per hectare for final sales. The alternatives where the negative economic impact is lowest is preferred.

Impacts (Table below) are measured in terms of:

- Production: refers to the value of output generated in the economy as a result of the existing tourism activity.
- Employment: reflects the number of jobs created by the tourism activity.
- Household Income: refers to the income by households as a result of their involvement in the activity and downstream beneficiation production.

Summary of economy wide economic impact

Alternative	**Total hectare within reserve/ lodge/ game farm**	**Economy-Wide Economic Value**	**Employment**	**Household Income**
Normandie-Iphiva 2 with deviation	2 510	R 29.7 million	116 jobs	R 14 million

The economic specialist found that the construction and operation of the Normandie-Iphiva 400 kV powerline will have a medium-high significant impact after mitigation on property value for the affected properties. Loss in tourism employment; impact on property values of adjacent properties and the reduction in the economic value of the regional economy as a result of a reduction in tourism activities and future expansion/investment in tourism activity low may also be impacted due to the loss in productive land are all predicted to be medium-low.

Conclusion and Recommendation

The EAP recommended that the Normandie-Iphiva 2 corridor with deviation within which servitudes for the construction and operation of the 400 kV powerline be authorised.

The powerlines should be constructed on farm boundaries as far as possible. Towers should be placed outside of wetland/riparian areas and their associated 32 m zones of regulation as far as is possible. Where powerlines are constructed in parallel, towers should preferably be positioned so as to alternate with those of the existing powerline (i.e. out- of-step) and not be placed opposite one another (in-step). This mitigation will increase the visibility of both sets of powerlines to flying large raptors and the birds may then be in a better position to take timely collision avoidance action. Lattice towers with visually intrusive footing designs should be avoided to reduce visual impacts, except for situations where strain towers are required or stability/geotechnical aspects play a role. Servitudes should avoid ridge, follow existing infrastructure corridors and avoid visually sensitive areas and receptors where practical.

Water Use Licences/Registrations must be obtained for any construction in an area regulated by the National Water Act (below 1:100 year floodline or 100 m from a watercourse and 500 m from a wetland).

A walk-down of the servitude once the tower positions have been determined, prior to any construction activities, must be undertaken by suitably qualified heritage, ecology and bird specialists. The specialist should recommend feasible design changes (i.e. moving tower positions within the approved corridor, preferably within the servitude if already negotiated) to further reduce impacts and identify any heritage resources that may be impacted upon, plants or animals that require rescue and sections of the powerlines that require bird diverters and towers that require bird guards. Areas with a high ecological sensitivity, wetlands and watercourses should be designated as “No-Go” areas and be off limits to all unauthorised vehicles and personnel. These findings must be documented on powerline profiles and incorporated into the EMPr.

Reflectors with LED lights are recommended as bird diverters particularly close to nesting sites and in areas in relatively close proximity to water or wetlands.

The footprint area of towers must be limited to what is essential in order to minimise impacts as a result of vegetation clearing and compaction of soils. Removal of plants should be restricted to only those trees that pose a risk to the powerline. Protected trees within the servitude will necessitate that appropriate permits are applied for before these trees are damaged or removed. Physical damage to natural vegetation on the periphery of the

servitude, in all riparian areas and areas with steep slopes must be avoided. No hunting is permitted by Eskom employees or contractors. No incision and canalisation of the wetland features should take place. No material may be dumped or stockpiled in any “No-Go” areas. All vehicles must remain on demarcated roads and within the project area footprint. All land disturbed by Eskom should be vegetated and left in the condition it was before the construction of the powerlines and no disturbed areas should be left uncovered during construction to prevent erosion.

Exemption from further palaeontological assessment is recommended. A Fossil Chance Find Procedure must be included in the EMPr.

The social mitigation and management measures include appointing a Community Liaison Officer, compiling and implementing policies for employment, conduct of employees and contractors, road use, access control specifically for protected and game reserve areas, a relocation and compensation in accordance with international best practice, strategies for community relations, communication, Corporate Social Investment, safety and security, HIV and life skills, and a grievance mechanism. A relocation specialist should be appointed should relocation be required. Construction camps should be established in accordance with international best practice, and Eskom must join local fire protection agencies and have and implement a firefighting strategy.

2. PROJECT LOCATION

GN 982 Appendix 4:

c) a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;

The proposed project is located predominately in KZN with a small portion of the project in the Mpumalanga Province. The Zululand and Gert Sibande District Municipalities are affected by the project with Pongola and Mkuze being the main towns in the study area. Land use varies across the study area with dispersed rural settlements, sugar cane farming, areas formally protected for conservation, private game farms and linear peri-urban development adjacent to the National Route 2 (N2).

The proposed project consists of the approximately 150 km Normandie-Iphiva 400 kV Transmission powerlines that will link into the Iphiva 400/132 kV Substation (**Figure 2.1**).

The existing Normandie Substation is 18 km south east of the town of Piet Retief in Mpumalanga and can accommodate the proposed new powerlines.

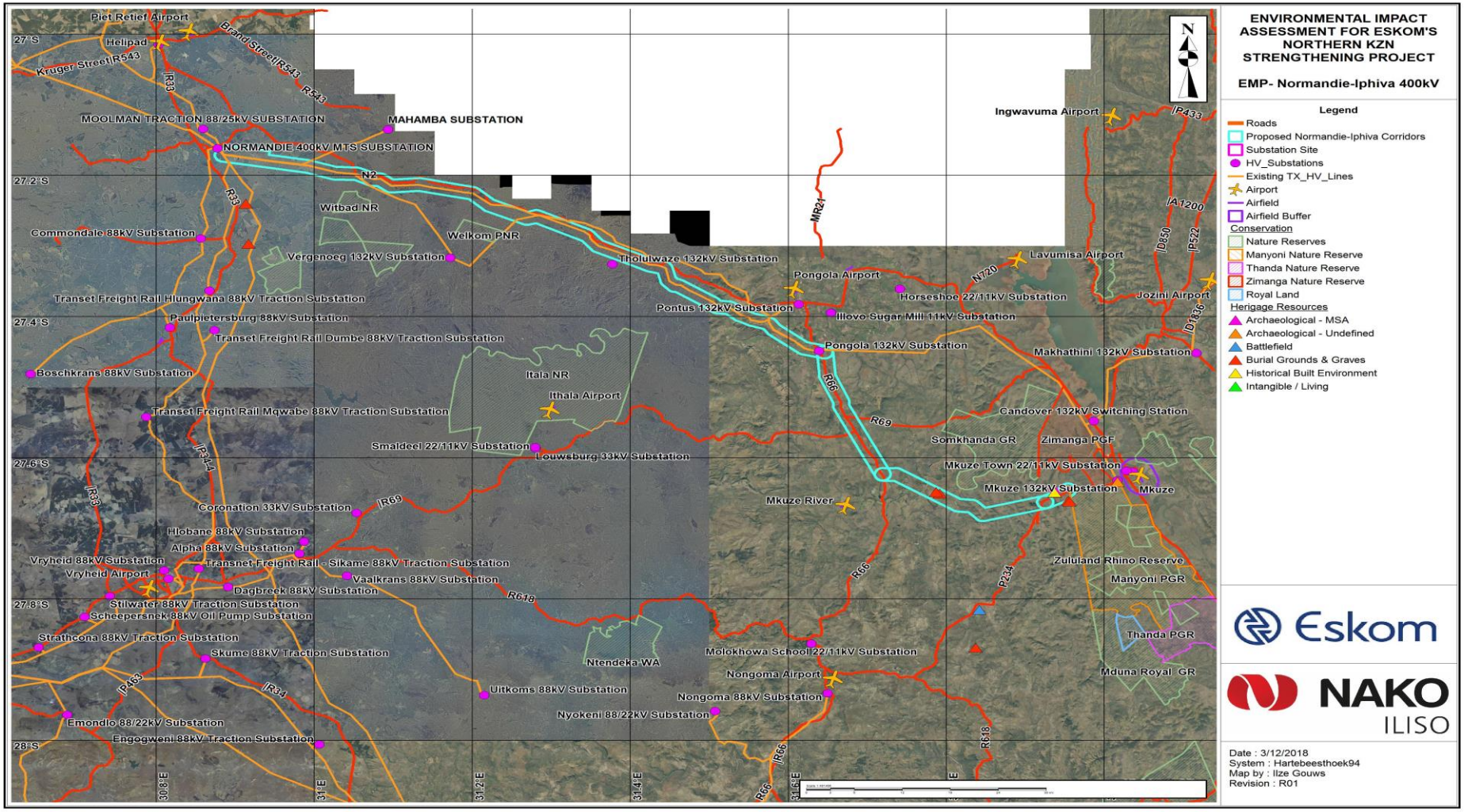


Figure 2.1: Locality of the proposed Iphiva-Duma powerline corridor with sensitivity overlaid

3. LEGAL REQUIREMENTS, POLICIES AND GUIDELINES

3.1 ENVIRONMENTAL PRINCIPLES

The following principles should be considered at all times during the pre-construction and construction phase activities.

- The environment is considered to be composed of both biophysical and social components.
- Construction is a disruptive activity and due consideration must be given to the environment, including the social environment, during the execution of a project to minimise the impact on affected parties.
- Minimisation of areas disturbed by construction activities (i.e. the footprint of the construction area) should minimise many of the construction related environmental impacts of the project and reduce rehabilitation requirements and costs.
- As minimum requirements, all relevant standards relating to international, national, provincial and local legislation, as applicable, shall be adhered to. This includes requirements relating to waste emissions (e.g. hazardous, airborne, liquid and solid), waste disposal practices, noise regulations, road traffic ordinances, etc.
- Every effort should be made to minimise, reclaim and/or recycle "waste" material.

3.2 ENVIRONMENTAL PERMITS, LICENCES AND AUTHORISATIONS

Commencement of the project is subject to obtaining all necessary permits, licences and/or authorisations required in terms of South African environmental legislation. A number of activities were applied for as part of the EIA process. Should the project trigger any other activities not included in the applications submitted, a separate application process must be followed and these activities authorised before the project can commence.

Table 3.1: Powerline activities that could require either a permit, licence authorisation or consent use

Activity	Type of permit/ license/consent required	Issuing Authority
Taking water from a water resource	Licence	Department of Water and Sanitation (DWS)
Storing water	Licence	DWS
Impeding or diverting the flow of water in a watercourse	Licence	DWS

Activity	Type of permit/ license/consent required	Issuing Authority
Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit.	Licence	DWS
Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people	Licence	DWS
Disposing of waste in a manner which may detrimentally impact on a water resource	Licence	DWS
Use of treated wastewater (dust suppression)	Approval	DWS and Department of Health (DOH)
Applying for a licence regarding activities in state forest.	Licence	DWS
Compliance with the Veld and Forest Fire Act	Requirement for a fire management plan	Department of Agriculture Forestry and Fisheries (DAFF)
To impact on archaeological and paleontological sites and meteorites	Permit	South African Heritage Resource Agency (SAHRA) (Amafa)
To impact on or disturb burial grounds and graves	Permit	SAHRA (Amafa)
Way leave applications for accesses to provincial roads	Approval	Department of Transport (DOT)
Design of the main access road to the site camp.	Approval Environmental Authorisation (EA)	DEA and Relevant Provincial Roads Dept.
Application for health permits for hostels and sanitation	Permit	DOH
Blasting	Permit	DEA/South African Police Services
Commencement of construction activities	Notify one week before commencement	DEA
Application for Radio Equipment Licence	Site radio submission	ICASA
Outdoor advertising of Activities	South African Manual for Outdoor Advertising Control specifications	SAMOAC
Site establishment sewage disposal	Approval	Local Municipality
Site Establishment storm water & pollution control	Separate report	Local Municipality

Activity	Type of permit/ license/consent required	Issuing Authority
Fuel storage	Approval-as part of BA/EIA authorisation	DEA or the relevant provincial Environmental Affairs
Hazardous material route	Approval	DOT
Other hazardous substances	Permit	DOH/DEA (in certain cases)
Use of borrow pits	Approval	Department of Mineral Resources
Detail design (water, waste water, roads design)	Approval	Local Municipality
Way leave applications – design	Approval	SANRAL
Waste storage, transportation, treatment, recycling and / or disposal (including hazardous waste	Approval – Waste Management Licence (WML)	DEA

3.3 ESKOM POLICY DOCUMENTS

3.3.1 Control Plans for Alien Invasive Species

Government Notice Regulation (GNR) 598 of 2014, Alien and Invasive Species (AIS) Regulations requires that Eskom as a landowner is legally obliged to clear its properties of AIS. As such, Eskom is required by law to firstly determine if AIS are present on its property and if so, as per the listed category, control them so as to prevent them invading outside that property. AIS are one of the initiatives set out on the Eskom's Biodiversity Implementation Plan (Eskom Biodiversity Implementation Plan, 2017).

Alien invasive plant species on land under linear infrastructure is addressed by the National Vegetation Management Commodity Strategy. The updated AIS list as per the most recent legislation is incorporated into the vegetation maintenance schedule going forward.

As a priority, Eskom Real Estate, Generation Peaking and Nuclear have in place AIS Control Plans for all conservation sites. Some Power Stations do possess site specific Vegetation Assessments which need to be aligned to the Control Plan requirements (Eskom Biodiversity Implementation Plan, 2017).

Eskom's 5-year Alien Invasive Control Plan is compiled for submission to DEA as an overarching framework to implement AIS regulations in accordance with Eskom's operational risk and supporting finances, capacity and resources. The plan includes:

- Implementation of AIS Control Plan as per priority land specified;

- Training – Engaging with DEA's preferred suppliers and providing Eskom environmental practitioners with the relevant training of identification, effective control methodologies per species etc;
- On the ground implementation – Setting up a national Memorandum of Understanding with Working for Water to initiate provincial collaborations;
- Spatial Support – ensuring Eskom practitioners have access to the most updated spatial data layers to inform their planning of AIS control on their sites; and
- Collaboration with DEA /other parastatals on large scale projects (Eskom Biodiversity Implementation Plan, 2017).

4. PLANNING, DESIGN AND PRE-CONSTRUCTION REQUIREMENTS

GN 982 Appendix 4:

(d) a description of the impact management (outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the EIA process for all phases of the development

(e) a description and identification of **impact management outcomes** required for the aspects contemplated in paragraph (d);

(f) a description of proposed impact **management actions**, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to —

- (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;
- (ii) comply with any prescribed environmental management standards or practices;
- (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and
- (iv) comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable;

(g) the **method of monitoring** the implementation of the impact management actions contemplated in paragraph (f);

(h) the **frequency of monitoring** the implementation of the impact management actions contemplated in paragraph (f);

(i) an indication of the **persons who will be responsible** for the implementation of the impact management actions;

(j) the **time periods** within which the impact management actions contemplated in paragraph (f) must be implemented;

(k) the **mechanism for monitoring** compliance with the impact management actions contemplated in paragraph (f);

(l) a **program for reporting** on compliance, taking into account the requirements as prescribed by the Regulations;

for

- (i) Planning and Design and
- (ii) (ii) pre-construction activities;

4.1 DESCRIPTION OF PLANNING DESIGN AND PRE-CONSTRUCTION ACTIVITIES

During the planning, design and pre-construction phase Eskom will:

- Survey the authorised corridor;
- Identify the most feasible technical alignment;
- Negotiate servitudes (see below);
- Undertake detailed design of towers;
- Prepare tender documents for Contractors;
- Advertise and adjudicate tenders;
- Appoint Contractors;
- Negotiate with landowners for the use of land for the construction camp and access roads;
- Undertake pre-construction environmental investigations including ecological, birds and heritage;

- Obtain any additional licences, permits, approvals and authorisations required;
- Relocation or compensation for any affected parties not addressed by purchasing of the property (e.g. unregistered rights);
- Negotiate compensation and mitigation of affected parties (e.g. for impact on eco-tourism activities);
- Appoint independent ECO; and
- And notify DEA of the intention to commence with construction.

4.1.1 Servitude negotiation

Distribution powerlines are constructed and operated within a servitude (36 m wide for 132 kV powerlines) that is established along its entire length. The servitude allows Eskom Distribution certain rights and controls that support the safe and effective operation of the line.

The process of achieving the servitude agreement is referred to as the Servitude Negotiation Process, or just the negotiation process.

The negotiation process is undertaken directly by Eskom Distribution. Important points relating to the EIA process are as follows:

- Servitude negotiation is a private matter between Eskom Distribution and the landowner concerned.
- The negotiation process involves a number of stages (**Section 4.1.2**), and culminates in the 'signing' of a servitude. Here Eskom Distribution enters into a legal agreement with the landowner.
- The agreements will detail such aspects as the exact location and extent of the servitude, and access arrangements and maintenance responsibilities.
- Compensation measures are agreed in each case.
- It may take place at any time in the planning of a new powerline.
- It must be completed (i.e. the agreement must be signed) before construction starts on that property.
- It is independent of the EIA process.

The EIA process has become important in the initial planning and route selection of a new Distribution powerline. For this reason, it would normally be preferable that the negotiation process begins after the EIA has been completed. At this stage there is greater confidence in the route to be adopted, and it would be supported by EA.

However, it may be required that the negotiation process needs to start earlier, and may begin before or run in parallel to the EIA process. This may be due to tight timeframes, knowledge of local conditions and constraints, etc. Eskom Transmission has a right to engage with any landowner at any time, though they do so at risk if EA has not been awarded.

4.1.2 The Negotiation Process

The negotiation process can be extensive, often running into years on the longer lines. It is therefore critical that it is correctly programmed into the planning of a new powerline. The negotiation process involves:

- Initial meeting with the landowner.
- The signing of an 'option' to secure a servitude (this indicates that the owner will accept that the line will cross his property, subject to conditions to be finalised in the negotiation of the servitude agreement). An option is valid for one year.
- Once the route is confirmed (i.e. options signed with the upstream and downstream landowners) the servitude agreement will be finalised with the individual landowners. This agreement will set out the conditions for the establishment and operation of the servitude, and will be site specific (different landowners may have different requirements). Compensation payments are made when the servitude is registered at the Deeds office.
- Once the construction is complete and the land rehabilitated to the landowner's satisfaction, the landowner signs a 'Final Release' certificate. Until such time Eskom Transmission remains liable for the condition of the land.
- Once the clearance certificate is signed, the responsibility for the line and servitude is handed over to the regional Eskom Transmission office. Prior to this the Eskom national office is responsible for the process.

4.2 ROLES AND RESPONSIBILITIES

In order to ensure that the EMPr and its mitigation measures are implemented, roles and responsibilities need to be clearly defined and documented.

4.2.1 Competent Authority

The CAs, on behalf of the Minister, plays a lead role in the implementation of national environmental policies, legislation and regulations. Their role is to ensure that the Project is

implemented in a sustainable manner, in compliance to the relevant environmental legislation.

The CA is responsible for approving the EMPr for the Project and any revisions and amendments thereto.

4.2.2 Developer (Eskom)

The holder of the EA to which this EMPr relates holds legal responsibility for compliance with this EMPr and any other arrangements must be entered into between such holder and other parties. The Developer will have overall responsibility for the management of the project and the implementation of the EMPr.

The Developer must:

- Be fully conversant with the conditions of the EA;
- Ensure that all stipulations within the EMPr are communicated and adhered to by the Developer and its Contractor(s);
- Overall management of the project and EMPr implementation;
- Ensure that Contractors are fully aware of the Conditions of the EA and of the EMPr prior to tendering, and that their Scope of Work includes providing the services necessary to adhere to both; and
- Appoint an independent ECO prior to the commencement of construction. The Developer is further responsible for providing and giving mandate to enable the ECO to perform responsibilities, and he/she must ensure that the ECO is integrated as part of the project team while remaining independent.

4.2.3 Environmental Assessment Practitioner

The EAP drafts the EMPr as part of the EIA process.

4.2.4 Community Liaison Officer

Eskom must appoint a Community Liaison Officer (CLO).

4.3 DESIGN REQUIREMENTS

Final tower types to be used for the Normandie-Iphiva 400 kV Transmission powerline will be determined by Eskom after final survey and profiling of the different alignments.

Typical possible tower types include:

- Cross Rope Towers (**Figure 4.1** and **Plate 1**);

- Self-Supporting Tower (**Figure 4.2** and **Plate 2**), or
- Guyed Vee Tower (**Figure 4.3** and **Plate 3**).

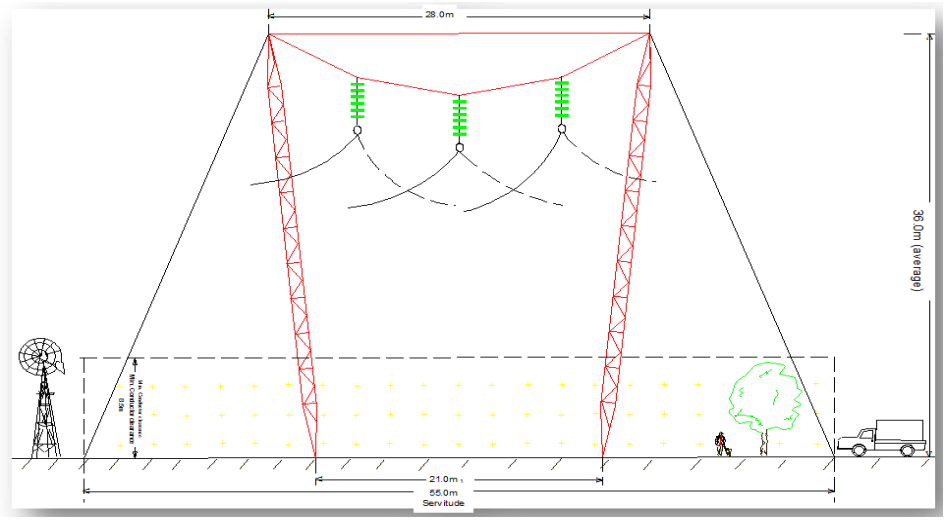


Figure 4.1: Cross Rope Towers

Plate 1: Cross Rope Tower

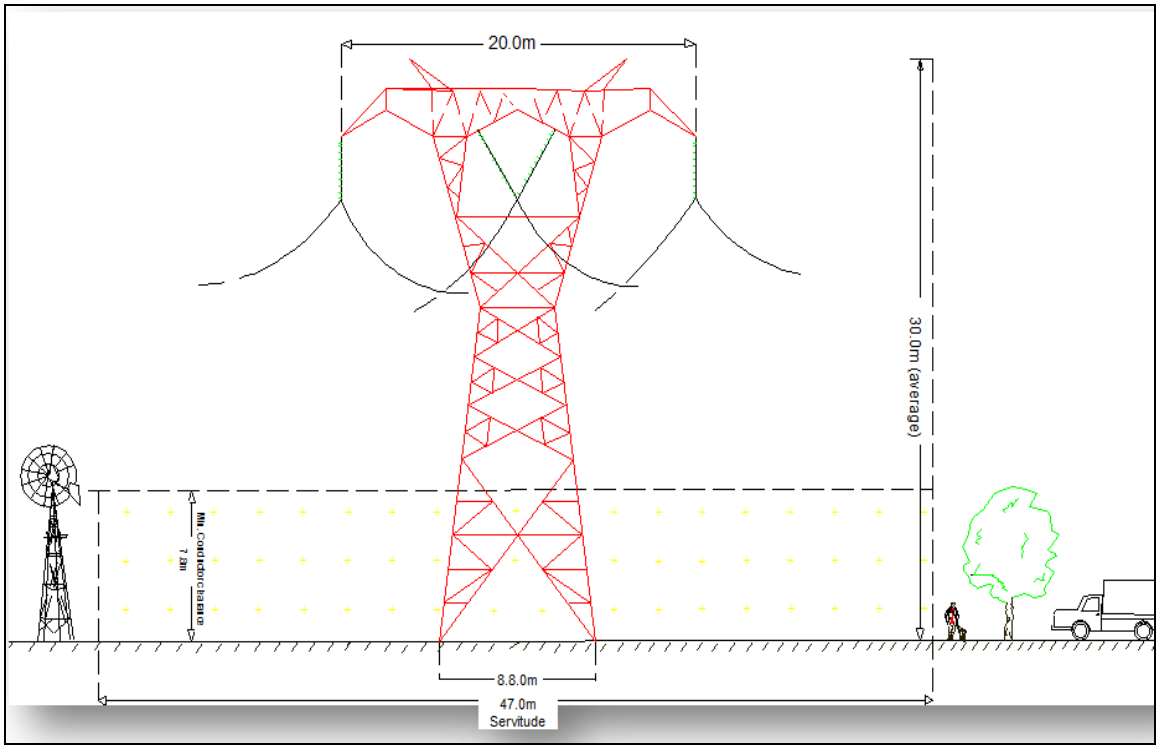


Figure 4.2: Self-Supporting Tower

Plate 2: Self-Supporting Tower

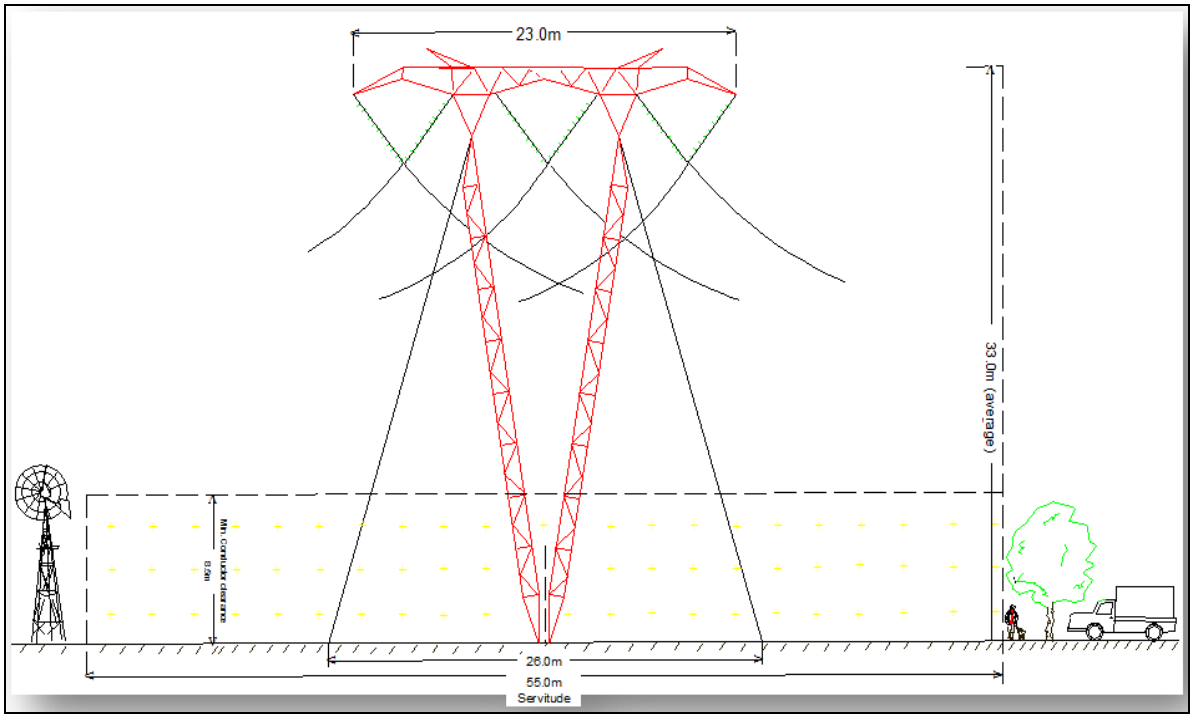


Figure 4.3: Guyed Vee Tower

Plate 3: Guyed Vee Tower

Each powerline consists of three phases (three conductors). Towers usually support one powerline, but in cases of extreme constraints, two powerlines of different voltages can also be supported on one set of multi-circuit towers (**Plate 4**).

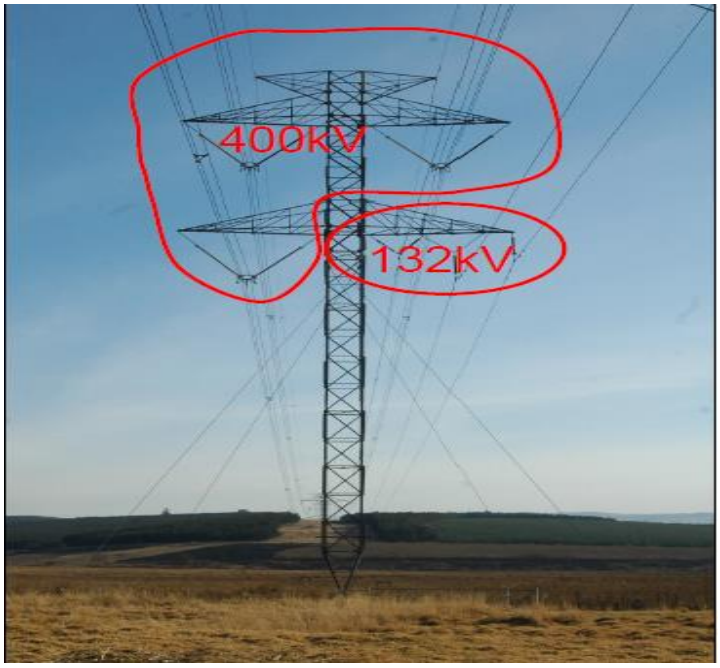


Plate 4: Multi-circuit tower

Most farming activities, except for sugar cane and commercial forestry, can be practiced under the conductors, provided that there is adherence to safe working clearances, crop height restrictions and building restrictions.

A 55 m servitude (27.5 m on either side of the centre line) is required to accommodate the towers on which the overhead line will be strung. In forestry areas the servitude needs to be wider. The servitude is required to ensure safe construction, maintenance and operation of the powerline and Eskom will be entitled to unrestricted access. Where 400 kV powerlines are constructed in parallel, a minimum separation distance of 55 m between centre points is required. Minimum vertical clearance distance between the ground and powerline conductors is 8.1 m.

The minimum vertical clearance to any fixed structure that does not form part of the powerline is 5.6 m. The minimum distance from a powerline running parallel to a proclaimed public road is 90 m from the centreline of the road servitude. The maximum crop height within the servitude is 4.3 m. The maximum operation height under the conductors is 2 m.

4.3.1 Impact Management Outcomes for Design

The identification of the servitude, tower positions and tower types must be done in a manner that minimises the impacts on visually sensitive receptors, people currently living on and using the land, heritage resources, plants, animals and wetlands.

4.3.2 Impact Management Actions for Design

The following aspects need to be taken into account in the identification of the identification of the servitude, tower positions and tower types and associated access road:

- Avoid impacts on wetlands, watercourses and areas regulated by the (DWS (if possible). Ensure that any water use such as construction in regulated areas is appropriately authorised.
- Avoid “No-go” areas identified by ecology, bird and heritage specialists in their pre-construction investigations (**Section 4.5**).
- Suitable measures must be applied to powerlines that pose a risk of collision for birds to make them visible to birds.
- The footprint area of towers must be limited to what is essential in order to minimise impacts as a result of vegetation clearing and compaction of soils.
- Adequate stormwater management must be incorporated into the design of the proposed structures in order to prevent erosion and the associated sedimentation of the system for the life of the structure. Particular attention must be given to the area adjacent to the road reserve to ensure that stormwater energy is dissipated and does not cause erosion in these areas.
- The powerlines should be constructed on farm boundaries as far as possible, specifically in areas where land is used for forestry.
- Towers should be placed outside of wetland/riparian areas and their associated 32 m zones of regulation as far as is possible.
- Where powerlines are constructed in parallel, towers should preferably be positioned so as to alternate with those of the existing powerline (i.e. out- of-step) and not be placed opposite one another (in-step). This mitigation will increase the visibility of both sets of powerlines to flying large raptors and the birds may then be in a better position to take timely collision avoidance action.
- Lattice towers with visually intrusive footing designs should be avoided to reduce visual impacts, except for situations where strain towers are required or stability/geotechnical aspects play a role.
- Servitudes should avoid ridge, follow existing infrastructure corridors and avoid visually sensitive areas and receptors where practical.

- Allow for wetland soil conditions to be maintained both upstream and downstream of the crossing to such a degree that wetland vegetation community structures upstream and downstream of the crossing are maintained. Where high speed travelling is possible, speed bumps/ berms must be placed across the road to slow moving vehicles. This is particularly important near villages, schools, clinics, etc. Adequate stormwater management must be incorporated into the design of the proposed structure in order to prevent erosion and the associated sedimentation of the system for the life of the structure. Particular attention must be given to the area adjacent to the road reserve to ensure that stormwater energy is dissipated and does not cause erosion in these areas. All crossing construction should be undertaken in the low flow season and must be completed within 6 months. Clearly demarcate sensitive areas into which no construction activities should encroach.

4.4 INVESTIGATIVE ACTIVITIES

Investigative activities include geotechnical and other pre-construction activities on site.

4.4.1 Impact Management Outcomes for Pre-Construction Investigative Activities

Investigative activities should not impact on the receiving environment. The site should be left in the same condition that it was found.

4.4.2 Impact Management Actions for Pre-Construction Investigative Activities

Arrangements for access on site

ESKOM must arrange for any access to the site that will be required with the landowners.

Hydrocarbon wastes, accidental spills and hazardous wastes

Compliance with all national, regional and local legislation with regard to the disposal of hydrocarbons, chemicals, solvents and any other harmful and hazardous substances and materials must be ensured. All hazardous waste must be collected in receptacles located on a drip tray on site for disposal at a registered hazardous waste disposal site. Accidental chemical spills must be contained for cleanup and control by the supplier, or by a professional pollution control service provider. Vehicles and equipment must undergo regular maintenance to avoid fuel and oil leaks, as well as to remove combustible material that may be the cause of accidental fires.

Water for human consumption

Water for human consumption will be brought to site by the Contractor in a water tank and the water will be obtained from a potable source.

Fire prevention and management

No open fire is permitted and the collection on site of firewood or other fuel is strictly prohibited.

Topsoil conservation

Topsoil is defined as the A Horizon which is the upper soil profile approximately 200 mm deep. The topsoil cleared for purposes of an investigation must be stock-piled separately from the sub-soils and replaced from where it was removed once investigations have been completed. After completion of drilling and excavation of trail pits the Contractor must rehabilitate the disturbed sites by replacing the topsoil and landscaping the area to control storm runoff.

Solid waste management

No dumping or littering is allowed. Domestic and all other waste from all work areas must be collected and removed from the site. No solid waste may be burned on site.

Landscaping and rehabilitation

All test pits dug for investigation purposes must be properly filled in, compacted and covered with topsoil. Special attention should be paid to alien and invasive control within these areas. Alien and invasive vegetation control should take place throughout all phases of the development.

Damage to property

Any damage caused to property must be reported immediately to the DEA Liaison Officer who will report it to the landowner and arrange for repairs to be done or for a claim for compensation to be lodged with the DEA. The cost of repairs or compensation for accidental damage will be for the account of the Contractor.

4.5 PRE-CONSTRUCTION ENVIRONMENTAL INVESITIGATIONS

4.5.1 Impact Management Outcomes for Pre-Construction Environmental Investigation

During the EIA phase of the project the most significant impacts on the receiving environment were avoided by identifying the alternative powerline corridor that has the least environmental impacts and is therefore the best practical environmental option. Assessments did not identify the best way to minimise impacts within that corridors. The objective of the pre-construction investigations is to further avoid and minimise impacts on these aspects of the environment by taking them into account in planning and design.

4.5.2 Impact Management Actions for Pre-Construction Environmental Investigation

A walk-down of the servitude once the tower positions have been determined, prior to any construction activities, must be undertaken by suitably qualified heritage, ecology and bird specialists. The specialist should recommend feasible design changes (i.e. moving tower positions within the approved corridor, preferably within the servitude if already negotiated) to further reduce impacts and identify any heritage resources that may be impacted upon, plants or animals that require rescue and sections of the powerlines that require bird diverters and towers that require bird guards. Areas with a high ecological sensitivity, wetlands and watercourses should be designated as "No-Go" areas and be off limits to all unauthorised vehicles and personnel. These findings must be documented on powerline profiles and incorporated into the EMPr.

Reflectors with LED lights are recommended as bird diverters particularly close to nesting sites and in areas in relatively close proximity to water or wetlands.

4.6 SOCIAL IMPACTS

Eskom should attempt to enter into negotiations with the relevant land owners as soon as is possible. Once the land negotiations have been finalised, it is important that the project should started and completed as soon as possible. Before construction has started there is always the possibility of a change in plans or priorities, which would result in prolonging uncertainty. Eskom should have a communication strategy in place to keep stakeholders up to date with the process.

4.6.1 Impact Management Outcomes for Social Aspects

Manage expectations and improve relationships with communities, and manage expectations in terms of job creation and Community Social Investment.

4.6.2 Impact Management Actions for Social Aspects

- Appoint a CLO
- Compile grievance mechanism
- Compile Written Employment Policy
- Jobs should be advertised in a way that is accessible to all members of society.
- Labour desks should be established in accessible areas.
- Compile and implement policies for conduct of employees and contractors, road use, and access control specifically for protected and game reserve areas,

- Compile a relocation and compensation Policy in accordance with international best practice,
- Compile strategies for community relations, communication, Corporate Social Investment, safety and security, HIV and life skills.
- A relocation specialist should be appointed should relocation be required.
- Construction camps should be established in accordance with international best practice,
- Eskom must join local fire protection agencies and have and implement a firefighting strategy and
- Consult with relevant communities before engaging in any Corporate Social Investment projects in the area.
- Eskom should have a strategy in place for engaging with traditional leadership structures. They must ensure that they are familiar with the right processes to follow. It must be considered that this will take some time, and sufficient time should be allowed in the negotiation process to engage with the leadership and allow the leadership to consult with their constituencies. It must be acknowledged that this process may take longer than engaging with most of the other landowners. Following the right process also include respect for local customs and Eskom's representatives should know what is expected from them in terms of behaviour and dress code.
- Eskom should manage expectations in terms of their Corporate Social Responsibility. There should be a system that will allow community members to bring their need or proposed project to the attention of Eskom. Eskom should be clear about the criteria for further consideration and should keep the community up to date with the status of their application. Requests for assistance should be treated with respect and not disappear in a black hole. It is acknowledged that there are limits to the extent to which Eskom can accommodate projects in their CSR programme, and these should be communicated to the relevant stakeholders. Eskom should manage expectations and need to find a balance between making promises that they cannot keep and not being involved at all.

4.7 MONITORING AND REPORTING

The ECO should undertake an audit of the Planning, Design and Pre-Construction Phase activities prior to the commencement of construction.

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5. CONSTRUCTION PHASE

GN 982 Appendix 4:

(d) a description of the impact management (outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the EIA process for all phases of the development

(e) a description and identification of **impact management outcomes** required for the aspects contemplated in paragraph (d);

(f) a description of proposed impact **management actions**, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to —

- (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;
- (ii) comply with any prescribed environmental management standards or practices;
- (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and
- (iv) comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable;

(g) the **method of monitoring** the implementation of the impact management actions contemplated in paragraph (f);

(h) the **frequency of monitoring** the implementation of the impact management actions contemplated in paragraph (f);

(i) an indication of the **persons who will be responsible** for the implementation of the impact management actions;

(j) the **time periods** within which the impact management actions contemplated in paragraph (f) must be implemented;

(k) the **mechanism for monitoring** compliance with the impact management actions contemplated in paragraph (f);

(l) a **program for reporting** on compliance, taking into account the requirements as prescribed by the Regulations;

For

(iii) construction activities;

(iv) rehabilitation of the environment after construction and where applicable post closure; and

5.1 CONSTRUCTION ACTIVITIES

Construction of the powerline is expected to take 36 months. No staff will be accommodated on site during the construction or operation of the powerline, but will be transported to site each day.

The construction process consists of the following phases:

- Contractor site establishment;
- Survey and pegging of tower positions;
- Access road negotiation and construction;
- Gate installation and vegetation clearing;
- Foundation excavation and installation;

- Tower assembly and erection;
- Conductor stringing and tensioning, and
- Servitude clean-up and rehabilitation.

The establishment of construction camps will take place along the route. The exact position of the construction camps will be negotiated with the relevant landowners. The location and layout of the construction camp, as well as use and management of resources must be approved by the Engineer and will be monitored by the ECO against the requirements set out in this EMPr.

An 8 m wide strip directly under the position of the powerline will be cleared of vegetation for construction purposes. Any plants that could interfere with the construction, maintenance or operation of the powerline, will be removed or trimmed once the centre line has been cleared, the tower positions will be pegged.

Vehicle access is usually required along the entire route for construction, maintenance and operation purposes. Existing roads will be used as far as possible and the construction of roads and bridges will be kept to the minimum. Gates will be installed on all fences that the powerline crosses. Any existing infrastructure will be maintained in its existing condition. Access points and roads will be negotiated with the relevant landowners.

The type of foundation required for each tower is dependent on the geo-technical conditions. The minimum working area required for the erection of a self-supporting strain tower is 40 m by 40 m, and for a cross-rope suspension tower is 50 m by 50 m. If the area is bushveld, then it will be cleared, but if it is grassland, then it will just be trampled by activities.

Foundations may be drilled, mechanically excavated, or dug by hand. No blasting will take place. Concrete is then placed. Helicopters may be used to transport equipment and materials if tower positions are inaccessible. Due to the costs involved, this is not the standard method of accessing the towers and line and access roads will still be used for the majority of the route.

Any incomplete excavations will be protected to prevent animals and people from injury. All foundations are back-filled, and stabilised through compaction and capped with concrete at ground level. Towers are assembled on the ground and then lifted into position by cranes or helicopters.

The conductor is then strung between towers by first passing a guide wire through the desired position. Cable drums (containing 2.5 km of cable, can be steel or wooden approximately 2.5 to 3 m in size) are placed at 5 km intervals in the cleared section of the servitude, and passed 2.5 km in each direction.

5.2 ROLES AND RESPONSIBILITIES DURING THE CONSTRUCTION PHASE

In order to ensure that the EMPr and its mitigation measures are implemented, roles and responsibilities need to be clearly defined and documented prior to commencement.

5.2.1 Competent Authority

The CA, on behalf of the Minister, plays a lead role in the implementation of national environmental policies, legislation and regulations. Their role is to ensure that the Project is implemented in a sustainable manner, in compliance to the relevant environmental legislation.

The CA is responsible for approving the EMPr for the Project and any revisions and amendments thereto.

5.2.2 Developer (Eskom)

The holder of the EA to which this EMPr relates holds legal responsibility for compliance with this EMPr and any other arrangements must be entered into between such holder and other parties. The Developer will have overall responsibility for the management of the project and the implementation of the EMPr.

The Developer must:

- Be fully conversant with the conditions of the EA;
- Ensure that all stipulations within the EMPr are communicated and adhered to by the Developer and its Contractor(s);
- Overall management of the project and EMPr implementation;
- Ensure that Contractors are fully aware of the Conditions of the EA and of the EMPr prior to tendering, and that their Scope of Work includes providing the services necessary to adhere to both; and
- Appoint an independent ECO prior to the commencement of construction. The Developer is further responsible for providing and giving mandate to enable the ECO to perform responsibilities, and he/she must ensure that the ECO is integrated as part of the project team while remaining independent.

5.2.3 Independent Environmental Control Officer

The Independent ECO should be employed by the Developer for the duration of the project. The ECO should have appropriate training and experience in the implementation of environmental management specifications. The primary role of the ECO is to act as an independent quality monitoring and reporting agent regarding all environmental concerns and associated environmental impacts. In this respect, the ECO is to conduct periodic site inspections, attend regular site meetings, pre-empt problems and be available to advise on incidental issues that arise. The ECO is also required to conduct compliance audits, verifying the monitoring reports submitted by the Developer Environmental Officer (dEO). The ECO provides feedback to the Developer and the environmental authorities regarding all environmental matters.

Issues of non-compliance raised by the ECO must be taken up by the Developer, and resolved with the relevant Contractor as per the conditions of his contract. Decisions regarding environmental procedures, specifications and requirements which have a cost implication (i.e. those that are deemed to be a variation, not allowed for in the Performance Specification) must be endorsed by the Developer.

The ECO must also, as specified by the EA, report to the relevant CA as and when required.

The responsibilities of the ECO will include the following:

- Be aware of the findings and conclusions of the EIA and Water Use Licensing process (where applicable) and the conditions stated within the environmental licenses;
- Be familiar with the recommendations and mitigation measures of this EMPr;
- Be conversant with relevant environmental legislation, policies and procedures, and ensure compliance with them;
- Undertake regular and comprehensive site inspections / audits of the construction site according to the EMPr and applicable licenses in order to monitor compliance with the EMPr;
- Monitoring the performance of the Contractors in terms of compliance with the EMPr and associated Method Statements;

• Make recommendation to the Developer and Site Supervisor regarding the removal of person(s) and/or equipment which are in contravention of the specifications of the EMPr and/or environmental licenses;

• Compile a regular environmental audit report highlighting any non-compliance issues as well as satisfactory or exceptional compliance with the EMPr;

• Validating the regular site inspection reports, which are to be prepared by the Contractor Environmental Officers (cEO) and dEO;

• Checking the 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;

• Assisting in the resolution of conflicts;

• In case of non-compliances, the ECO must first communicate this to the Developer, who has the power to ensure this matter is addressed. Should no action or insufficient action be taken, the ECO may report this matter to the authorities as non-compliance; and;

• Provide recommendations on the amendments to and update of the EMPr.

5.2.4 Developer Environmental Officer

The dEO is the Developer's Environmental Representative on site and will report to the Developer and is responsible for implementation of the EMPr, environmental monitoring and reporting, providing environmental input to the Developer and Contractor's Manager, liaising with Contractors and the landowners as well as a range of environmental coordination responsibilities.

The dEO must:

• Be fully conversant with the EMPr;

• Be familiar with the recommendations and mitigation measures of this EMPr, and implement these measures;

• Ensure that all stipulations within the EMPr are communicated and adhered to by the Employees, Contractor(s) and its sub-contractor(s);

• Conduct environmental awareness training on site;

• Ensure that the necessary legal permits and / or licenses are in place and up to date;

• Maintain public complaints register;

• Ensure all environmental records are kept on site;

• Confine the construction site to the demarcated area;

• Conduct environmental internal audits with regards to EMPr and authorisation compliance;

• Assist the Contractors in addressing environmental challenges on site;

• Assist in incident management;

• Reporting environmental incidents to Developer and ensuring that corrective action is taken, and lessons learnt shared;

• Assist the Contractor in investigating environmental incidents and compile investigation reports;

• Follow-up on pre-warnings, defects, Non-conformance reports;

• Measure and communicate environmental performance to the Contractor; and

• Review and update EMPr.

5.2.5 Contractor

The Contractor appoints the cEO and has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract are in line with the EMPr and that Method Statements are implemented as described. External Contractors must ensure compliance with this draft EMPr while performing the onsite activities as per their contract with the Project Developer. The contractors are required, where specified, to provide Method Statements setting out in detail how the management actions contained in the EMPr will be implemented during the development of overhead Transmission electricity infrastructure activities.

The Contractor must:

• Project delivery and quality control for the construction services as per appointment;

• employ a suitably qualified person to monitor and report to the Developer's appointed person on the daily activities on-site during the construction period;

• ensure that safe, environmentally acceptable working methods and practices are implemented and that equipment is properly operated and maintained, to facilitate proper access and enable any operation to be carried out safely;

• attend on site meeting(s) prior to the commencement of construction activities to confirm the construction procedure and designated activity zones;

• ensure that contractors' staff (or sub-contractors) repair any environmental damage as a result of a contravention of the specifications contained in the EMPr, to the satisfaction of the ECO.

5.2.6 Contractor Environmental Officer

Each Contractor affected by the EMPr should appoint a cEO, who is responsible for the on-site implementation of the EMPr. The Contractor's representative can be the site agent; site engineer; a dedicated environmental officer; or an independent consultant. The Contractor must ensure that the Contractor's Representative is suitably qualified to perform the necessary tasks and is appointed at a level such that she/he can interact effectively with other site Contractors, labourers, the ECO and the public.

The cEO ensures that all Sub-contractors working under the Contractor abide by the requirements of the EMPr. The Contractor is answerable to the Project Manager for all environmental issues associated with the project. His/her primary role is to coordinate the environmental management activities of the Contractor on site.

The cEO must:

• Be on site throughout the duration of the project and be dedicated to the project;

• Ensure all their staff are aware of the environmental requirements, conditions and constraints with respect to all of their activities on site;

• Implementing the environmental conditions, guidelines and requirements as stipulated within the EA, EMPr and Method Statements;

• Attend the Environmental Site Meeting;

• Undertaking corrective actions where non-compliances are registered within the stipulated timeframes;

• Report back formally on the completion of corrective actions;

• Environmental monitoring as required by applicable legislation;

• Assist the dEO in maintaining all the site documentation;
• Prepare the site inspection reports and corrective action reports for submission to the ECO;
• Assist the dEO with the preparing of the monthly report; and
• Where more than one Contractor is undertaking work on site, each company appointed as a Contractor will appoint a cEO representing that company.

5.2.7 Community Liaison Officer

Eskom must appoint a Community Liaison Officer (CLO).

5.3 ENVIRONMETAL DOCUMENTATION REPORTING AND COMPLIENCE DURING CONSTRUCTION

The holder of the EA is responsible for the upkeep and management of the Environmental file. At a minimum, all documentation detailed below will be stored in the Environmental file. A hard copy of all documentation shall be filed, while an electronic copy may be kept where relevant. A duplicate file will be maintained in the office of the Developer's Site Supervisor (where applicable). This duplicate file will be the responsibility of the cEOs and must remain current and up-to-date. The filing system must be updated and relevant documents added as required. The Environmental file must be made available at all times on request by the ECO or CA (in terms of NEMA EIA regulation) or other relevant authorities. The Environmental file will form part of any environmental audits undertaken as prescribed in the Regulations.

5.3.1 Documentation to be available

At the outset of the project the following documents shall be placed in the filing system and be accessible at all times:
• Full copy of the signed EA from the CAin terms of NEMA, granting approval for the development;
• Copy of the EMPr as well as any amendments thereof;
• Method statements; (when necessary as they only relate to sensitive areas)
• Completed environmental checklists; (to be provided by the ECO)
• Minutes and attendance register of environmental site meetings; (we only do one meeting that covers all issues- site audits are undertaken prior to these meetings)
• An up-to-date environmental incident log;
• A copy of all environmental instructions or directives issued;
• A copy of all environmental corrective actions signed off. The corrective actions must be filed in such a way that a clear reference is made to the non-compliance record;
• Complaints register.

5.3.2 Environmental Site Meetings

Minutes of the environmental site meetings shall be kept. The minutes must include an attendance register and will be attached to the Monthly Report that is distributed to attendees. Each set of minutes must clearly record “Matters for Attention” that will be reviewed at the next meeting (the Eskom’s minutes template).

5.3.3 Method Statements

Method statements will be compiled in such detail that the dEO and ECOs are able to assess whether the Contractor's proposal is in accordance with the EMPr.

The method statement shall cover applicable details with regard to:

- development procedures;
- materials and equipment to be used;
- getting the equipment to and from site;
- how the equipment/ material will be moved while on site;
- how and where material will be stored;
- the containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- timing and location of activities;
- compliance/ non-compliance with the generic EMPr; and
- any other information deemed necessary by the dEO/ECOs.

Unless indicated otherwise by the Developer, the Contractor shall provide the following method statements to the Developer no less than 14 days prior to the programmed commencement date of the subject works or activity:

- Site establishment – Camps, Lay-down or storage areas, satellite camps, infrastructure;
- Batch plants;
- Workshop or plant servicing;
- Handling, transport and storage of Hazardous Chemical Substances;
- Vegetation management – Protected, clearing, aliens, felling;
- Access management – Roads, gates, crossings etc.;
- Waste management – transport, storage, segregation, classification, disposal (all waste streams);
- Social interaction – complaints management, compensation claims, access to properties etc.;

- Water – use (source, abstraction and disposal), access and all related information, crossings and mitigation;
- Emergency preparedness – Spills, training, other environmental emergencies;
- Dust and noise management methodologies;
- Fauna interaction and risk management – only if the risk was identified – wildlife interaction especially on game farms; and
- Heritage and paleontology management.

The dEO and ECO shall ensure that the Contractors perform in accordance with these method statements.

5.3.4 Environmental Incident Log

The dEO is required to maintain an up-to-date and current Environmental Incident Log (environmental diary). The Environmental Incident Log is a means to record all environmental incidents and/or all non-compliance notice would not be issued. An environmental incident is defined as:

- Any deviation from the listed impact management actions (listed in this EMPr) that may be addressed immediately. (For example a Contractor's staff member littering or a drip tray that has not been emptied);
- Any environmental impact resulting from an action or activity by a Contractor in contravention of the environmental stipulations and guidelines listed in the EMPr which as a single event would have a minor impact but which if cumulative and continuous would have a significant effect (for example no toilet paper available in the ablutions for an afternoon); and
- General environmental information such as injured wildlife.

The dEO is to record all environmental incidents in the Environmental Incident Log. All incidents regardless of severity must be reported to the Developer. The Log is to be kept in the EMPr file and at a minimum the following will be recorded for each environmental incident:

- The date and time of the incident;
- Description of the incident;
- The name of the Contractor responsible;
- The incident must be listed as significant or minor;

- If the incident is listed as significant, a non-compliance notice must be issued, and recorded in the log;
- Remedial or corrective action taken to mitigate the incident; and
- Record of repeat minor offences by the same contractor or staff member.

The Environmental Incident Log will be captured in the environmental audit report.

5.3.5 Non-Compliance Report

A non-compliance notice will be issued to the responsible Contractor by the dEO or ECO via the Developer's Site Supervisor or Project Manager. The non-compliance notice will be issued in writing; a copy filed in the Environmental file and will at a minimum include the following:

- Time and date of the non-compliance;
- Name of the contractor responsible;
- Nature and description of the non-compliance;
- Recommended / required corrective action; and
- Date by which the corrective action to be completed.

The Contractors shall act immediately when a notice of non-compliance is received and correct whatever is the cause for the issuing of the non-compliance notice.

Complaints received regarding activities on the development site pertaining to the environment shall be recorded in a dedicated register and the response noted with the date and action taken. The ECO should be made aware of any complaints. Any non-compliance with the agreed procedures of the EMPr is a transgression of the various statutes and laws that define the manner by which the environment is managed. Failure to redress the cause shall be reported to the relevant CA for them to deal with the transgression, as it deems fit. The Contractor is deemed not to have complied with the EMPr if, inter alia, There is a deviation from the environmental conditions, management outcomes and actions activities, as approved in generic and site specific EMPr as relevant as set out in the EMPr, which deviation has, or may cause, an environmental impact.

5.3.6 Corrective Action Records

For each non-compliance notice issued, a documented corrective action must be recorded. On receiving a non-compliance notice from the Developer's Site Supervisor, the cEO will ensure that the corrective actions required take place within the stipulated timeframe. On

completion of the corrective action the cEO is to issue a Corrective Action Report in writing to the dEO. If satisfied that the corrective action has been completed, the dEOs are to sign-off on the Corrective Action Report, and attach the report to the non-compliance report in the EMPr file. A corrective action is considered complete once the report signed off by the dDEO.

5.3.7 Photographic Records

It is recommended that a digital photographic record will be kept. The photographic record will be used to show before, during and post rehabilitation evidence of the project as well used in cases of damages claims if they arise. Preferable each image must be dated and a brief description note attached.

The Contractor shall allow the ECOs access to take photographs of all areas, activities and actions.

The ECO shall keep an electronic database of photographic records which will include:

- Pictures of all areas designated as work areas, camp areas, construction sites and storage areas taken before these areas are set up;
- Bunding and fencing;
- Road conditions and road verges;
- Condition of all farm fences;
- Topsoil storage areas;
- Areas to be cordoned off during construction;
- Waste management sites;
- Ablution facilities (inside and out);
- Any non-conformances deemed to be “significant”;
- All completed corrective actions for non-compliances;
- All required signage; and
- All areas before, during and post rehabilitation.

Relevant photographs will be included in the Final Environmental Audit Report

5.3.8 Complaints Register

The dEO shall keep a current and up-to-date complaints register. The complaints register is to be a record of all complaints received from communities, stakeholders and individuals. The Complaints Record shall:

- Record the name and contact details of the complainant;
- Record the time and date of the complaint;
- Contain a detailed description of the complaint;
- Where relevant and appropriate, contain photographic evidence of the complaint or damage (dEO to take relevant photographs); and
- Contain a copy of the dEOs written response to each complaint received and keep a record of any further correspondence with the complainant. The dEOs written response will include a description of any corrective action to be taken and must be signed by the Contractor, dEO and affected party. Where a damage claim is issued by the complainant.

5.3.9 Claims for Damages

In the event that a Claim for Damages is submitted by a community, landowner or individual, the dEO shall:

- Record the full detail of the complaint;
- The dEO will evaluate the claim and associated damage and submit the evaluation to the Senior Site Representative for approval;
- Following consideration by the Developer's Project Manager, the claim is to be resolved and settled immediately, or the reason for not accepting the claim communicated in writing to the claimant. Should the claimant not accept this, the dEO shall, in writing report the incident to the Developer's negotiator and legal department; and
- A formal record of the response by the dEO to the claimant as well as the rectification of the method of making payments not amount will be recorded in the EMPr file.

5.3.10 Interactions with Affected Parties

Open, transparent and good relations with affected landowners, communities and regional staff are an essential aspect to the successful management and mitigation of environmental impacts.

The dEO shall:

- Ensure that all queries, complaints and claims are dealt within an agreed timeframe;
- Ensure that any or all agreements are documented, signed by all parties and a record of the agreement kept in the EMPr file;

- Ensure that a complaints telephone numbers are made available to all landowners and affected parties; and
- Ensure that contact with affected parties is courteous at all times;

5.3.11 Environmental Audits

Environmental Audits of the construction phase and implementation of the EMPr will be undertaken by the independent ECO and are a legal requirement in terms of NEMA once an EA is issued and as long as the EMPr is valid. The findings and outcomes of these audits will be recorded in the Environmental file. The environmental audits and associated reports must be conducted and submitted to the CA at intervals as indicated in the EA.

The ECOs shall prepare a monthly Environmental Audit Report. The Report will be reviewed and accepted by the Developer and filed in the Environmental file. At a frequency determined by the EA, the ECOs shall submit the monthly reports to the CAin terms of NEMA. At a minimum the Monthly report is to cover the following:

- Weekly Environmental Checklists; Bi weekly during civil work and monthly reports
- Deviations and non-compliances with the checklists;
- Non-compliances issued;
- Completed and reported corrective actions;
- Environmental Monitoring;
- General environmental findings and actions; and
- Minutes of the Environmental Site Meetings.

5.3.12 Final Environmental Audits

On final completion of the construction Phase, the ECO is required to prepare a final environmental audit report. The report is to be submitted to the CAfor acceptance and approval. The environmental report must comply with Appendix 7 of the EIA Regulations, 2014:

- Details of the independent person who prepared the report;
- Details of the expertise of independent person that compiled the report;
- A declaration that the independent auditor is independent in a form as may be specified by the CA;
- An indication of the scope of, and the purpose for which, the environmental audit report was prepared;
- A description of the methodology adopted in preparing the environmental audit report;
- An indication of the ability of the EMPr, and where applicable, the closure plan to-

- Sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an on-going basis;
- Sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the closure of the facility; and
- Ensure compliance with the provisions of EA, EMPr, and where applicable, the closure plan;

- A description of any assumptions made, and any uncertainties or gaps in knowledge;
- A description of any consultation process that was undertaken during the course of carrying out the environmental audit report;
- A summary and copies of any comments that were received during any consultation process; and
- Any other information requested by the CA.

Submission of the final environmental audit report to the CAwill indicate the end of the development phase.

5.4 ENVIRONMENTAL CONTROLS DURING CONSTRUCTION

5.4.1 Environmental awareness training.

Management Outcome

All staff must be aware of the environmental sensitives and risks on site and undertake activities in a manner that avoids and minimised impacts.

Impact Management Actions

1.The Contractor shall allow for sufficient sessions to train all personnel with no more than 20 personnel attending each course; 2. All new staff coming onto site shall receive environmental awareness training;

3. Refresher environmental awareness training is available as and when required;

4. All staff are made aware of their individual roles and responsibilities in achieving compliance with the EA and EMPr;

5. The Contractor shall erect and maintain information posters at key locations on site;

6. Environmental awareness training should include as a minimum the following:

a) Description of significant environmental impacts, actual or potential, related to their work activities;

b) Mitigation measures to be implemented when carrying out specific activities;

c) Emergency preparedness and response procedures;

d) Emergency procedures;

e) Procedures to be followed when working near or within sensitive areas;

f) Wastewater management procedures;

g) Water usage and conservation;

h) Solid waste management procedures;

i) Sanitation procedures;

j) dangers of open/unattended fires; and

k) Disease prevention.

7. Training can be re-enforced by short “toolbox” sessions.

8. A record of all environmental awareness training courses undertaken as part of the EMPr must be available;

9. A staff attendance register of all staff to have received environmental awareness training must be available.

10. Course material must be available and presented in all appropriate languages.

5.4.2 Site establishment

Management Outcome

Effectively located construction camps in order to avoid and minimise impacts on environmental aspects.

Impact Management Action

1. A Method Statement shall be provided by the contractor prior to any onsite activity that includes the layout of the construction camp in the form of a plan showing the location of key infrastructure and services (where applicable), including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous materials storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management;
2. Location of construction camps must be carefully considered and approved by the ECOs to ensure that the site does not impact on sensitive areas identified in the EIA or site walk through;
3. Sites should be located where possible on previously disturbed areas;
4. The camp must be fenced in accordance with **Section 5.4.5**: Fencing and gate installation; and
5. The use of existing accommodation for contractor staff, where possible, is encouraged.

5.4.3 No-go areas

Management Outcome

Access to No go areas prevented in order to prevent impacts on sensitive environmental features.

Impact Management Action

1. Identification of No-Go areas is to be informed by the BA, site walk through and any additional areas identified during construction;
2. Erect, demarcate and maintain a temporary fence around the perimeter of any No-Go area;
3. Fencing of No-Go areas is to be undertaken in accordance with **Section 5.4.5**: Fencing and gate installation; and
4. Unauthorised access and construction related activity inside No-Go areas is prohibited.

5.4.4 Access roads and traffic

Management Outcome

Minimise impact to the environment through the planned and restricted movement of vehicles on site.

Impact Management Action

1. Employees of Eskom and Eskom's Contractors must ensure that they drive safely and comply with the speed restrictions on public roads;
2. Eskom should have an enforceable road use policy in place that includes fines for transgressors;
3. Heavy vehicles should be clearly marked and travel during off peak times; and
4. Deliver infrastructure during off peak times.
5. Access to the servitude and tower positions must be negotiated with the relevant landowner and must fall within the assessed and authorised area;
6. An access agreement must be formalised and signed by the Development Project Manager, Contractor and landowner before commencing with construction activities;
7. The access roads to tower positions shall be signposted after access has been negotiated and before the commencement of construction activities;
8. Any access route deviation from that in the written agreement must be closed and re-vegetated immediately, at the contractor's expense;
9. Maximum use of both existing servitudes and existing roads must be made;
10. In circumstances where private roads must be used, the condition of the said roads shall be recorded prior to use and the condition thereof agreed by the landowner, the Development Project Manager, landowner and the contractor;
11. All private roads used for access to the servitude must be maintained and upon completion of the works, be left in at least the original condition. As far as possible, access roads shall follow the contours in hilly areas, as opposed to winding down steep slopes;
12. Access is to be established by vehicles passing over the same track on natural ground, multiple tracks are not permitted. Access roads shall only be constructed where necessary at watercourses, on steep slopes or where boulders prohibit vehicular traffic (refer to Appendix A for requirements when constructing a new access road and Protection of watercourses and water bodies for controls when seeking access in proximity to a water course or water body);
13. Upon completion of construction, only roads as indicated by the Development Project Manager shall be closed.

5.4.5 Fencing and gate installation

Management Outcome

To minimise impact to the environment and ensure safe and controlled access to the site through the erection of fencing and gates where required.

Impact Management Action

1. Use existing gates provided to gain access to all parts of the defined Working Area, where possible;
2. Existing and new gates to be recorded and documented in accordance with **Section 5.3.7**: photographic record;
3. All gates must be fitted with locks and be kept locked at all times during the construction phase, unless otherwise agreed with the
landowner;
4. At points where the line crosses a fence in which there is no suitable gate within the extent of the line servitude, on the instruction of the Development Project Manager, a gate must be installed;
5. Care must be taken that the gates shall be so erected that there is a gap of no more than 100 mm between the bottom of the gate and the ground;
6. Where gates are installed in jackal proof fencing, a suitable reinforced concrete sill must be provided beneath the gate;
7. Original tension must be maintained in the fence wires;
8. All gates installed in electrified fencing must be re-electrified;
9. All demarcation fencing and barriers must be maintained in good working order for the duration of construction activities;
10. Fencing must be erected around the construction camp, batching plants, hazardous storage areas, and all designated no-go
areas, where applicable;
11. All fencing must be developed of high quality material bearing the SABS mark;
12. The use of razor wire as fencing must be avoided;
13. Fenced areas with gate access will remain locked after hours, during weekends and on holidays if staff are away from site. Site
security will be required at all times;
14. On completion of the project all temporary fences are to be removed and where possible re-used by the contractor at new

projects;

14. The contractor will ensure that all fence uprights are appropriately removed, ensuring that no uprights are cut at ground level but rather removed completely.

5.4.6 Water supply management

Management Outcome

Undertake responsible water usage.

Impact Management Action

1. Should water abstraction be required and the necessary authorisation from DWS and permission from the landowner has been received, the Contractor shall ensure the following:
    a. The vehicle abstracting water from a river does not enter or cross it and does not operate from within the river;
    b. No damage occurs to the river bed or banks and that the abstraction of water does not entail stream diversion activities; and
    c. All reasonable measures to limit pollution or sedimentation of the downstream watercourse are implemented.
2. Ensure water conservation is being practiced by:
    a. Minimising water use during cleaning of equipment;
    b. Undertaking regular audits of water systems; and
    c. Including a discussion on water usage and conservation during environmental awareness training.

5.4.7 Storm and waste water management

Management Outcome

An effective system of storm water run-off control is implemented, where required and impacts to the environment caused by storm water and wastewater discharges during construction are avoided.

Impact Management Actions

1. Appropriate pollution control facilities necessary to prevent discharge of water containing polluting matter or visible suspended;
2. Materials into watercourses or water bodies must be designed and implemented;

3. Runoff from the cement/ concrete batching areas must be strictly controlled, and contaminated water must be collected, stored and either treated or disposed of off-site, at a location approved by the Project Manager;

4. All spillage of oil onto concrete surfaces must be controlled by the use of an approved absorbent material and the used absorbent material disposed of at an appropriate waste disposal facility;

5. Natural storm water runoff not contaminated by development operations and clean water can be discharged directly to watercourses and water bodies, subject to the Project Manager's approval and support by the ECO;

6. Water that has been contaminated with suspended solids, such as soils and silt, may be released into watercourses or water bodies only once all suspended solids have been removed from the water by settling out these solids in settlement ponds. The release of settled water back into the environment must be subject to the Project Manager's approval and support by the ECO.

5.4.8 Solid waste management

Management Outcome

Wastes are appropriately stored, handled and safely disposed of at a licensed waste facility.

Impact Management Action

1. All measures regarding waste management must be undertaken using an integrated waste management approach;
2. Sufficient, covered waste collection bins (scavenger and weatherproof) must be provided;
3. A suitably positioned and clearly demarcated waste collection site must be identified and provided;
4. The waste collection site must be maintained in a clean and orderly fashion;
5. Waste must be segregated into separate bins and clearly marked for each waste type;
6. Staff must be trained in waste segregation;
7. Bins must be emptied regularly;
8. General waste produced onsite must be disposed of at recognised and licenced waste disposal sites/ recycling company;
9. Hazardous waste must be disposed of at a registered waste disposal site;
10. Certificates of safe disposal for general, hazardous and recycled waste must be maintained.

5.4.9 Protection of watercourses

Management Outcome

Pollution and contamination of the watercourse environment as well as potential erosion are prevented.

Impact Management Action

1. All watercourses and water bodies must be protected from direct or indirect spills of pollutants such as solid waste, sewage, cement, oils, fuels, chemicals, aggregate tailings, wash and contaminated water or organic material resulting from the Contractor's activities;
2. In the event of a spill, prompt action must be taken to clear the polluted or affected areas;
3. Where possible, no development equipment must traverse any seasonal or permanent wetland;
4. Development of permanent watercourse crossing must only be undertaken where no alternative access to tower position is available;
5. When working in or near any watercourse or wetland, the following environmental controls and consideration must be taken:

    a) Development within flowing water is to be minimised. All diversions must be in place, water diverted away from the Working Area and the area properly stabilised prior to excavations commencing;

    b) When working in flowing water, downstream sedimentation must be controlled by installing and maintaining the necessary temporary sedimentation barriers, e.g. geotextile silt curtains or sedimentation weirs developed out of suitably secured straw bales. Sedimentation barriers must be a maximum of 25 m downstream of the construction activities;

    c) During the execution of the Works, appropriate measures to prevent pollution and contamination of the riverine environment must be implemented e.g. including ensuring that construction equipment is well maintained;

    d) Where earthwork is being undertaken in close proximity to any watercourse, slopes must be stabilised using suitable materials, i.e. sandbags or geotextile fabric, to prevent sand and rock from entering the channel; and

    e) Appropriate rehabilitation and re-vegetation measures for the river banks must be implemented timeously. In this regard, the banks should be appropriately and incrementally stabilised as soon as development allows.

5.4.10 Vegetation clearing

Management Outcome

Vegetation clearing is restricted to the authorised development footprint of the proposed infrastructure

Impact Management Actions

1. Indigenous vegetation which does not interfere with the safe development and operation of the powerline must be left undisturbed;
2. Protected or endangered species may occur on or near the development site. Special care should be taken not to damage such species;
3. Search, rescue and replanting of all protected and endangered species likely to be damaged during project development must be identified by the Botanical Specialist and completed prior to any development or clearing;
4. Permits for removal must be obtained from the relevant CAprior to the cutting or clearing the affected species, and they must be filed;
5. The Final Environmental Report must confirm that all identified species have been rescued and replanted;
6. Trees felled due to construction must be monitored and listed in the Audit Environmental Report;
7. Rivers, watercourses and other water bodies must be kept clear of felled trees, vegetation cuttings and debris. Integrity of the riverbanks must be maintained by only trimming parts of trees directly affecting the safe operation of the overhead transmission and distribution infrastructure;
8. Only a registered pest control operator may apply herbicides on a commercial basis and commercial application must be carried out under the supervision of a registered pest control operator, supervision of a registered pest control operator or is appropriately trained;
9. A daily register must be kept of all relevant details of herbicide usage as stipulated in Act 36 of 1947;
10. Trees, shrubs, grass, natural features and topsoil which are not removed during vegetation clearance shall be protected from damage during operation of the overhead transmission and distribution infrastructure. Disturbance of the surface of the earth shall be allowed for access purposes only;
11. All protected species and sensitive vegetation not removed must be clearly marked and such areas fenced off if required in accordance with No-Go procedure in **Section 5.4.3**: No-Go areas. When working in or near any watercourse or wetland, the following environmental controls and consideration shall be taken.

Servitude:

1. Vegetation that does not grow high enough to cause interference with overhead overhead transmission and distribution infrastructures, or cause a fire hazard to any plantation, should not be cut or trimmed unless it is growing in the road access area, and then only at the discretion of the Project Manager;
2. Where clearing for access purposes is essential, the maximum width to be cleared within the servitude must be in accordance to the specifications
3. Alien invasive vegetation should be removed according to a plan (in line with relevant municipal and provincial procedures, guidelines and recommendations) and disposed of at a licenced waste disposal facility;
4. Vegetation should be trimmed where it is likely to intrude on the minimum vegetation clearance distance (MVCD) or will intrude on this distance before the next scheduled clearance. MVCD is determined from SANS 10280;
5. Trees growing to a height in excess of the horizontal distance of that tree from the nearest conductor which are identified as being a risk to safe operation of the overhead transmission and distribution infrastructure must be treated and prevented from growing in a manner as to endanger the line should they fall;
6. Debris resulting from clearing and pruning must be disposed of at a licenced waste disposal facility, unless the landowners wish to retain the cut vegetation;
7. Deep valleys and environmentally sensitive areas that restrict vehicle access, or legally protected areas, must not be cleared of vegetation provided that the vegetation poses no threat to the safe operation and reliability of the overhead transmission and distribution infrastructure. In the case of the development of new overhead transmission and distribution infrastructures, a one metre “trace-line” must be cut through the vegetation for stringing purposes only and no vehicle access must be cleared along the “trace-line”. Alternative methods of stringing which limit impact to the environment must always be considered.

5.4.11 Protection of fauna

Management Outcome

Minimise disturbance to fauna.

Impact Management Actions

1. No interference with livestock must occur without the landowner’s written consent and with the landowner or a person representing the landowner being present;

2. The breeding sites of raptors and other wild bird's species must be taken into consideration during the planning of the development programme;
3. Breeding sites must be kept intact and disturbance to breeding birds must be avoided. Special care must be taken where nestlings or fledglings are present;
4. Nesting sites on existing parallel lines must documented;
5. Special recommendations of the avian specialist must be adhered to at all times to prevent unnecessary disturbance of birds;
6. Bird guards and diverters must be installed on the new line as per the recommendations of the specialist;
7. No poaching must be tolerated under any circumstances. All animal dens in close proximity to the works areas must be marked as No-Go areas.

5.4.12 Protection of heritage resources

Management Outcome

Impact to heritage resources is minimised.

Impact Management Action

1.Identify, demarcate and prevent impact to all known sensitive heritage features on site in accordance with the No-Go procedure in **Section 5.4.3**: No-Go areas;
2. Carry out general monitoring of excavations for potential fossils, artefacts and material of heritage importance;
3. All work must cease immediately, if any human remains and/or other archaeological, palaeontological and historical material are uncovered. Such material, if exposed, must be reported to the nearest museum, archaeologist/ palaeontologist (or the South African Police Services), so that a systematic and professional investigation can be undertaken. Sufficient time should be allowed to remove/collect such material before development recommences.

5.4.13 Safety of the public

Management Outcome

All precautions are taken where possible to minimise the risk of injury, harm or complaints.

Impact Management Action

1. Identify fire hazards, demarcate and restrict public access to these areas as well as notify the local authority of any potential threats e.g. large brush stockpiles, fuels etc.;
2. All unattended open excavations must be adequately fenced or demarcated;

3. Adequate protective measures must be implemented to prevent unauthorised access to and climbing of partly constructed towers and protective scaffolding;
4. Ensure structures vulnerable to high winds are secured;
5. Maintain an incidents and complaints register in which all incidents or complaints involving the public are logged.

5.4.14 Sanitation

Management Outcome

Clean and well maintained toilet facilities are available to all staff in an effort to minimise the risk of disease and impact to the environment.

Impact Management Action

1. Mobile chemical toilets are installed onsite if no other ablution facilities are available;
2. The use of ablution facilities and or mobile toilets must be used at all times and no indiscriminate use of the veld for the purposes of ablutions must be permitted under any circumstances;
3. Where mobile chemical toilets are required, the following must be ensured:
    a) Toilets are located no closer than 100 m to any watercourse or water body;
    b) Toilets are secured to the ground to prevent them from toppling due to wind or any other cause;
    c) No spillage occurs when the toilets are cleaned or emptied and the contents are managed in accordance with the EMPr;
    d) Toilets have an external closing mechanism and are closed and secured from the outside when not in use to prevent toilet paper from being blown out;
    e) toilets are emptied before long weekends and workers' holidays, and must be locked after working hours;
    f) Toilets are serviced regularly and the ECO must inspect toilets to ensure compliance to health standards;
4. A copy of the waste disposal certificates must be maintained.

5.4.15 Prevention of disease

Management Outcome

All necessary precautions linked to the spread of disease are taken.

Impact Management Action

1. Undertake environmentally-friendly pest control in the camp area;

2. Ensure that the workforce is sensitised to the effects of sexually transmitted diseases, especially HIV AIDS;
3. The Contractor must ensure that information posters on AIDS are displayed in the Contractor Camp area;
4. Information and education relating to sexually transmitted diseases to be made available to both construction workers and local community, where applicable;
5. Free condoms will be made available to all staff on site at central points;
6. Medical support must be made available;
7. Provide access to Voluntary HIV Testing and Counselling Services.

5.4.16 Emergency procedures

Management Outcome

Emergency procedures are in place to enable a rapid and effective response to all types of environmental emergencies.

Impact Management Action

1. Compile an Emergency Response Action Plan prior to the commencement of the proposed project;
2. The Emergency Plan must deal with accidents, potential spillages and fires in line with relevant legislation;
3. All staff must be made aware of emergency procedures as part of environmental awareness training;
4. The relevant local authority must be made aware of a fire as soon as it starts;
5. In the event of emergency necessary mitigation measures to contain the spill or leak must be implemented (see Hazardous Substances **Section 5.4.17**).

5.4.17 Hazardous substances

Management Outcome

Outcome: safe storage, handling, use and disposal of hazardous substances.

Impact Management Action

1. The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives substituted where possible;
2. All hazardous substances will be stored in suitable containers as defined in the Method Statement;

3. Containers will be clearly marked to indicate contents, quantities and safety requirements;
4. All storage areas will be bunded. The bunded area will be of sufficient capacity to contain a spill / leak from the stored containers;
5. An Alphabetical Hazardous Chemical Substance control sheet will be drawn up and kept up to date on a continuous basis;
6. All hazardous chemicals that will be used on site will have Material Safety Data Sheets (MSDS);
7. All employees working with HCS will be trained in the safe use of the substance and according to the safety data sheet;
8. Employees handling hazardous substances / materials must be aware of the potential impacts and follow appropriate safety measures. Appropriate personal protective equipment must be made available;
9. The Contractor must ensure that diesel and other liquid fuel, oil and hydraulic fluid is stored in appropriate storage tanks or in bowsers;
10. The tanks/ bowsers must be situated on a smooth impermeable surface (concrete) with a permanent bund. The impermeable lining must extend to the crest of the bund and the volume inside the bund must be 130% of the total capacity of all the storage tanks/ bowsers (110% statutory requirement plus an allowance for rainfall);
11. The floor of the bund must be sloped, draining to an oil separator;
12. Provision must be made for refuelling at the storage area by protecting the soil with an impermeable groundcover. Where dispensing equipment is used, a drip tray must be used to ensure small spills are contained;
13. All empty externally dirty drums must be stored on a drip tray or within a bunded area;
14. No unauthorised access into the hazardous substances storage areas shall be permitted;
15. No smoking must be allowed within the vicinity of the hazardous storage areas;
16. Adequate fire-fighting equipment must be made available at all hazardous storage areas;
17. Where refuelling away from the dedicated refuelling station is required, a mobile refuelling unit must be used. Appropriate ground protection such as drip trays must be used;
18. An appropriately sized spill kit kept onsite relevant to the scale of the activity/s involving the use of hazardous substance must be available at all times;
19. The responsible operator must have the required training to make use of the spill kit in emergency situations;
20. In the event of a spill, contaminated soil must be collected in containers and stored in a central location and disposed of according to the National Environmental Management:

Waste Act 59 of 2008. Refer to **Section 5.4.7** for procedures concerning waste water management and **Section 5.4.8** for solid waste management.

5.4.18 Workshop, equipment maintenance and storage

Management Outcome

Soil, surface water and groundwater contamination is minimized.

Impact Management Action

1. Where possible and practical all maintenance of vehicles and equipment must take place in the workshop area;
2. During servicing of vehicles or equipment, especially where emergency repairs are effected outside the workshop area, a suitable drip tray must be used to prevent spills onto the soil. The relevant local authority must be made aware of a fire as soon as it starts;
3. Leaking equipment must be repaired immediately or be removed from site to facilitate repair;
4. Workshop areas must be monitored for oil and fuel spills;
5. Appropriately sized spill kit kept onsite relevant to the scale of the activity taking place must be available;
6. The workshop area must have a bunded concrete slab that is sloped to facilitate runoff into a collection sump or suitable oil / water separator where maintenance work on vehicles and equipment can be performed;
7. Water drainage from the workshop must be contained and managed in accordance **Section 5.4.7**: Waste water management.

5.4.19 Batching plants

Management Outcome

To control concrete and cement batching activities in order to minimise spillages and contamination of soil, surface water and groundwater

Impact Management Action

1. Concrete mixing must be carried out on an impermeable surface (such as on boards and/or within a bunded area with an impermeable surface) or make a hard surface and remove when done;
2. Concrete mixing areas must be fitted with a containment facility for the collection of cement laden water. This facility must be impervious to prevent soil and groundwater contamination;

3. Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains;
4. A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted;
5. Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licenced disposal facility;
6. Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site;
7. Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to **Section 5.4.20**: Dust emissions)
8. Any excess sand, stone and cement must be removed or reused from site on completion of construction period and disposed at a registered disposal facility;
9. Temporary fencing must be erected around batching plants in accordance with **Section 5.4.5**: Fencing and gate installation.

5.4.20 Dust emissions

Management Outcome

Dust prevention measures are applied to minimise the generation of dust.

Impact Management Action

1. Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the ECO;
2. Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces must be re- vegetated or stabilised as soon as is practically possible;
3. Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present;
4. During high wind conditions, the ECO will evaluate the situation and make recommendations as to whether dust-damping measures are adequate, or whether working will cease altogether until the wind speed drops to an acceptable level;
5. Where possible, soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind;
6. Where erosion of stockpiles becomes a problem, erosion control measures must be implemented at the discretion of the ECO;
7. Vehicle speeds must not exceed 40km/h along dust roads or 20km/h when traversing unconsolidated and non-vegetated areas;

8. Appropriate dust suppression measures must be used when dust generation is unavoidable, e.g. dampening with water; particularly during prolonged periods of dry weather in summer. Such measures must also include the use of temporary stabilising measures (e.g. chemical soil binders, straw, brush packs, chipping);
9. Straw stabilisation must be applied at a rate of one bale/10m² and harrowed into the top 100 mm of top material, for all completed earthworks;
10. For significant areas of excavation or exposed ground, spray water or wet areas using trucks to minimise the spread of dust.

5.4.21 Blasting

Management Outcome

Impact to the environment is minimised through a safe and healthy blasting practice.

Impact Management Actions

1. Any blasting to be done after informing local public;
2. Any blasting activity must be conducted by a suitably licensed blasting contractor;
3. Notification of surrounding landowners, emergency services site personnel of blasting activity 24 hours prior to such activity taking place on Site.

5.4.22 Noise

Management Outcome

To prevent unnecessary noise to the environment by ensuring that noise from construction activity is mitigated.

Impact Management Action

1. Operating hours as determined by the EA are adhered to during the development phase. Where not defined, development must be limited to daylight hours.

5.4.23 Fire prevention

Management Outcome

Prevention of uncontrollable fires.

Impact Management Action

1. Designate smoking areas where the fire hazard could be regarded as insignificant;
2. Firefighting equipment must be available on all vehicles located on site;
3. The local Fire Protection Agency (FPA) must be informed of construction activities;

4. Contact numbers for the FPA and emergency services must be communicated in environmental awareness training and displayed at a central location on site;
5. Two-way swop of contact details between ECO and FPA.

5.4.24 Stockpiling and stockpile areas

Management Outcome

To reduce erosion and sedimentation as a result of stockpiling.

Impact Management Action

1. All material that is excavated during the project development phase (either during piling (if required) or earthworks) must be stored appropriately on site in order to minimise impacts to watercourses, wetlands and water bodies;
2. All stockpiled material must be maintained and kept clear of weeds and alien vegetation growth by undertaking regular weeding and control methods;
3. Stockpiles must not exceed 2 m in height;
4. During periods of strong winds and heavy rain, the stockpiles should be covered with appropriate material (e.g. cloth, tarpaulin etc.);
5. Where possible, sandbags (or similar) should be placed at the bases of the stockpiled material in order to prevent erosion of the material.

5.4.25 Finalising tower positions

Management Outcome

To minimise environmental impacts resulting from the positioning of towers.

Impact Management Actions

1. No vegetation clearing must occur during survey and pegging operations;
2. No new access roads must be developed to facilitate access for survey and pegging purposes;
3. Project manager, botanical specialist and contractor to agree on final tower positions based on survey within assessed and approved areas.

5.4.26 Assembly and erecting towers

Management Outcome

To minimise environmental impacts resulting from the assembly and erection of towers.

Impact Management Actions

1. Prior to erection, assembled towers and tower sections must be stored on elevated surface (suggest wooden blocks) to minimise damage to the underlying vegetation;
2. In sensitive areas, tower assembly must take place off-site or away from sensitive positions;
3. The crane used for tower assembly must be operated in a manner which minimises impact to the environment;
4. The number of crane trips to each site must be minimised;
5. Wheeled cranes must be utilised in preference to tracked cranes;
6. Consideration must be given to erecting towers by helicopter or by hand where it is warranted to limit the extent of environmental impact;
7. Access to tower positions to be undertaken in accordance with access requirements in specified in **Section 5.4.4**: Access Roads;
8. Vegetation clearance to be undertaken in accordance with general vegetation clearance requirements.
9. No levelling at tower sites must be permitted unless approved by the Development Project Manager or Developer Site Supervisor;
10. Topsoil must be removed separately and stored for later use during rehabilitation of such tower sites;
11. Topsoil must be stored in heaps not higher than 1m to prevent destruction of the seed bank within the topsoil;
12. Excavated slopes must be no greater that 1:3, but where this is unavoidable, appropriate measures must be undertaken to stabilise the slopes;
13. Fly rock from blasting activity must be minimised and any pieces greater than 150 mm falling beyond the Working Area, must be collected and removed;
14 Only existing disturbed areas are utilised as spoil areas;
15. Drainage is provided to control groundwater exit gradient with the spill areas such that migration of fines is kept to a minimum;
16. Surface water runoff is appropriately channelled through or around spoil areas;
17. During backfilling operations, care must be taken not to dump the topsoil at the bottom of the foundation and then put spoil on top of that;
18. The surface of the spoil is appropriately rehabilitated in accordance with the requirements specified in **Section 5.4.31**: Landscaping and rehabilitation;
19. The retained topsoil must be spread evenly over areas to be rehabilitated and suitably compacted to effect re-vegetation of such areas to prevent erosion as soon as construction activities on the site is complete. Spreading of topsoil must not be undertaken at the beginning of the dry season.

5.4.27 Stringing

Management Outcome

No environmental degradation occurs as a result of stringing.

Impact Management Actions

1. Where possible, previously disturbed areas must be used for the siting of winch and tensioner stations. In all other instances, the siting of the winch and tensioner must avoid No-Go areas and other sensitive areas;
2. The winch and tensioner station must be equipped with drip trays in order to contain any fuel, hydraulic fuel or oil spills and leaks;
3. Refuelling of the winch and tensioner stations must be undertaken in accordance with **Section 5.4.17**: Hazardous substances;
4. In the case of the development of overhead transmission and distribution infrastructure, a one metre “trace-line” may be cut through the vegetation for stringing purposes only and no vehicle access must be cleared along “trace-lines”. Vegetation clearing must be undertaken by hand, using chainsaws and hand held implements, with vegetation being cut off at ground level. No tracked or wheeled mechanised equipment must be used;
5. Alternative methods of stringing which limit impact to the environment must always be considered e.g. by hand or by using a helicopter;
6. Where the stringing operation crosses a public or private road or railway line, the necessary scaffolding/ protection measures must be installed to facilitate access. If, for any reason, such access has to be closed for any period(s) during development, the persons affected must be given reasonable notice, in writing;
7. No services (electrical distribution lines, telephone lines, roads, railways lines, pipelines, fences etc.) must be damaged because of stringing operations. Where disruption to services is unavoidable, persons affected must be given reasonable notice, in writing;
8. Where stringing operations cross cultivated land, damage to crops is restricted to the minimum required to conduct stringing operations, and reasonable notice (10 work days minimum), in writing, must be provided to the landowner;
9. Necessary scaffolding protection measures must be installed to prevent damage to the structures supporting certain high value agricultural areas such as vineyards, orchards, nurseries.

5.4.28 Civil works

Management Outcome

Impact to the environment is minimised through adherence to EMPr requirements.

Impact Management Action

1. Where terracing is required, topsoil must be collected and retained for the purpose of re-use later to rehabilitate disturbed areas not covered by yard stone;
2. Areas to be rehabilitated include terrace embankments and areas outside the high voltage yards;
3. Where required, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled;
4. These areas can be stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly;
5. Rehabilitation of the disturbed areas shall be managed in accordance with **Section 5.4.31**: Landscaping and rehabilitation;
6. Any blasting activities must be controlled and executed by a licensed person. Blasting activities must be well communicated with Landowners and nearby communities and all livestock must be moved from the area;
7. All excess spoil generated during terracing activities must be disposed of in an appropriate manner and at a legally operated landfill site;
8. Spoil can however be used for landscaping purposes and must be covered with a layer of 150mm topsoil for rehabilitation purposes;
9. Under no circumstances may any illegal / hazardous substances or materials be dumped with topsoil and used during landscaping.

5.4.29 Excavation of foundation, cable trenching and drainage systems

Management Outcome

Impact to the environment is minimised through adherence to EMPr requirements.

Impact Management Action

1. All excess spoil generated during foundation excavation must be disposed of in an appropriate manner and at a legally operated landfill site, if not used for backfilling purposes;
2. Spoil can however be used for landscaping purposes and must be covered with a layer of 150mm topsoil for rehabilitation purposes;

3. Management of equipment for excavation purposes shall be undertaken in accordance with **Section 5.4.18**: Workshop equipment maintenance and storage;

4. Hazardous substances spills from equipment shall be managed in accordance with **Section 5.4.17**: Hazardous substances.

5.4.30 Temporary site closure

Management Outcome

Minimise the risk of environmental impact during periods of site closure greater than five days.

Impact Management Action

1. Bunds must be emptied (where applicable);
2. Hazardous storage areas must be well ventilated;
3. Fire extinguishers must be serviced and accessible. Service records to be filed and audited at last service;
4. Emergency and contact details displayed must be displayed;
5. Security personnel must be briefed and have the facilities to contact or be contacted by relevant management and emergency personnel;
6. Night hazards such as reflectors, lighting, traffic signage etc. must have been checked;
7. Fire hazards identified and the local authority must have been notified of any potential threats e.g. large brush stockpiles, fuels etc.;
8. Structures vulnerable to high winds must be secured;
9. Wind and dust mitigation must be implemented;
10. Cement and materials stores must have been secured;
11. Toilets must have been emptied and secured;
12. Refuse bins must have been emptied and secured; and
13. Drip trays must have been emptied and secured.

5.4.31 Landscaping and rehabilitation

Management Outcome

Leave all disturbed areas in the same or better condition than they were found in.

Impact Management Action

1. All areas disturbed by construction activities must be subject to landscaping and rehabilitation;

2. All spoil and waste will be disposed to a registered waste site and certificates of disposal provided;
3. All slopes in excess of 2% (1:50) must be contoured in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983;
4. All slopes in excess of 12% (1:8.3) must be terraced in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983;
5. Berms that have been created should have a slope of 1:4 and be replanted with indigenous species and grasses;
6. Where new access roads have crossed cultivated farmlands, that lands must be rehabilitated by ripping to a minimum depth of 600 mm;
7. Rehabilitation of tower sites and access roads outside of farmland;
8. Indigenous species will be used for replanting;
9. Stockpiled topsoil must be used for rehabilitation (refer to **Section 5.4.24**: Stockpiling and stockpiled areas);
10. Stockpiled topsoil will be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion;
11. Before placing topsoil, all visible weeds from the placement area and from the topsoil must be removed;
12. Subsoil must be ripped before topsoil is placed;
13. The project must be timed so that rehabilitation can take place at the optimal time for vegetation establishment;
14. Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled as per the instruction from the ECO;
15. Sloped areas stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly;
16. Where required, re-vegetation can be enhanced using a vegetation seed mixture as described below. A mixture of seed can be used provided the mixture is carefully selected to ensure the following:

a) Annual and perennial plants are chosen;
b) Pioneer species are included;
c) Species chosen must grow in the area feasible to grow;
d) Root systems must have a binding effect on the soil;
e) The final product should not cause an ecological imbalance in the area.

5.4.32 Social impacts

Impact Management Outcomes for social aspects

Manage interaction with and expectations of surrounding communities.

Impact Management Actions for social aspects

- Maintain the Appointment a Community Liaison Officer
- Implement grievance mechanism
- Implement Written Employment Policy
- Jobs should be advertised in a way that is accessible to all members of society.
- Labour desks should be established in accessible areas.
- Implement policies for conduct of employees and contractors, road use, and access control specifically for protected and game reserve areas,
- Implement strategies for community relations, communication, Corporate Social Investment, safety and security, HIV and life skills.
- Eskom must maintain membership of the local fire protection agencies and have and implement a fire fighting strategy
- Consult with relevant communities before engaging in any Corporate Social Investment projects in the area; and
- Eskom should have a strategy in place for engaging with traditional leadership structures.

6. OPERATION REQUIREMENTS

GN 982 Appendix 4:

(d) a description of the impact management (outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the EIA process for all phases of the development including─

(e) a description and identification of **impact management outcomes** required for the aspects contemplated in paragraph (d);

(f) a description of proposed impact **management actions**, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to —

- (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;
- (ii) comply with any prescribed environmental management standards or practices;
- (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and
- (iv) comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable;

(g) the **method of monitoring** the implementation of the impact management actions contemplated in paragraph (f);

(h) the **frequency of monitoring** the implementation of the impact management actions contemplated in paragraph (f);

(i) an indication of the **persons who will be responsible** for the implementation of the impact management actions;

(j) the **time periods** within which the impact management actions contemplated in paragraph (f) must be implemented;

(k) the **mechanism for monitoring** compliance with the impact management actions contemplated in paragraph (f);

(l) a **program for reporting** on compliance, taking into account the requirements as prescribed by the Regulations;

For

(v) where relevant, operation activities;

6.1 OPERATION ACTIVITIES

Ongoing maintenance of the powerlines will be required throughout its lifespan. Line inspections are usually undertaken once or twice per annum. This may be done via the access routes, or by helicopter.

6.1.1 Line Inspections

Powerline inspections are usually undertaken once or twice per annum. The maintenance process involves the identification and correction of defects which could have detrimental effect on future line operation. This include a means of inspection, evaluation and repair of the identified defects in a reasonable period so as to prevent imminent failure, mal-operation or reduced reliability. This may be done via the access routes, or by helicopter. The Eskom

document, TST41-637, Routine Inspection and Maintenance, details the philosophy employed in the inspection and maintenance of overhead Transmission powerlines.

6.1.2 Servitude maintenance

The following documents highlight the most pertinent issues in the management of the servitude for

Transmission's overhead powerlines

- Servitude Life Cycle Management Plan;
- Transmission Bird Perch Guidelines, TGL41-332;
- Bird Nesting Guidelines, TGL41-333; and
- Transmission Vegetation Management Guidelines, TGL41-334.

The environmental impact due to the modification of the habitat of birds and plant species must be closely monitored to ensure that no negative influences result. In the case of birds, it could relate to increased collisions and electrocutions. The stimulation of alien or invasive species of plants should be avoided where possible.

A readily accessible servitude road facilitates quicker powerline patrols and maintenance. It also expedites the execution of emergency repairs. It is therefore imperative for these to be properly maintained and managed.

More importantly is the exposure of concrete foundations, which introduces the risk of tower collapse during high wind loading conditions. The environmental deterioration is another concern which constitutes contravention of environmental legislation. The encroachment on the right of way by settlements poses a safety risk to the public.

6.1.3 Insulators

Glass insulators in highly polluted areas should regularly be evaluated. Appropriate cleaning should be done and insulators found to be under specified in creepage for the prevailing pollution level should be replaced with units of the appropriate creepage level.

The methods of washing, whether by hand or spray washing, shall be determined by the urgency and the resources at hand. Alternatively, where regular cleaning/washing is required at a great expense, the glass insulators should be replaced with polymeric, silicone insulators.

Insulators should be scanned with a corona camera to ascertain the extent of corona. On detection of corona activity, a program should be put in place to monitor and replace the insulators.

6.1.4 Hardware

Earthing, and line hardware should be inspected as per TST41-637. Any defects identified should be monitored and prioritised for replacement or repair. Action plans should be initiated, as a matter of priority, to ensure that imminent failures are averted.

6.1.5 Anti-climbs

Anti-climbs are essential for preventing the public (especially children) from climbing to within critical distance from live conductors. Damaged or removed anti-climbs should be replaced as soon as reasonably possible, as it constitutes a regulatory requirement on the part of the business. They should be affixed between 2,5m to 3m above ground and maintained in operable condition. TSP41-591 contains application guidelines for anti-climbs.

6.1.6 Foundations

Exposed foundations due to flooding or erosion, constitutes a safety hazard and should be addressed, through the rehabilitation of the surrounding soil and damaged foundations. Currently no standard or guideline exist for rehabilitation of damaged tower foundations.

6.1.7 Tower Earthing

The connection and configuration of the tower earthing should be as per TST41-321. Loose and corroded earth straps should be fixed to ensure the electrical integrity of the connection to the tower.

6.1.8 Tower corrosion protection

TSP41-608 addresses the methodologies to be followed for the corrosion protection of steel structures on Transmission powerlines. The painting or coating of structures must be preceded by a thorough surface preparation which encompasses, removal of loose paint, scale and rust by means of scraping or sanding, followed by washing using clean sponges and clean potable water. The specification details the procedure to be followed under various corrosive environments. It also addresses the type of coating system suited for

specific applications, with recommended and approved products for use. It is imperative that the operational powerlines staff are guided in the optimum application of coating systems by the relevant corrosion specialists.

6.1.9 Live Line Maintenance

Two techniques of live working have been developed on Transmission voltages. The “stick” or “distance” method utilised insulated pole and special tools and equipment to perform work on live apparatus while at ground potential. This technique is mainly used on 132 and 220 kV as the safe approach distance, and as a result the stick length, becomes impractical on the higher voltages.

For higher voltages the “bare hand” technique is used. In this method the live line worker is energised to the voltage of the live part to be worked on and physically performs the work with his hands, rather than using a stick as described earlier. Special precautions are taken to ensure an equi-potential zone around the body. Insulated aerial devices, insulated ladders as well as helicopters are used to transfer the live line worker from ground to system potential. It goes without saying that maintaining the safe approach distance at all time is critical. Because of the risks involved, the live work environment is highly procedurised and controlled. Strict requirements are contained in standards and procedures in the Transmission quality manual.

A major benefit of performing live line maintenance is the increased availability obtained on a specific line due to the fact that it does not have to be switched out to perform maintenance. This reduces supply risk to customers and strengthens the system from an operational point of view. The fact that maintenance can be performed on a line when required, and not subject to outages, results in increased reliability, which results in superior performance of the line. The ability to perform live maintenance reduces and/or delays the need for capital expenditure to build new lines for redundancy in order to perform maintenance under de-energised conditions.

6.2 ROLES AND RESPONSIBILITIES

6.2.1 Developer (Eskom)

The holder of the EA to which this EMPr relates holds legal responsibility for compliance with this EMPr and any other arrangements must be entered into between such holder and other

parties. The Developer's will have overall responsibility for the management of the project and the implementation of the EMPr.

6.3 MONITORING AND REPORTING

Records of the following must be kept:

- Bird collisions;
- Use of pesticides and herbicides;
- Oil spills;
- Fires; and
- Any other emergency incidents.

6.4 PHYSICAL ENVIRONMENT

6.4.1 Air quality: Dust and Fire Break

Burning of waste materials such as vegetation and materials resulting from maintenance activities at the site is strictly prohibited.

Where fire breaks are necessary, they should be planned in conjunction with relevant landowners and performed in accordance with the conditions of the fire management plans for the region. Erosion in fire breaks should be prevented.

No fires are to be made on private property or within the line servitude.

6.4.2 Erosion

Naturally occurring erosion on the servitude should be repaired and further erosion prevented. Erosion outside the servitude that was not caused by operation or maintenance activities is the responsibility of the landowner. If, however, operation and maintenance activities have caused erosion outside the servitude, it is the responsibility of Eskom to repair it and prevent further erosion damage.

6.4.3 Littering

No littering shall take place on the servitude. Burning of waste material such as vegetation and old cleaning materials resulting from maintenance activities at the site is strictly prohibited.

6.4.4 Maintenance of Access roads

All conditions that the landowner may have shall be noted and adhered to. All vehicle movement shall be along existing roads and access tracks. Vehicles should be driven at moderate speeds care should be taken especially in wet weather to avoid eroding tracks. Multiple tracks are to be avoided at all times.

If Eskom is the only user of these access roads, then the maintenance of the access road shall be the sole responsibility of Eskom. Damage to access roads due to the movement of vehicles must be reported to Eskom and landowner. All repairs must be done immediately and to the satisfaction of the landowner. Written proof of satisfaction must be obtained.

No fence or gates are to be lowered, cut removed or damaged in any way. Leave private gates, as they are found open or closed.

6.4.5 Access & damage to Properties

All damage done to property must be reported to Eskom and the landowner. Repairs to the damage must be done immediately.

Do not interfere with stock, crops or activities on the property. No wandering around properties whatsoever.

6.4.6 Maintenance of Vehicles

Servicing of vehicles in the veld is strictly prohibited. Only emergency repair shall be allowed in the line servitude. In the event of a breakdown in the veld, any oil spills shall be cleaned up immediately.

The following shall apply:

a) All contaminated soil shall be removed and placed in containers. Contaminated soil can be taken to one central point where bio-remediation can be done by a registered Bio-Remedial Company.
b) Bigger spills can be treated on site.

Oil spills

All oil spills from pole-mounted transformers should be treated as PCB contaminated spills, unless the oil status is known and or laboratory results proof otherwise. The necessary precautions as specified in the Eskom Procedure for waste Management (EPC 32-245) should be considered.

The term PCB is the generic name for group of fire resistant dielectric fluids and synthetic insulating liquids composed of polychlorinated biphenyis, sometimes with the addition of polychlorinated benzenes. PCB is commonly known by various brand names. These include Askarel, Chlorectol, Elemex, Inerteen and degradable and therefore tends to be passed on through the food chain, creating major environmental pollution and health hazards. PCB produces hazardous by-products under combustion.

In the event of an oil spill, the spill must be reported to the Department of Water Affairs only when there is contamination of surface or ground water. The incident must be reported to according to the Procedure for the effective Management of Safety, Health and environmental related incidents (EPC 32-95) within a period of 24 hours.

6.4.7 Water Quality

In accordance with the requirements of the Water Act, surface and ground water shall not be polluted or contaminated (oil, petrol, herbicides, ash, dust etc) nder any circumstances. Storm water shal be managed to ensure that it does not become polluted.

All harzadous substance at the site shall be adequately stored and accurately identified, recorded and labbelled (ex. Polychlorinated Biphenyl's – PCB/Askarel) EPC 32-245)). All *harzardous* waste shall be disposed of at a lincensed , Class H, disponsable site. This applies to the oil in pole-mounted transformers that can leak and pose an enviromental risk. All water contaminated by oil spills is to be reported to the Department of Water and Sanitation, if applicable. The incident must be reported to according to the Procedure for the effective Management of Safety, Health and environmental related incidents (EPC 32-95) within a period of 24 hours.

6.4.8 Wet Areas

Rivers: No roads shall cut through river- and straem banks as this may lead to eosion causing situation of streams and downstream dam. Existing drifts and bridges may be used with the contest of the landowner. Such structures shall then be throughly examined for strength and durability before they are used. New drifts and bridges or roads shall only be constructed with the approval of Eskom and the landowner and at the discretion of the Farmer Liasion Officer.

Permanently wet areas (vlei, pan etc.): These areas will be shown on the profile. No vehicular traffic shall be allowed in such areas. Only existing roads through such areas may be used with the approval of Eskom and the landowner. No equipment that can cause irreparable damage to wet arears shall be used.

Storm water run-off: Must be managed effectively in arears where it may negatively impact on the structures of powerlines as well as to avoid storm water damage and erosion to adjacent properties. Drainage systems also need to be kept clean from debris at all the times.

Measures shold be implemented to ensure that run-off water on the servitude does not run into dongas and cause an erosion hazard.

6.5 BIOLOGICAL ENVIRONMENT

6.5.1 Fauna

Birds: Interactions of birds with powerline should be prevented by the applications of for example bird flight divertes in sensitive arears. All bird-powerline interactions must be reported, recorded and investigated. After action has been implementd to solve the problem, it must be followed –up to assess the effectiveness of the remedial measures taken.

Other: Protected or endangered animal species occuring on Eskom servitudes must be indentified and protected from eskom's operation and maintanace activities. No animals may be killed on private property.

In areas where giffaffes oocur, the height of powerlines should be adjusted accordingly. Rock packs could also be put around the poles to prevent Rhino and elephant from pushing the poles over. It will be advisable to only implement these miigation measures in arears where the animals occur.

6.5.2 Fauna

Indigenous trees: Protected or endangered tree species occuring on ESKOM servitudes must be identified. Permits must be obtained from the relavent DEA or Department of Agriculture, Forestry and Fisheries (DAFF) for the felling of protected trees.

Bush clearing: The objective of bush clearing is to trim , cut or clear the minimum number of trees and bush necessary for safe electrical operation of the powerline. Bush clearing shall be in accordance with the Eskom Procedure for vegetation clearance and maintanance within overhead powerline servitude and on Eskom owned land (EPC 32-247). All trees and bush cleared from the servitude shall be cut into manageable lengths (1m), and neatly stacked at regular intervals along the line. This wood is available to landowner and/or local community for their persornal use.

No bush clearing shall be allowed on river- and stream banks. No bulldozer shall be allowed for bush clearing.

Economically valuable trees: The removal of any economically valuable trees or bush shall be negotiated with the landowner before such plants are removed.

Hercide usage: Only Eskom approved chemicals must be used in the control of weeds and pests. The application shall be according to set specifications, the manufacturer conditions must not be deviated from. Herbicides may not only be applied by a qualified Herbicide Applicator who is in possession of a Herbicide Applicators' Licence. The possibilityof leaching into the surroundingenvironment shall be properly investigated and only environmentally friendly herbicides shall be used.

A register shall be kept of all herbicides that are administered. If there is any doubt as to the use of a specific chemical, an expert should be consulted.

Qualified registered personnel must do application only- under the conditions as set in the Eskom Guidelines.

6.6 SOCIAL ENVIRONMENT

6.6.1 Interaction with landowners

The success of any operation depends largely on good relations with the landowners. All negotiations for any reason shall be between Eskom and the landowner. No verbal agreements shall be made and all agreements shall be recorded properly. All parties shall co-sign the agreement

The landowners shall be informed of any changes in operation and maintenance programmes, should it affect them. The Eskom contact numbers shall be made available to the landowners to ensure open channels of communication and prompt response to any queries and claims.

Property owners and local residents must be treated with respect and courtesy at all times. The culture and lifestyle of the community living in close proximity to the site and work site must be respected. The rights of the landowners shall be respected at all times and all stuff shall be sensitized to the effect that they are working on private property.

Environmental clauses must be included in contract documents for all contractors. All complaints must be reported, recorded and investigated.

All the conditions that the landowner may have should be noted and adhered to. Access will only be allowed to Eskom personnel with gate keys.

Fences or gates of landowners should not be damaged when gaining access to the servitude. The condition of Eskom gates and locks shall be regularly monitored to ensure that they are secure (i.e. to prevent livestock getting in or out as well to prevent unauthorized access). Gates shall be kept as found i.e. either opened or closed.

All complaints must be reported, recorded and investigated.

Eskom must maintain membership of the local fire protection agencies and have and implement a fire fighting strategy.

Eskom must consult with relevant communities before engaging in any Corporate Social Investment projects in the area.

Eskom should have a strategy in place for engaging with traditional leadership structures.

Agricultural goods: pilfering (removal) of agricultural goods (crops, livestock, firewood etc.) and poaching is prohibited. Receipts shall be given for any merchandise purchased or received from landowners.

All damage done to property must be reported to Eskom and the landowner. Repairs to the damage must be done immediately. Damaged ground surfaces, due to vehicle movement must be repaired to the satisfaction of the landowner, written proof must be obtained.

Do not interfere with stock, crops or activities on the property. No wondering around properties or whatsoever.

Cultural Environment (Archaeology)

Graves, archaeological sites and sites of historical interest in close proximity to an Eskom site or other work site must be protected and treated with respect. These areas shall be avoided during operation and maintenance activities. No artefacts shall be removed under any circumstances.

6.6.2 Graveyards

Graveyards may not be intruded and or disturbed during operation and maintenance activities.

6.6.3 Monuments

Site of historical interest in close proximity to the Eskom servitude shall be protected and treated with respect NHRA

6.6.4 Farmhouses and other buildings

Eskom personnel shall not intrude upon the private property of landowners. If and where the line crosses an inhabited area, the necessary precautions shall be taken to safeguard the lives and properties of the inhabitants during operation and maintenance activities.

6.6.5 Infrastructure

The integrity of existing structures shall be protected during operation and maintenance activities.

7. REFERENCES

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SAHRA, 2016. SAHRIS Fossil Heritage Layers. [Online] Available at: http://www.sahra.org.za/fossil-layers [Accessed 02 09 2016].

ANNEXURE A: CURRICULUM VITAE

ANNEXURE B: METHOD STATEMENT FOR SENSITIVE AREAS