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

IPHIVA SUBSTATION

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME - APRIL 2018

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ESKOM'S NORTHERN KWAZULU-NATAL STRENGTHENING PROJECT:

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Title:	Draft Environmental Management Programme for Eskom's Northern KwaZulu-Natal Strengthening Project: Iphiva Substation
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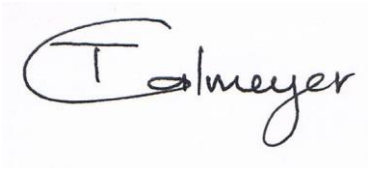
Approved for NAKO ILISO by:



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 Iphiva Substation. Separate EMPrs have been prepared for the Iphiva –Duma 400 kV powerline, the Normandie-Iphiva 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. 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 Interested and Affected Parties, attended meetings and provided input and comments by other means.

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APPENDIX A: Curricula Vitae of EAP (Terry Calmeyer)

LIST OF ACCRONYMS AND ABBREVIATIONS

AIS	Alien Invasive Species
CA	Competent Authority
Amafa	Provincial heritage agency for KZN
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
ECO	Environmental Control Officer
EA	Environmental Authorization
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
EAP	Environmental Assessment Practitioner
FPA	Fire Protection Agency
HCS	Hazardous Chemical Substance
IAIA	International Association of Impact Assessment
I&APs	Interested and Affected Parties
KZN	KwaZulu-Natal
KZNHA	KwaZulu-Natal Heritage Agency
MSDS	Material Safety Data Sheet
NEMA	National Environmental Management Act (Act 36 of 1998)
NEMPAA	National Environmental Management: Protected Areas Act (Act 57 of 2003)
NHRA	National Heritage Resources Act
SAHRA	South African Heritage Resources Agency
SANRAL	South African National Roads Agency Limited

DEFINITION AND TERMINOLOGY

In these 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 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 Iphiva 400/132 kV Substation close to Mkuze in KwaZulu-Natal. The substation will de-load the main sub-transmission network and improve the voltage regulation in the area. The Iphiva 400/132kV Substation will be integrated with the existing electricity network by 400 kV Transmission powerlines to Normandie and Duma, and approximately 165 km of 132 kV Distribution powerlines. Each of these four components of the overall scheme will be handled separately as individual projects, requiring separate environmental authorisation and EMPrs.

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 must be utilised as the basis for a decision on an application for environmental authorisation.

There is a reliance on the EMPr to ensure that a project's actual environmental impacts are consistent with those evaluated in the Environmental Impact Assessment (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.

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 Environmental Assessment Practitioner (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 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 Environmental Control Officers (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 environmental impact assessment 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.	

1.7 SUMMARY OF THE FINDINGS OF THE ENVIRONMENTAL IMPACT ASSESSMENT

The following key issues were identified in 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.

This EIA used input from specialists to assess the key impacts, determine their significance, and recommend appropriate measures to mitigate negative impacts and enhance benefits.

A preliminary **geotechnical** investigation was undertaken to confirm that the sites being assessed are suitable for the construction of a substation.

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 negligible impact after mitigation; and
- The impact of alien vegetation establishment will be negligible after mitigation.

The fauna and flora specialist recommended that the project is authorised. Iphiva 6 is disturbed by rural housing, bush clearing or informal roads, with little natural habitat remaining. There is scattered natural vegetation such as Aloe marlothii (Mountain Aloe) and various Acacia species.

With the clearing of vegetation for the construction of the substation, **avi-fauna** habitat will be removed. Indigenous vegetation will be replaced by fast growing alien and weed vegetation, degrading the general habitat quality. The construction of infrastructure

especially at height, which includes distribution lines emanating from the substation, will pose a risk to avifaunal species in the form of collision and electrocution risk.

The habitat present at Iphiva 6 is impacted by the presence of the local community. No Species of Special Concern were encountered during the field work. The significance of the direct loss of habitat types and biodiversity during construction after mitigation is therefore minor and the loss of species of special concern during construction after mitigation is negligible.

The aim of the **wetland** assessment process was to provide specialist opinion on the viability of the proposed strengthening project in terms of wetland ecology. Wetland areas were identified and preliminary wetland boundaries were delineated at the desktop level using detailed aerial imagery (Southern Mapping, 2015) along with 1m contours for the two Iphiva Substation sites under consideration.

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.

At the Substation site the soils are not suitable for arable agriculture, but rather suitable for grazing from an agricultural viewpoint. When not covered with vegetation the soils have a high risk for erosion.

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.

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 are considered 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 / Mkuze / Ulundi) and informal settlements / villages (likely considers transmission lines as a sign of progress) are considered 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 view sheds

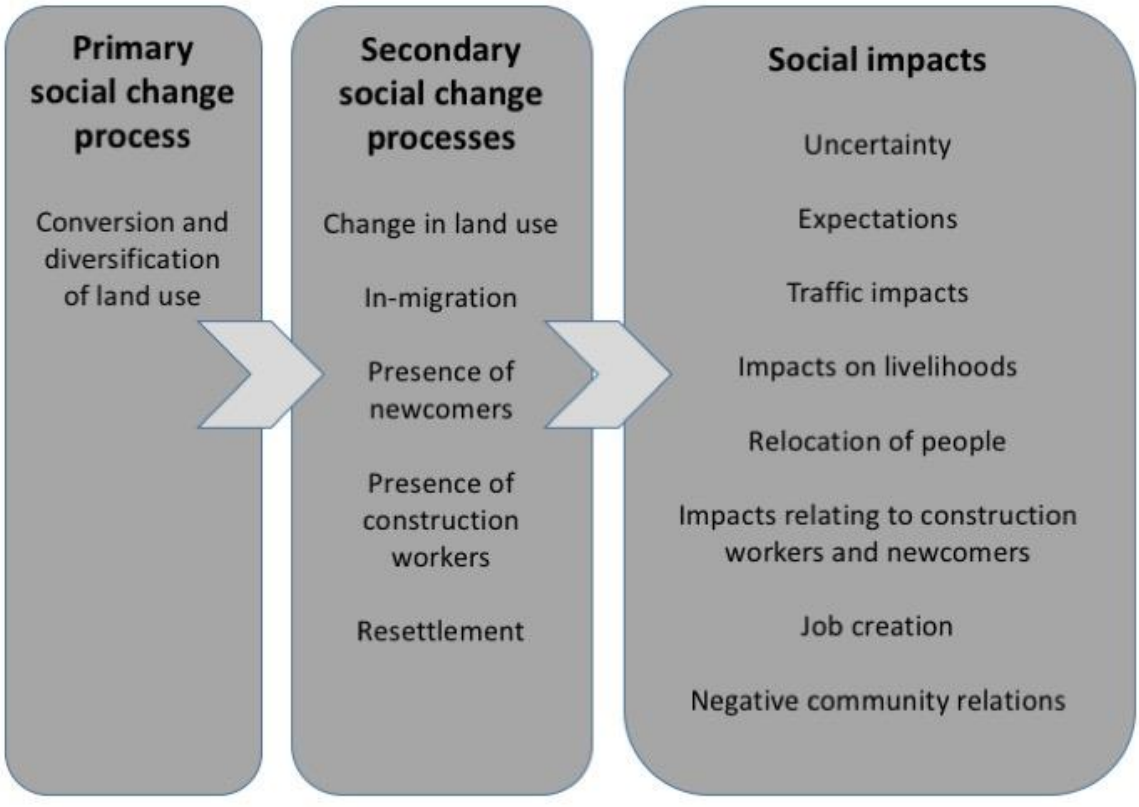
generated. These aspects and visual intrusion were combined to calculate the intensity / magnitude of each impact. The visual intensity was then combined with pre-defined impact assessment aspects such as the nature, duration, extent to determine the significance of each impact before and after mitigation.

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. Iphiva 6 is recommended.

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 substation 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. Investment costs for the new substation are estimated to be in the order of R 1.25 billion.

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.

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.

The economic specialist found that the construction and operation of the Iphiva 36Substation will have a low negative significant impact after mitigation on Property value. The significance of the impact on adjacent properties is Medium-High. 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 may also be impacted due to the loss in productive land and is expected to be Low.

The economic specialist recommended that in order to achieve the lowest possible negative economic impact a suitable location for the substation on Iphiva 6 should be found where the visual impact is as low as possible for the surrounding areas.

The EAP recommended that the construction and operation of the Iphiva Substation be authorised. Iphiva 6 is the best practical environmental option available. All of the specialists support the recommendation of the implementation of Iphiva 6.

The substation should be placed in the northern section of Site 6 (with the lowest visibility). The southern slopes of the hill on Site 6 should be avoided. This will reduce the visual and associated economic impacts on tourism. High structures, such as the radio tower pose a risk of collision for birds, and suitable measures must be applied to make the mast visible to birds.

A site investigation of the proposed substation site layout should be conducted by a suitable qualified avifauna and fauna and flora specialists in order to determine the presence of any threatened, protected, endemic bird, animal or plant species of special concern within or in close proximity to the area to be impacted by construction areas.

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.

The footprint area must be limited to what is essential in order to minimise impacts as a result of vegetation clearing and compaction of soils. Protected trees on the footprint of the substation site will require permits before these trees are damaged or removed. Physical damage to natural vegetation on the periphery of the footprint, 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 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 fire fighting 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;

Iphiva 6 is located north of the P 234 road approximately 9.5 km west of the N2. Access to the site will be via the N2 and P 234 roads.

A total footprint of 400 x 400 m (i.e. 16 ha) will be required for the development, within the authorised site with an area of approximately 1 x 1 km. The 16 ha development footprint area includes provisions for an 80 m high microwave radio communication mast, oil and fuel storage facilities, and an oil bund to contain any accidental transformer oil spills. The substation will comprise standard electrical equipment, including transformers, reactors, bus bars, and isolators.

The Iphiva 6 site is disturbed by rural housing, bush clearing and informal roads, with little natural habitat remaining. There is scattered natural vegetation such as *Aloe marlothii* (Mountain Aloe) and various Acacia species. When not covered with vegetation the soils have a high risk for erosion. There are two heritage sites on the site.

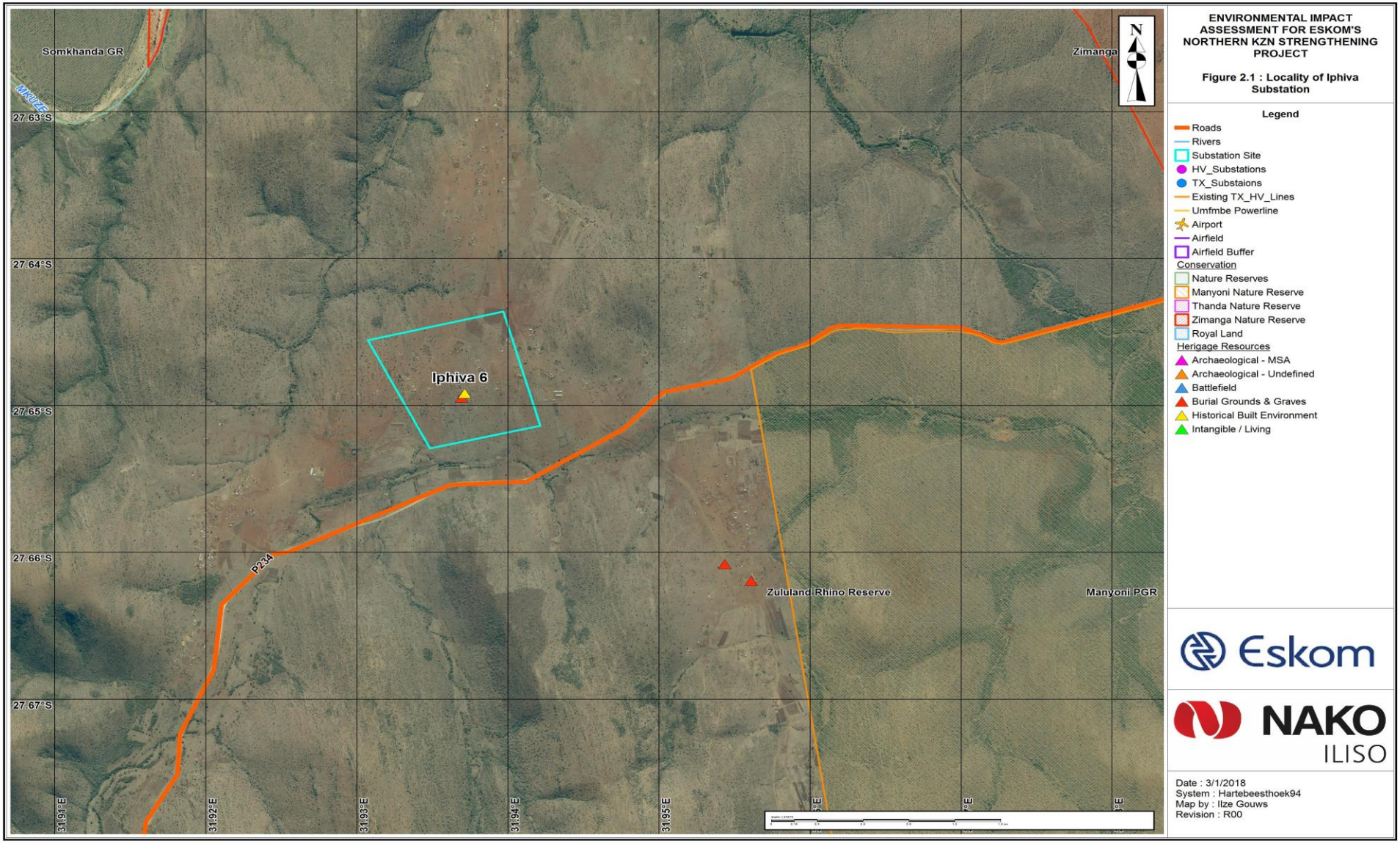


Figure 2.1: Locality of the proposed Iphiva Substation

3. LEGAL REQUIREMENTS, POLICIES AND GUIDELINES

3.1 ENVIRONMENTAL PRICIPLES

The following principles should be considered at 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 listed activities are approved in the Environmental Authorisation. Should the project trigger any other listed 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
Discharging waste or water containing waste into a water	Licence	DWS

resource through a pipe, canal, sewer, sea outfall or other conduit.		
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
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 Resources 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	KZN Provincial Roads Department
Application for health permits for hostels and sanitation	Permit	DOH
Blasting	Permit	DEA/South African Police Services (SAPS)
Commencement of construction activities	Notify one week before commencement	DEA
Application for Radio Equipment Licence	Site radio submission	ICSS
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
Hazardous material route	Approval	DOT
Other hazardous substances	Permit	DOH/DEA (in certain cases)
Use of borrow pits	Approval	Department of Mineral Resources (DMR)

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)	Waste Management Licence (WML)	DEA

3.3 ESKOM POLICY DOCUMENTS

3.3.1 Control Plans for Alien Invasive Species (AIS)

Government Notice Regulation (GNR) 598 of 2014, Alien and Invasive Species 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 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 environmental impact assessment 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:

- Identify the best footprint for the substation on the authorised site;
- Acquire the property required;
- Undertake detailed surveys of the site and access roads;
- Assess and design road and watercourse crossing upgrades required;
- Undertake detailed design of the substation;
- Prepare tender documents for Contractors;
- Advertise and adjudicate tenders;
- Appoint Contractors;

- Negotiate with landowners for the use of land for the construction camp, if not all part of the property to be acquired;
- 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 Environmental Control Officer; and
- And notify DEA of the intention to commence with construction.

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 Competent authorities, on behalf of the Minister, play 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 competent authority is responsible for approving the EMPr for the Project and any revisions and amendments thereto.

4.2.2 Developer (Eskom)

The holder of the Environmental Authorisation (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 environmental control officer (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 Environmental Assessment Practitioner (EAP) drafts the EMPr as part of the EIA process.

4.3 DESIGN REQUIREMENTS

4.3.1 Impact Management Outcomes for Design

The identification of the final footprint, layout and design of the substation 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 final layout of the substation and associated access road:

- The substation should be placed in the northern section of Site 6 (with the lowest visibility). The southern slopes of the hill on Site 6 should be avoided. This will reduce the visual and associated economic impacts on tourism.
- Avoid impacts on wetlands, watercourses and areas regulated by the Department of Water and Sanitation (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 5.4.5**).
- High structures, such as the radio tower pose a risk of collision for birds, and suitable measures must be applied to make the mast visible to birds.
- The footprint area must be limited to what is essential in order to minimize impacts as a result of vegetation clearing and compaction of soils.
- Adequate storm water 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 storm water energy is dissipated and does not cause erosion in these areas.

- The security lighting around the substation fence luminaire must be kept as low as possible.
- Lighting should only come on when triggered by the non-lethal fence, and not remain on throughout the night.
- Upwards light spill must be minimised by “blinkers” designed to ensure light is directed downwards whilst preventing side spill.

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 substation site that has the least environmental impacts and is therefore the best practical environmental option. Assessments did not identify the best way to minimise impacts on the site. 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 site investigation of the proposed substation site layout should be conducted by a suitable qualified avifauna and fauna and flora specialists in order to determine the presence of any

threatened, protected, endemic bird, animal or plant species of special concern within or in close proximity to the area to be impacted by construction areas.

Areas with a high ecological sensitivity, wetlands and watercourses should be designated as “No-Go” areas and be off limits to all unauthorized vehicles and personnel.

Protected trees on the footprint of the substation site will require permits before these trees are damaged or removed.

4.6 SOCIAL IMPACTS

4.6.1 Impact Management Outcomes for social aspects

Uncertainty

The presence of two alternatives creates uncertainty with the potentially affected landowners as they need to keep the possibility of the change in land use in mind when planning future activities. Very few people want to spend money on expansions or improvements on land that may not be available to them in the relatively near future.

According to the members of the traditional community in the area, the Iphiva 6 site is under a land claim, meaning there is uncertainty surrounding the proposed site even without the proposed project.

Expectations

The traditional communities have an expectation that Eskom will follow the correct procedure to engage with traditional leadership structures to obtain permission to use their land for the intended purpose. The traditional community members in the area close to the proposed sites do not currently have access to electricity. They are hopeful that Eskom would be able to address this and assist the community further in terms of their Corporate Social Responsibility.

Manage expectations in terms of job creation and Corporate Social Investment

Manage expectations by communicating requirements for recruitment and Eskom’s potential involvement in community projects.

4.6.2 Impact Management Actions for social aspects

- Appoint a Community Liaison Officer
- 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 fire fighting 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 CONSTRUCTION LAYOUT PLAN

4.7.1 Impact Management Outcomes for the Construction Site Layout Plan

Site Plan Requirements are principles that guide the design, orientation and location of buildings on individual sites. These include entrances, vehicular circulation, building orientation and setback, side and rear building lines, surface parking and shading, loading and service areas, security and access for the disabled. The objective is to minimise impacts on all aspects of the environment by proper planning.

4.7.2 Impact Management Actions for the Construction Site Layout Plan

- A **method statement** detailing the location, layout and method of establishment of the construction camp (including all buildings, offices, lay down yards, vehicles wash areas, fuel storage areas (if any), batching areas, topsoil stockpile areas and other infrastructure required for the running of the project) shall be submitted to the Engineer. No accommodation for any staff is permitted on site.
- On-site vehicular circulation, including road widths, sight lines, turning radii, parking and loading bays must conform to standards required by the Local Authority.
- Allow for wetland soil conditions to be maintained both upstream and downstream of any activities to such a degree that wetland vegetation community structures upstream and downstream of the development 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.
- Locate construction camps outside of visually sensitive areas and away from critical view sources such as protected areas, rural homesteads;
- Do not locate campsites in areas where it will be necessary to remove trees and shrubs or large areas of well-established vegetation;
- Where possible make use of sites which have been previously disturbed

4.8 MONITORING AND REPORTING

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

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 environmental impact assessment 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

The 400/132 kV substation will have a 400 m x 400 m footprint, within the approximately 1 km x 1 km authorised site. The substation is composed of standard electrical equipment such as transformers, reactors, bus bars and isolators. The substation will have a microwave radio communication mast that could be up to 80 m high. Oil and fuel storage facilities will be bunded and there will be an oil bund to contain any transformer oil spills.

The substation needs to be lit at night for safety and security reasons. The security lighting will be around the substation fence, the luminaire height is 4m, and will be operated with a trigger from the non-lethal fence. Three 400kV powerline and seven 132kV powerline will enter/leave the substation in various directions, depending on the final location.

No staff will be accommodated on site during the construction or operation of the substation, but will transported to site each day.

Construction of the substation will consist of the following activities:

- Vegetation clearing, which will result in a loss of flora;
- Upgrade/construction of access roads to accommodate heavy loads;
- Watercourse crossing may need to be upgraded;
- Levelling and terracing of the surface;
- Construction of foundations and concrete works, including storm water drainage pipes, slabs, bund walls, a control room and a small building and storage area;
- All open areas between the transformer plinths and other switchgear foundations will be covered with about a 100 mm layer of 25 – 38 mm crushed stone. Before laying the crushed stone, the ground surface is intensively treated to strict specification with insecticide and herbicide to prevent insect activity and the growth of weeds and other plants in the high voltage yard;
- Erection of steelworks; and
- Delivery and installation of transformers.

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 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.

An independent environmental control officer (ECO) must be contracted by the Developer to objectively monitor the implementation of the EMPr according to relevant environmental legislation, and the conditions of environmental authorization (EA). 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.

The Developer may appoint a Site Supervisor to oversee site works and liaises with the Contractor(s) and the ECO. The Developer's Site Supervisor is responsible for the day to day implementation of the EMPr and for ensuring the compliance of all Contractors with the conditions and requirements stipulated in the EMPr. The Developer (through the Site Supervisor) is the only party that may issue instructions to the Contractors. The Developer will also appoint an Environmental Representative (dEO) on site who will be responsible for 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 periodic environmental performance audits are undertaken on the project implementation;
- Ensure that all Contractors identify a Contractor's Environmental Officer (cEO);
- Will issue all non-compliances and instructions to Contractors.

5.2.2 Environmental Control Officer

The Independent Environmental Control Officer (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 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

Environmental Authorisation, report to the relevant competent authority as and when required.

The responsibilities of the ECO will include the following:

- Be aware of the findings and conclusions of the Environmental Impact Assessment 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 (dEO and cEO);
- 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.

5.2.3 Developers Environmental Officer

The Developers Environmental Officer (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 DEA 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);
- Ensure that the necessary legal permits and / or licenses are in place and up to date;
- 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.

5.2.4 Contractor

The Contractor appoints the Contractor's Environmental Officer (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.

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:

- Ensure 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) repairs any environmental damage as a result of a contravention of the specifications contained in the Environmental Management Programme, to the satisfaction of the ECO.

5.2.5 Contractors Environmental Officer

Each Contractor affected by the EMPr should appoint a Contractor's Environmental Officer, 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 Environmental Control Officer 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;
- Conduct environmental awareness training on site;
- Maintain public complaints register;
- Ensure all Environmental records are kept on site;
- Confine the construction site to the demarcated area; and
- Where more than one Contractor is undertaking work on site, each company appointed as a Contractor will appoint a cEO representing that company.

5.2.6 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 Competent Authority (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 environmental authorisation from the competent authority in terms of NEMA, granting approval for the development;
- Copy of the EMPr as well as any amendments thereof;
- Method statements;
- Completed environmental checklists;
- Minutes and attendance register of environmental site 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;
- Record of Environmental Training undertaken;
- Material Safety Data Sheets (MSDS);
- A copy of the waste disposal certificates must be maintained; and
- Weekly Environmental checklists.

The dEOs are required to complete a Weekly Environmental Checklist, the format of which is to be agreed prior to commencement of the activity. The dEOs are required to sign and date the checklist, retain a copy in the Environmental file and submit a copy of the completed checklist to the Developer on a weekly basis. Weekly during civil work and then Biweekly. The checklists will form the basis for the Monthly Environmental Reports. Copies of all completed checklists will be attached as Annexures to the Environmental Audit Report as required in terms of the Regulation.

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 Substance's;
- 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 Competent Authority 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 dEO.

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 (provided by the ECO)

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 dEOs 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 competent authority at intervals as indicated in the environmental authorization.

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 environmental authorization, the ECOs shall submit the monthly reports to

the Competent Authority in 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 competent authority for acceptance and approval. The environmental report must comply with Appendix 7 of the Environmental Impact Assessment 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 Competent Authority;
- 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 environmental authorisation, 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 Competent Authority.
- Submission of the final environmental audit report to the competent authority will 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 environmental authorisation 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

Establishment of the construction camp must comply with the approved layout plan.

2. The camp must be fenced in accordance with **Section 5.4.5**: Fencing and gate installation; and

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. Erect, demarcate and maintain a temporary fence around the perimeter of any No-Go area;
2. Unauthorised access and construction related activity inside No-Go areas is prohibited.

5.4.4 Access Roads and Traffic

Management Outcome

The road up to the site is a gravel road, and although it seems to be a relatively busy road, it was not designed for heavy vehicles. Heavy vehicles using this road can lead to damage and deterioration of the road. The area is populated and there are many pedestrians.

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

5.4.5 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. All gates installed in electrified fencing must be re-electrified;
5. All demarcation fencing and barriers must be maintained in good working order for the duration of construction activities;
6. Fencing must be erected around the construction camp, batching plants, hazardous storage areas, and all designated no-go areas, where applicable;
7. All fencing must be developed of high quality material bearing the SABS mark;
8. The use of razor wire as fencing must be avoided;
9. 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;
10. On completion of the project all temporary fences are to be removed and where possible re-used by the contractor at new projects;
11. 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 materials into watercourses or water bodies must be designed and implemented;

2. 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;

3. 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;

4. 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;

5. 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 substation 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. Permits for removal must be obtained from the relevant Competent Authority prior to the cutting or clearing the affected species, and they must be filed;
4. Trees felled due to construction must be monitored and listed in the Audit Environmental Report;
5. Rivers, watercourses and other water bodies must be kept clear of felled trees, vegetation cuttings and debris. Integrity of the riverbanks must be maintained;
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. 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.

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. 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;
3. Special recommendations of the avian specialist must be adhered to at all times to prevent unnecessary disturbance of birds;
4. Bird diverters must be installed on the mast;
5. 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. Ensure structures vulnerable to high winds are secured;
4. 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 (HCS) 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 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 environmental authorisation are adhered to during the development phase. Where not defined, development must be limited to daylight hours.

5.4.22 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.

5.4.23 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 3 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.

5.4.24 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 5.4.27**: 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.

5.4.25 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.

5.4.26 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.

5.4.27 Landscaping and rehabilitation

Management Outcome

All land impacted on by construction should be left in the same or better condition as it was found in, and as agreed with the landowner.

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 5.4.23**: 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.

5.4.28 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 firefighting 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 environmental impact assessment 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 ACTIVITIES IN THE OPERATIONAL PHASE

Ongoing maintenance of the substation will be required throughout its lifespan. The EMPr specifies these operational and maintenance requirements.

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 with substation infrastructure;
- Use of pesticides and herbicides on the property;
- Oil spills;
- Fires; and
- Any other emergency incidents.

6.4 PHYSICAL ENVIRONMENT

6.4.1 Access and Damage to Properties

- All vehicle movement must be along existing roads.
- No fences or gates that provide access to the substation are to be lowered, cut, removed or damaged in any way. Leave private gates, as they are found opened or closed. Investigate any irregularities concerning Eskom fences and gates for example, an opened gate or lowered fence. Eskom locks and gates must be regularly checked to ensure that they are still in working order.

6.4.2 Water

- Under no circumstances must surface or ground water be polluted or contaminated by oil, petrol, cleaning material, herbicides etc.
- Adequate oil containment must be used, for examples bund walls, oil catchment areas, oil drainage systems, holding dams and oil plinths.
- All storm water runoff must be managed efficiently so as to avoid storm water damage and erosion to adjacent properties. Drainage systems need to be kept clean from debris at all times
- In the event of an oil spill, the spill must be reported to the Department of Water and Sanitation if applicable, only when there is contamination of the resources.
- The incident must be reported to the zone/Sector Manager and local EMS representative and or Environmental Officer within a period of 24 Hours (according to **32-95-procedure**).

6.4.3 Air quality: Dust and Fire Breaks

- Burning of waste material such as vegetation, domestic waste and old cleaning materials resulting from operation and maintenance activities at the site is strictly prohibited.

- Fire breaks where necessary must be planned in conjunction with relevant landowners and performed in accordance with the condition of the surrounding veld. Erosion and fire breaks must be guarded against and precautions taken.
- Tall weeds and grass in and around the substation and along the stone fire walk need to be removed. No fires to be made in private property or within the substation area.

6.4.4 Waste Management

- Littering or illegal dumping of any waste material is prohibited; no waste landfills are to be established on the site without government authorization. Provision must be made for the collection, separation and temporary storage of all waste materials, requirements of **32-245 Waste Standard** must be adhered to. All collected waste must be disposed of at a registered waste disposal site for example, municipal dumps or facilities.
- All recyclable materials should, where economically viable, be reused, returned to store or sold as scrap.
- All hazardous substances at the site must be adequately stored and accurately identified, classified and labelled (MSDS) e.g. PCB's, paints, silica gels etc.
- Ensure that all waste hazardous substances are disposed of at a licenced class H:H disposal site. This must also be adhered to when dealing with contractors.

6.4.5 Herbicides and Pesticides

- 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 must only be applied by a qualified herbicide applicator who is in position of a herbicide applicators' license. The possibility of leaching into the surrounding environment shall be properly investigated and only environmentally friendly herbicides shall be used. A register shall be kept of all herbicides and pesticides that are administered. If ever there is any doubt as to the use of specific chemicals, an expert should be consulted. Qualified registered personnel must do application only-under the conditions as set in the Eskom guidelines.

6.5 BIOLOGICAL ENVIRONMENT

6.5.1 Plant and Animal species

- Protected and endangered plant and animal species occurring at Eskom sites and servitude must be identified and protected from Eskom activities or plant.

- Permit must be obtained from the relevant departments for example, Department of Environmental Affairs (DEA) and Department of Agriculture, Forestry and Fisheries (DAFF) for the felling, disturbance or cutting of protected trees.
- Identify all animals' fatalities due to the site infrastructure such as bird collisions and implement immediate action to minimise or avoid the problem. Wildlife interactions must be reported recorded and investigated and, after action is implemented to solve the problem, be followed-up to assess the effectiveness of the remedial measure taken.

6.6 SOCIAL ENVIRONMENT

6.6.1 Social Aspects

- A list of the neighbouring properties, property owners' names, addresses and telephone numbers and land use should be drawn up where possible.
- A plan of action should be concluded with the neighbouring property owners and the relevant authorities in the case of an emergency (veld fires, oil spill, water contamination etc) an Eskom contact numbers must be clearly indicated on a board placed that it is visible.
- 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.
- 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.
- All complaints must be reported, recorded and investigated.
- Eskom sites should be evaluated in terms of their contributions to noise pollution and action implemented to ensure conformance to legal requirements and taking into consideration the views of adjacent land users/owners.
- 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.

7. REFERENCES

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ANNEXURE A: CURRICULUM VITA