

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

NORMANDIE-IPHIVA 400 KV POWERLINE

REFERENCE NUMBER 14/12/16/3/3/2/1036

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT- APRIL 2018



ESKOM'S NORTHERN KWAZULU-NATAL STRENGTHENING PROJECT: NORMANDIE-IPHIVA 400 kV POWERLINE

ENVIRONMENTAL IMPACT ASSESSMENT

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Title: Environmental Impact Assessment Report for Eskom's Northern KwaZulu-Natal Strengthening Project: Normandie-Iphiva 400 kV Powerline

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Project name: Eskom's Northern KwaZulu-Natal Strengthening Project: Environmental Impact Assessment

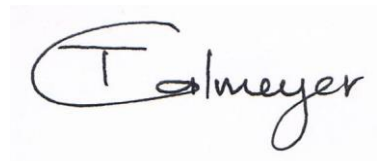
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Date: April 2018

NAKO ILISO

Approved for NAKO ILISO by:



Clint Koopman

Chief Executive Officer

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ENVIRONMENTAL IMPACT ASSESSMENT

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PURPOSE OF THE DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

ESKOM Holdings SOC Ltd (Eskom) has commissioned an Environmental Impact Assessment (EIA) of the proposed project to strengthen the supply of electricity in 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, and the approximately 130 km Iphiva-Duma 400 kV Transmission powerlines. Approximately 165 km of 132 kV Distribution powerlines will also link into the Iphiva Substation. The 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) (NEMA) as amended. In particular, the Regulations GN R982, R983, R984, and R985 promulgated in December 2014, as amended:

This EIA Report deals with the proposed Normandie-Iphiva 400 kV Powerline. Separate applications and reports have been prepared for the substation and other new powerlines. The environmental studies are required to provide an assessment of the project in terms of the biophysical, social and economic environments to assisted both the Environmental Authorities (in this case the Department of Environmental Affairs (DEA)) and Eskom in making decisions regarding the future of the project.

The EIA Report presents a summary of the findings of the specialists' studies and provides recommendations on the mitigation measures that should be implemented in order to minimise the negative and maximise the positive impacts.

In keeping with environmental legislations, it is the responsibility of the EAP to ensure that the public is provided the opportunity to participate meaningfully in the environmental assessment process. Accordingly, interested and affected parties (I&APs) are invited to review the Draft

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EIA Report from 26 April to 29 May 2018 and submit their comments to the public participation officer.

The comments received during this period will be incorporated into the Final EIA Report, and submitted to the DEA who will decide whether the project should go ahead and if so under which conditions. I&APs will be notified of DEA's decisions once it has been made.

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT DISTRIBUTION

Pdf versions of the documents will be uploaded to the NAKO ILISO website. Provision has been made to cut 10 CDs of each of the sets of draft reports. These will be available at key stakeholder and authorities and focus group meetings, or posted to I&APs on request. Hard copies have been placed in the public libraries listed below.

Placing of draft documents at public venues

Area	Venue	Address	Contact Details
Piet Retief	Piet Retief Public Library	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

All comments received will be recorded in the Comments and Responses Report.

INTERESTED AND AFFECTED PARTIES MEETINGS

The Draft EIA Report will also be presented at Key Stakeholder and Authorities meetings as listed in the table below.

Key Stakeholder and Authorities Meetings

Date and Time	Area	Address
Wednesday 09 May 2018 10h00 – 12h30	Pongola	Pongola Country Lodge 14 Jan Mielie Street, Pongola
Thursday 10 May 2018 10h00 – 12h30	Mkhuze	Ghost Mountain Inn Fish Eagle Road, Mkhuze

Minutes of meetings that have taken place since the compilation of the Final Scoping Report have been prepared and distributed to all attendees with the opportunity to provide corrections within 14 days. Final minutes are included in **Appendix C**.

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Focus Group Meetings

Focus group meetings will be held as follows:

Meeting Type and Target Audience	Day, Date and Time	Area	Venue & Physical Address
Public Meeting: Comondale Farmers Association	Monday 07 May 2018 15h00 – 17h30	Between Paulpietersburg and Piet Retief	Comondale Farmers Association
Public Meeting: Moolman Farmers Association	Tuesday 08 May 2018 10h00 – 12h30	Piet Retief	TWK Agri 11 De Wet Street Piet Retief

Meetings with traditional councils

Traditional Councils within the uMkhanyakude and Zululand Districts that could be affected by the project have been identified. Meetings with each of the Traditional Councils took place during the Scoping Phase. Follow up meetings are planned for the public comment period for the Draft EIA report. All Traditional Council meetings will be conducted in Zulu. All comments received at these meetings will be incorporated into the Comments and Responses Report.

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EXECUTIVE SUMMARY

Background

ESKOM Holdings SOC Ltd (Eskom) has commissioned a project to strengthen the supply of electricity in northern KwaZulu-Natal (KZN). NAKO ILISO has been appointed to undertake an Environmental Impact Assessment (EIA) to support applications for Environmental Authorisation.

The project has been divided into the following four components, each of which has an application:

- Iphiva Substation;*
- Normandie-Iphiva 400 kV Transmission Powerline;*
- Iphiva-Duma 400 kV Transmission Powerline; and*
- 132 kV Distribution Powerlines.*

This report documents the process and findings of the assessment of the Normandie-Iphiva 400 kV Powerline. This report will be subject to a public comment period after which it will be finalised and submitted to the competent authority for review.

Need for the project

The northern KZN network is currently fed at 132 kV by the Normandie and Impala Main Transmission Substations. The major load centres are Pongola and the Makhathini Flats. The Normandie Substation is situated approximately 80 km north-west of Pongola and the Impala Substation is situated approximately 180 km south of Makhathini Flats. High voltage drops are experienced in the 132 kV network and the voltages are approaching unacceptable low voltage levels as the demand increases. Contingencies on the main 132 kV supplies also lead to thermal overloading of the remaining network.

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Project Description

In order to strengthen and alleviate current and future network constraints in northern KZN, it is proposed that the Iphiva 400/132 kV Substation be introduced in the area, which will de-load the main sub-transmission network and improve the voltage regulation in the area. The Iphiva Substation will be integrated with the existing electricity network by 400 kV Transmission powerlines to the Normandie and Duma Substations, and approximately 165 km of 132 kV Distribution powerlines.

Final tower types to be used will be determined by Eskom after final survey and profiling of the authorised corridor. Typical possible tower types include Cross Rope Towers, Self-Supporting Towers, and Guyed Vee Towers. Each powerline consists of three phases (three conductors). Towers usually support one powerline.

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

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

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

The construction process consists of:

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

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

Listed Activities

The proposed project triggers several activities listed in the National Environmental Management Act (No 107 of 1998) (NEMA), as amended, as requiring environmental authorisation before they can commence. The purpose of this study is to undertake an EIA process, with associated Public Participation Process (PPP) and specialist studies, to enable the competent authority to decide whether the project should go ahead or not, and if so, then on what conditions.

Receiving Environment

The project is located in the KZN Province, with a small portion in Mpumalanga. The area has warm to hot summers, high evaporation, dry warm winters and a mean annual rainfall between 495 and 1 560 mm. Average rainfall is higher in the west and decreases gradually to the east. The dominant landscape features are valley slopes to undulating hills and flat plains with a network of rivers and smaller streams. The northern and central parts of the study area are more mountainous and have extreme topographical features.

The region is well known for its large wetlands, river systems, grassland hills, bushveld and diverse micro-habitats. The study area falls within the Maputaland-Pondoland-Albany hotspot, which is rich in floral diversity and is part of the Maputaland Centre of Plant Endemism. 58 of Southern Africa's endemic and near endemic avifaunal species are found within the project area.

Mkuze and Pongola are the large towns in the area. The rest of the area consists of settlements in areas under traditional leadership, commercial farms and game reserves. The land under traditional management belongs to the Ingonyama Trust. Settlement patterns are scattered. Dwellings consist mostly of brick structures or traditional structures. Most people have isiZulu as their home language.

In terms of commercial farming, sugar cane and forestry are concerns when it comes to the presence of powerlines. Sugar cane needs to be burnt, and as such cannot always be planted below powerlines. Although there are other methods to harvest sugar cane under powerlines,

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these are more expensive and labour intensive. Fire is a risk for forestry, and a spark or a snapped power line could cause extensive damage.

Alternatives

The two end points of the proposed powerline, the existing Normandie and proposed Iphiva Substations are known. Eskom and the EAP, in consultation with specialists and I&APs identified technically possible 2 km wide corridors within which a 55 m servitude to construct the 400 kV powerline could be acquired. In the Scoping phase of the project, two (2) of these corridors, referred to as Normandie-Iphiva 2 and Normandie-Iphiva 3 were recommended for further assessment

Public Participation in the Scoping Phase

Public participation is an important aspect of any EIA, with the objective to assist stakeholders to table issues of concern, suggestions for enhanced benefits and to comment on the findings of the EIA. The PPP is designed to provide sufficient and accessible information to Interested and Affected Parties (I&APs) in an objective manner.

An I&AP database has been established to record the details of stakeholders that wish to register for the project. Key stakeholders have been identified and notified of the project and their opportunities to participate. A Background Information Document was compiled and distributed to all registered I&APs and at meetings. Newspaper advertisements were placed in four newspapers in English and isiZulu. Onsite notices were erected at 23 locations in the study area. Meetings were held with Key Stakeholder and Authorities at four venues in the study area, in order to present the proposed project to them, and give them an opportunity to raise any concerns that they might have. Similar meetings, in isiZulu, took place with each of the 31 Traditional Councils in the study area. Focus group meetings with Ezemvelo KZN Wildlife, organisations concerned about impacts on birds, Farmers Organisations and the landowners of the substation site alternatives also took place.

The draft Scoping Report was available for public comment. All comments made at meetings or submitted by other means have been captured in a Comments and Response Report, and were incorporated into a Final Scoping Report that was submitted to the competent authority for review. The competent authority has accepted the Final Scoping Report and this EIA phase of the project has been undertaken according to the Plan of Study in the Scoping Report.

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This draft EIA Report is now available for a 30-day public comment period. All comments received will be considered and the EIA Report will be finalised for submission to the competent authority.

Key Issues

The following key issues have been identified:

- *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.*

Specialist Studies

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

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

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

The Normandie-Iphiva 3 powerline was recommended for implementation.

The following recommendations/mitigations were suggested:

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

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

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

- *Presence or absence of Red Data or protected bird species;*
- *Presence or absence of exceptional Avifaunal species diversity;*
- *Extent of intact habitat in good ecological condition in the absence of disturbance; and*
- *Presence or absence of important ecosystems protected areas, such as Important Bird Areas, Protected Areas, areas demarcated for future protected area status (National Protected Areas Expansion Strategy) and wetlands.*

The avi-fauna specialist accepts the economic need of the Eskom expansion and is in support of this strategy. The proposed powerline is could have very high impacts on the Avifauna Species of Special Concern in the area. A walkdown of the servitude once the tower positions have been determined, prior to any construction activities, must be undertaken by suitably qualified bird specialist. The specialist should recommend feasible design changes (i.e. moving tower positions within the approved corridor, preferably within the servitude if already

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negotiated) to further reduce impacts and identify the sections of the powerlines that require bird diverters and towers that require bird guards. These findings must be documented on powerline profiles and incorporated into the EMP. With the historic success that the mitigation measure has had on previous projects, the main issues can be mitigated to an acceptable level. In this case the project can go ahead. The avi-fauna specialist recommended that Normandie-Iphiva 3 with deviation be implemented.

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

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

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

Eskom avoids placing towers in wetlands for technical reasons. Most of the wetlands are narrow enough for the conductors to be strung over them. Direct loss of wetlands, increased sedimentation, compaction of wetland soils, altered wetland hydrology, onset of erosion, and the establishment of alien invasive plant species is expected to result from the clearing of vegetation for the construction of access roads and towers foundations, as well as the increased vehicular activity associated with the stringing of the powerlines.

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

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

The wetlands specialist recommended implementation of the Normandie-Iphiva 2 corridor with the Deviation.

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

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

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

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

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

No areas with a high potential agricultural value were identified in the proposed corridors. Approximately 52 % of the Normandie-Iphiva Corridors have soils not suitable for arable agriculture, but suitable for forestry or grazing covers. The Normandie-Iphiva (2) 400kV corridor with the Deviation is the preferred alternative since it has less impact on forestry and agricultural cultivated land and erosion potential is less.

The **Heritage Impact Assessment** complies in part with the KZN 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.

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

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

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

Varying levels of anthropogenic disturbances such as rural settlements, subsistence and commercial agricultural fields, and municipal infrastructures were noted in the study area. Of the options, Normandie-Iphiva 3 is deemed to have less anthropogenic disturbances when compared to Normandie-Iphiva 2. This suggests that there is a greater potential to identify in situ heritage resources within Normandie-Iphiva 3. The heritage specialist therefore recommends Normandie-Iphiva 2 for implementation.

Direct impacts to archaeological resources, burial grounds and graves with a high or medium Cultural Significance have a negligible positive significance after mitigation.

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

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

The greatest factor that influenced visual impact for this project was the presence of conservation areas, due to their dependence upon the landscape as visual resource as income generator for tourism-related activities. The avoidance and minimisation of the visual impact was mostly focused around reducing impact on these areas.

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

The visual specialist recommended that Normandie-Iphiva 2 (along the N2) should be authorised. The Deviation (i.e. widening of the corridor to the north (close to the start)) is preferred, as it allows for the avoidance of visual impact on Mr de Waals farm. This is related to its lower visual sensitivity and impact when compared to Normandie-Iphiva 3, when considering the most sensitive viewer group, namely protected / conservation areas, followed by rural commercial farming homesteads. The remaining impact after mitigation is considered acceptable.

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

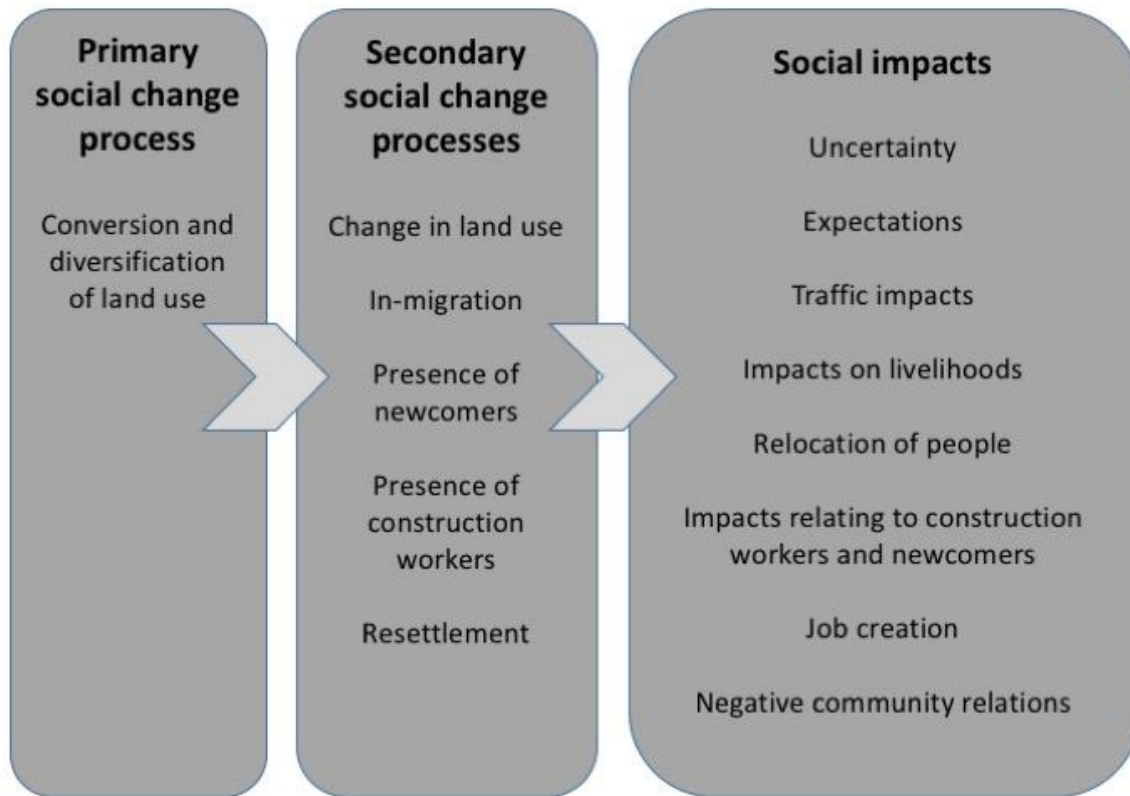
*Demographic, economic, geographic, institutional, legal, emancipatory, empowerment, and socio-cultural processes were investigated in the **Social** Impact Assessment: The social specialist identified the following key stakeholder groups potentially impacted by the project:*

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

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

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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.

The social specialist recommends that Normandie-lphiva 2 be authorised and is indifferent to the deviation.

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.

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Tourism is not an economic sector in its own right but is a complex and composite sector comprising mainly of accommodation, transportation, food and beverages, cultural and recreational activities. The activities undertaken by the tourist relate with the travel, destination, and entertainment activities and expenditure that tourists make. The tourism sector contributes approximately 6 % to the value of economic activity for all goods and services produced within the area. This is slightly higher than the national average. The total number of people employed in tourism amounts to approximately 4.6 % of all employment within the regional economy. The tourism value of the region is estimated at R 1.9 billion for the geographical area for 2016, and employment amounts to approximately 9 831 for the corresponding year.

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

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

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

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

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

Impacts (table below) are measured in terms of:

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

Summary of economy wide economic impact

Alternative	Total hectare within reserve/ lodge/ game farm	Economy-Wide Economic Value	Employment	Household Income
Normandie-Iphiva 2 with deviation	2 510	R 29.7 million	116 jobs	R 14 million
Normandie-Iphiva 3 with deviation	5 284	R 62 million	243 jobs	R 29 million

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

The economic specialist recommends that Normandie-Iphiva 2 for implementation as its impact on existing tourism is lower than Iphiva-Duma 3.

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Conclusion and Recommendation

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

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

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

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

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

The footprint area of towers must be limited to what is essential in order to minimise impacts as a result of vegetation clearing and compaction of soils. Removal of plants should be restricted to only those trees that pose a risk to the power line. Protected trees within the

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servitude will necessitate that appropriate permits are applied for before these trees are damaged or removed. Physical damage to natural vegetation on the periphery of the servitude, in all riparian areas and areas with steep slopes must be avoided. No hunting is permitted by Eskom employees or contractors. No incision and canalisation of the wetland features should take place. No material may be dumped or stockpiled in any “No-Go areas. All vehicles must remain on demarcated roads and within the project area footprint. All land disturbed by Eskom should be vegetated and left in the condition it was before the construction of the powerlines and no disturbed areas should be left uncovered during construction to prevent erosion.

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

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

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ESKOM'S NORTHERN KWAZULU-NATAL STRENGTHENING PROJECT: NORMANDIE-IPHIVA 400 kV POWERLINE

ENVIRONMENTAL IMPACT ASSESSMENT

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

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LIST OF ACRONYMS

AIDS	Acquired Immuno-Deficiency Syndrome
BID	Background Information Document
BPA	Biodiversity Priority Areas
COGTA	Cooperative Governance and Traditional Affairs
C-Plan	Conservation Plan
CRR	Comments and Responses Report
CSIR	Council for Scientific and Industrial Research
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DPLG	Department of Provincial and Local Government
DWAF	Department of Water Affairs and Forestry
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
EMPr	Environmental Management Programme
EO	Environmental Officer
Eskom	ESKOM Holdings SOC Ltd
FGM	Focus Group Meeting

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GIS	Geographic Information System
GNR	Government Notice Regulation
HIA	Heritage Impact Assessment
HIV	Human Immunodeficiency Virus
HRA	Heritage Resources Authority
I&AP	Interested and Affected Party
IAIA	International Association of Impact Assessment
IBAs	Important Birds Areas
IFC	International Finance Corporation
IUCN	International Union for the Conservation of Nature
KZN	KwaZulu-Natal
KZNHA	KwaZulu-Natal Heritage Act
MDG	Millennium Development Goal
MEGDP	Mpumalanga Economic Growth and Development Path
N2	National Route 2
NDP	National Development Plan
NEMA	National Environmental Management Act (No 107 of 1998)
NEMPAA	National Environmental Management: Protected Areas Act (No 57 of 2003)
NFEPA	National Freshwater Ecosystem Priority Areas
NHRA	National Heritage Resources Act (No 25 of 1999)
NPAES	National Protected Areas Expansion Strategy
PGDS	Provincial Growth and Development Strategies
PICC	Presidential Infrastructure Coordinating Committee
PPP	Public Participation Process
SABAP2	South African Bird Atlas Project data
SABS	South African Bureau of Standards
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SANS	South African National Standards
SDF	Strategic Development Frameworks
SEA	Strategic Environmental Assessment
SIA	Social Impact Assessment
SIPs	Strategic Integrated Projects
UN	United Nations

LIST OF UNITS

km	Kilometre
m	Meter
kV	kilo Volts

GLOSSARY OF TERMS

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- No-go area: An area in which the Transmission Powerline cannot be routed due to resulting significant environmental, technical and social impacts.
- Corridor: A corridor, approximately 2 km wide that is feasible for the routing of the proposed Transmission Powerline which will be authorised by DEA. Within this approved corridor a final route alignment of the servitude will be negotiated by Eskom with individual landowners.
- Study area: The area that has been covered by the EIA process within which possible study corridors have been investigated.
- Substation: A collection of equipment for the purpose of raising, lowering and regulating the voltage of electricity.

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ENVIRONMENTAL IMPACT ASSESSMENT

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

1 INTRODUCTION

1.1 BACKGROUND

ESKOM Holdings SOC Ltd (Eskom) has commissioned a project to strengthen the supply of electricity in northern KwaZulu-Natal (KZN). The northern KZN network is currently fed at 132 kV by the Normandie and Impala Substations. The major load centres are Pongola and the Makhathini Flats. The Normandie Substation is situated approximately 80 km north-west of Pongola and the Impala Substation is situated approximately 180 km south of the Makhathini Flats. High voltage drops are experienced in the 132 kV network and the voltages are approaching unacceptable low levels as the demand increases. Contingencies on the main 132 kV supplies also lead to thermal overloading of the remaining network.

In order to alleviate current and future network constraints in northern KZN, it is proposed that the Iphiva 400 / 132 kV Substation be introduced in the area, which will de-load the main sub-transmission network and improve the voltage regulation in the area. The Iphiva Substation will be integrated with the existing electricity network by 400 kV Transmission powerlines to Normandie and Duma Substations, 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. This Draft Environmental Impact Assessment (EIA) Report is specifically for the Normandie-Iphiva 400 kV Transmission powerline.

1.2 PURPOSE OF THIS STUDY

The proposed project triggers several activities listed in the National Environmental Management Act (No 107 of 1998) (NEMA) EIA Regulations as requiring environmental authorisation before they can commence. The purpose of this study is to undertake an EIA process, with associated Public Participation Process (PPP) and specialist studies, to enable

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the competent authority to decide whether the project should go ahead or not, and if so, then on what conditions.

1.3 OBJECTIVES OF THIS DOCUMENT

This document serves as the Draft of the EIA Report for the proposed Eskom’s Northern KZN Strengthening Project for the Normandie-Iphiva 400 kV Powerline. According to Government Notice Regulation (GNR) 982 (4 December 2014), the objective of the EIA process is to undertake the following, through a consultative process:

- Determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
- Describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- Identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;
- Determine the--
 - Nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and
 - Degree to which these impacts-
 - Can be reversed;
 - May cause irreplaceable loss of resources, and
 - Can be avoided, managed or mitigated;
- Identify the most ideal location for the activity within the preferred site based on the lowest level of environmental sensitivity identified during the assessment;
- Identify, assess, and rank the impacts the activity will impose on the preferred location through the life of the activity;
- Identify suitable measures to avoid, manage or mitigate identified impacts; and
- Identify residual risks that need to be managed and monitored.

The Draft EIA Report will be made available to Interested and Affected Parties (I&APs) for a 30 day review period from **26 April 2018 to 29 May 2018**. All comments that are received will be incorporated in the Final EIA Report and will also be noted in the Comments and Response

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Report. The Final EIA Report will be submitted to National Department of Environmental Affairs (DEA), the Competent Authority in respect to this proposed development.

1.4 DETAILS OF THE APPLICANT

Applicant name:	Eskom Holdings SOC Ltd		
Registration number	2002/015527/30		
Responsible person name	Archibold Mogokonyane		
Applicant/ Responsible person ID number:	7011045082088		
Responsible position	Programme Manager: Land Development		
Physical address:	Megawatt Park, Maxwell Drive, Sunninghill, Johannesburg		
Postal address:	P O Box 1091, Johannesburg,		
Postal code:	2000	Cell:	082 466 6022
Telephone:	011 800 3778	Fax:	011 800 3917
E-mail:	MogokoA@eskom.co.za	BBBEE status	State Owned Company

1.5 DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

The Environmental Assessment Practitioner (EAP) undertaking this EIA is **Terry Calmeyer** from MDT Environmental (Pty) Ltd (see Curriculum Vitae in **Appendix A**). Eskom has contracted NAKO ILISO 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 MA (Environment and Society) from the University of Pretoria and over 20 years of EIA experience. She is a previous President of the South African Affiliation of the International Association of Impact Assessment (IAIASa), serves on the Training and Professional Development 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 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 Environmental Management Programmes (EMPRs), the management of Environmental Control Officers 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.

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1.6 STRUCTURE OF THIS REPORT

The location of the project is presented in **Chapter 2** of this report. A description of the project in **Chapter 3**. Legislations and guidelines in **Chapter 4** and need and desirability in **Chapter 5**. Alternatives and deviations are presented in **Chapter 6**, and the PPP in **Chapter 7**. The issues raised are presented in **Chapter 8**. The environmental attributes are presented in **Chapter 9**, assessment of impacts in **Chapter 10** and summaries of the specialist studies in **Chapter 11**. **Chapter 12** contains an environmental impact statement, **Chapter 13** conditions to be included in an environmental authorisation, **Chapter 14** assumptions, limitations and gaps. A conclusion and recommendations are presented in **Chapter 15** and reference in **Chapter 16**.

1.7 COMPLIANCE WITH THE EIA REGULATIONS

Section 2 of Appendix 3 of GN R982 specifies the content requirements for an EIA Report.

Table 1.1 indicates how this document complies with these requirements.

Table 1.1: Regulatory content requirements for an EIA Report

Section 2 of Appendix 3 of GN R.982	Section in EIA Report
3. (1) (a) details of- (i) the EAP who prepared the report;	Chapter 1.5
(ii) the expertise of the EAP, including a curriculum vitae;	Chapter 1.5 and Appendix A
(b) the location of the development footprint of the activity on the approved site as contemplated in the accepted scoping report, including: (i) the 21 digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name; and (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	Chapter 2 Appendix B
(c) a plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is- (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	Figure 2.1 Appendix L
(d) a description of the scope of the proposed activity, including- (i) all listed and specified activities triggered and being applied for and; (ii) a description of the associated structures and infrastructure related to the development;	Chapter 3
(e) a description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context;	Chapter 4
(f) a motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred development footprint within the approved site as contemplated in the accepted scoping report;	Chapter 5

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Section 2 of Appendix 3 of GN R.982	Section in EIA Report
(h) a full description of the process followed to reach the proposed development footprint within the approved site as contemplated in the accepted scoping report, including:	
(i) details of the development footprint alternatives considered;	Chapter 6
(ii) details of the PPP undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Chapter 7
(iii) a summary of the issues raised by I&APs, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	Chapter 8
(iv) the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Chapter 9
(v) the impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts— (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated;	Chapter 10
(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;	Chapter 10
(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Chapter 10
(ix) if no alternative development footprints for the activity were investigated, the motivation for not considering such; and	Alternative corridors were considered as detailed in Chapter 6
(x) a concluding statement indicating the location of the preferred alternative development footprint within the approved site as contemplated in the accepted scoping report;	Chapter 12
(i) a full description of the process undertaken to identify, assess and rank the impacts the activity and associated structures and infrastructure will impose on the preferred development footprint on the approved site as contemplated in the accepted scoping report through the life of the activity, including— (i) a description of all environmental issues and risks that were identified during the EIA process; and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;	Chapter 10 Chapter 8 Chapter 10
(j) an assessment of each identified potentially significant impact and risk, including— (i) cumulative impacts; (ii) the nature, significance and consequences of the impact and risk; (iii) the extent and duration of the impact and risk; (iv) the probability of the impact and risk occurring; (v) the degree to which the impact and risk can be reversed; (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and (vii) the degree to which the impact and risk can be mitigated;	Chapter 10
(k) where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;	Chapter 11
(l) an environmental impact statement which contains— (i) a summary of the key findings of the EIA:	Chapter 12

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Section 2 of Appendix 3 of GN R.982	Section in EIA Report
(ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred development footprint on the approved site as contemplated in the accepted scoping report indicating any areas that should be avoided, including buffers; and (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	
(m) based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management outcomes for the development for inclusion in the EMP as well as for inclusion as conditions of authorisation;	Chapter 14
(n) the final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment;	Chapter 12
(o) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;	Chapter 14
(p) a description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;	Chapter 15
(q) a reasoned opinion as to whether the proposed activity should or should not be authorised , and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	Chapter 14
(r) where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised;	Not applicable
(s) an undertaking under oath or affirmation by the EAP in relation to: (i) the correctness of the information provided in the reports; (ii) the inclusion of comments and inputs from stakeholders and I&APs; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;	Appendix A
(t) where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	Not applicable
(u) an indication of any deviation from the approved scoping report, including the plan of study, including— (i) any deviation from the methodology used in determining the significance of potential environmental impacts and risks; and (ii) a motivation for the deviation;	Chapter 10
(v) any specific information that may be required by the competent authority; and	Section 1.8
(w) any other matters required in terms of section 24(4)(a) and (b) of the Act.	None
(2) Where a government notice by the Minister provides for any protocol or minimum information requirement to be applied to an EIA report the requirements as indicated in such notice will apply.	Not Applicable

1.8 SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

Specific requirements of the DEA are contained in their letter accepting the Final Scoping Report dated 5 December 2017 as presented in **Table 1.2**.

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Table 1.2: Specific Requirements from the DEA’s letter accepting the Final Scoping Report

	Requirements from acceptance letter	Comment	Where this is addressed in this report
a)	The total footprint of the proposed development must be indicated. The location of the powerline within the proposed corridor and the associated infrastructure must be mapped at an appropriate scale.	This EIA assesses 2km wide corridors within which Eskom will negotiate a 55 m wide servitude within which the powerline will be constructed. The exact servitude and tower positions are not known at the time of undertaking the EIA. The exact location of access roads to be constructed or upgraded are also not known. The EIA assumes that only access roads in the 2 km wide corridor will be covered by this application. Any additional access roads outside of the 2 km wide corridor will have to be authorised by a separate process during implementation, if required. Access will be negotiated with the directly affected landowners during implementation.	Chapter 3
b)	A clear description of all associated infrastructure must be provided. This description must include, but not limited to the following: <ul style="list-style-type: none"> • Access roads infrastructure (existing and new); and • All supporting onsite infrastructure. 		
c)	With regards to infilling and excavation of watercourses for the construction of powerline, the applicant is required to provide an indication of the preferred and alternative location from which the material used for infilling will be sourced and where excavated material will be stored and/or disposed of. In addition, the impacts associated with this	Quantities and sources of material for infilling and excavations of watercourses are not known at the time of undertaking the EIA. This assessment covers activities in the 2 km wide corridor. Water Use Licences or Registration will	Not applicable

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	Requirements from acceptance letter	Comment	Where this is addressed in this report
	activity must be adequately assessed in the EIA Report.	be obtained during implementation.	
d)	Should a Water Use License be required, proof of application for licence needs to be submitted.	The need for Water Use Licences or Registrations will only be determined and applied for during implementation after receipt of the Environmental Authorisation.	Chapter 4
e)	The listed activities presented in the EIA Report and the application form must be the same and correct. Only activities that are applicable and relevant to the development must be included in both the application form and the EIA Report. Should there be activities that are no longer applicable to the development, the application form must be amended and submitted together with the EIA Report.	The EIA Report and Application form contain the same activities that are all applicable and relevant to the project.	Chapter 3
f)	The EAP must engage the relevant provincial authority with regards to development in geographic areas triggering GN R. 985: Activities 4 and 12. Please ensure that only relevant sensitive geographic areas are applied for under these listed activities.	Several meetings have taken place with Ezemvelo KZN Wildlife (Ezemvelo) as recorded in Chapter 7 . The exact location of access roads has not been determined yet. This EIA assumes that they could be required anywhere in the corridors.	Chapter 7 Chapter 3
g)	The EIA Report must provide an assessment of the impacts and mitigation measures for each of the listed activities applied for.	Listed activity added to Chapter 10.	Chapter 10
h)	Please make sure that correct contact details for all authorities (provincial, local and district municipalities) including email addresses are provided in the application form.	Contact details have been checked.	Application Form
i)	The EIA Report must provide the corner/bend-point coordinates for the proposed powerline (as well as start, middle and end points) and	This EIA assesses 2km wide corridors within which Eskom will negotiate a 55 m wide servitude	Appendix L

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	Requirements from acceptance letter	Comment	Where this is addressed in this report
	these must be attached as a separate appendix to the EIR, as well as the start, middle and end points of all the roads proposed for construction or widening.	within which the powerline will be constructed. The exact servitude is known at the time of undertaking the EIA. The exact location of access roads to be constructed or upgraded are also not known. The EIA assumes that only access roads in the 2 km wide corridor will be covered by this application. Any additional access roads outside of the 2 km wide corridor will have to be authorised by a separate process during implementation, if required. Access will be negotiated with the directly affected landowners during implementation. Start, bend and end points of the corridors are included in Appendix L.	
j)	Please ensure that the EIA Report correctly indicates only affected provinces, district and local municipalities for this specific application, as far as the location of the activity is concerned.	Provinces, District and Local Municipalities have been identified.	Chapter 9.11
k)	The EIA Report must provide a detailed need and desirability motivation as to why there is a need for the development and why the specific location is desirable.	The Need and Desirability have been provided.	Chapter 5
l)	The EIA Report must include all items as specified in Appendix 3 of GN R 982, including:	Requirements of Appendix 3 of GN 982 have been complied with.	Chapter 2 and Appendix B.

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	Requirements from acceptance letter	Comment	Where this is addressed in this report
	<ul style="list-style-type: none"> The 21 digits Surveyor General code of each cadastral land parcel; and Where available, the physical address and farm name of the property or properties; 		
m)	Information on services required on the site, e.g. Sewage, refuse removal and water. Who will supply these services and has an agreement and confirmation of capacity been obtained?	The powerline will not require any permanent sewerage, refuse removal or water during operation. Maintenance workers will provide their own water, remove their waste and use existing sewerage facilities. During construction, the Contractor will provide temporary chemical toilets that will be serviced. Waste will be disposed of at licenced facilities. Water for construction will be negotiated with the service providers or if abstracted directly from resources then only after a Water Use Licence or Registration has been obtained.	EMPr
n)	Please provide in the EIR an indication of the time period that will be required to complete construction of the applied powerline and associated infrastructure (i.e. number of years or months to required complete development, once construction commences)	Construction of the powerline is expected to take 36 months.	Chapter 3.4
o)	A construction and operational phase EMPr to include mitigation and monitoring measures. The EMPr to be submitted as part of the EIA Report must include the recommendations and mitigation measures recorded	An EMPr that addresses construction and operation has been compiled.	EMPr

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	Requirements from acceptance letter	Comment	Where this is addressed in this report
	in the EIA Report and the specialist studies conducted.		
p)	<p>Please ensure that the Final EIA Report includes at least one A3 regional map of the area that the locality map included in the Final EIR illustrate the different proposed alignments. The maps must be of acceptable quality and as a minimum, have the following attributes:</p> <ul style="list-style-type: none"> • Maps are relatable to one another • Cardinal points • Co-ordinates • Legible legends • Indicative alternatives • Latest land cover • Vegetation types of the study area; and • A3 size locality map 	<p>Locality Map included as Figure 2.1.</p> <p>Land cover Map included as Figure 8.1</p> <p>Vegetation types map included as Figure 9.4.</p> <p>Co-ordinates are shown on Figure 2.1.</p>	Figure 2.1, Figure 8.1 and Figure 9.4.

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2 LOCATION OF THE PROJECT

GNR 982 Appendix 3:

3(1) (b) the location of the development footprint of the activity on the approved site as contemplated in the accepted scoping report, including:

- (i) the 21 digit Surveyor General code of each cadastral land parcel;
- (ii) where available, the physical address and farm name; and
- (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;

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

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

The existing Normandie Substation is 18 km south east of the town of Piet Retief in Mpumalanga and can accommodate the proposed new powerline. The surveyor general codes are presented in **Appendix B**.

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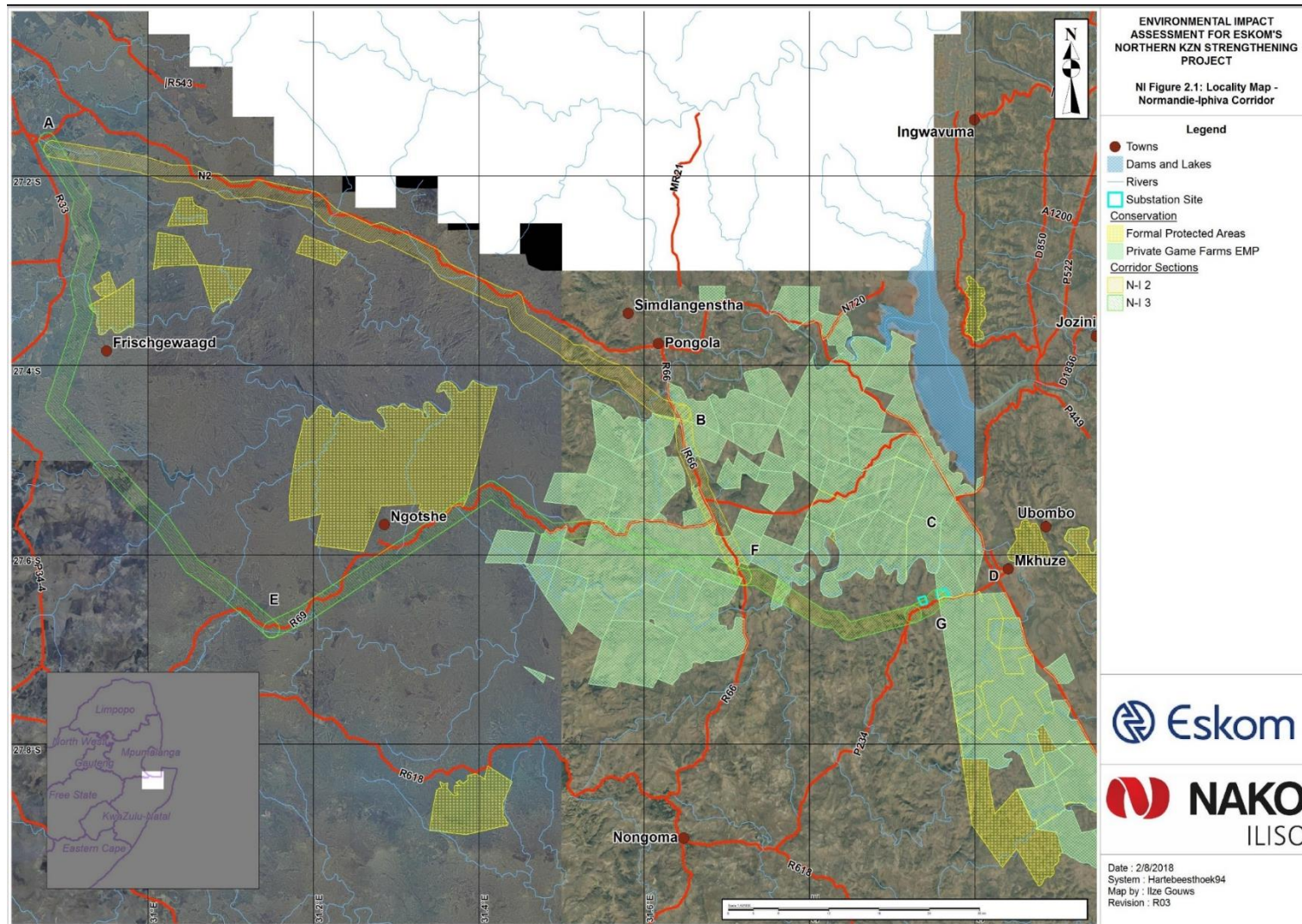


Figure 2.1: Locality of study area

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3 PROJECT DESCRIPTION

GNR 982 Appendix 3:

3(1) (d) a description of the scope of the proposed activity, including—

(i) all listed and specified activities triggered and being applied for; and

(ii) a description of the associated structures and infrastructure related to the development;

This section describes the proposed project and activities listed in the EIA Regulations 2014, as amended, that will be triggered by the project. Photographs in this section are courtesy of Bruce Burger (Eskom).

3.1 OVERVIEW OF THE ELECTRICAL NETWORK

The South African electrical power system can be broadly divided into the generators that supply the power, the Transmission system that carries the power from the generating centres to the load centres, and the distribution system that feeds the power to consumers. (Figure 3.1).

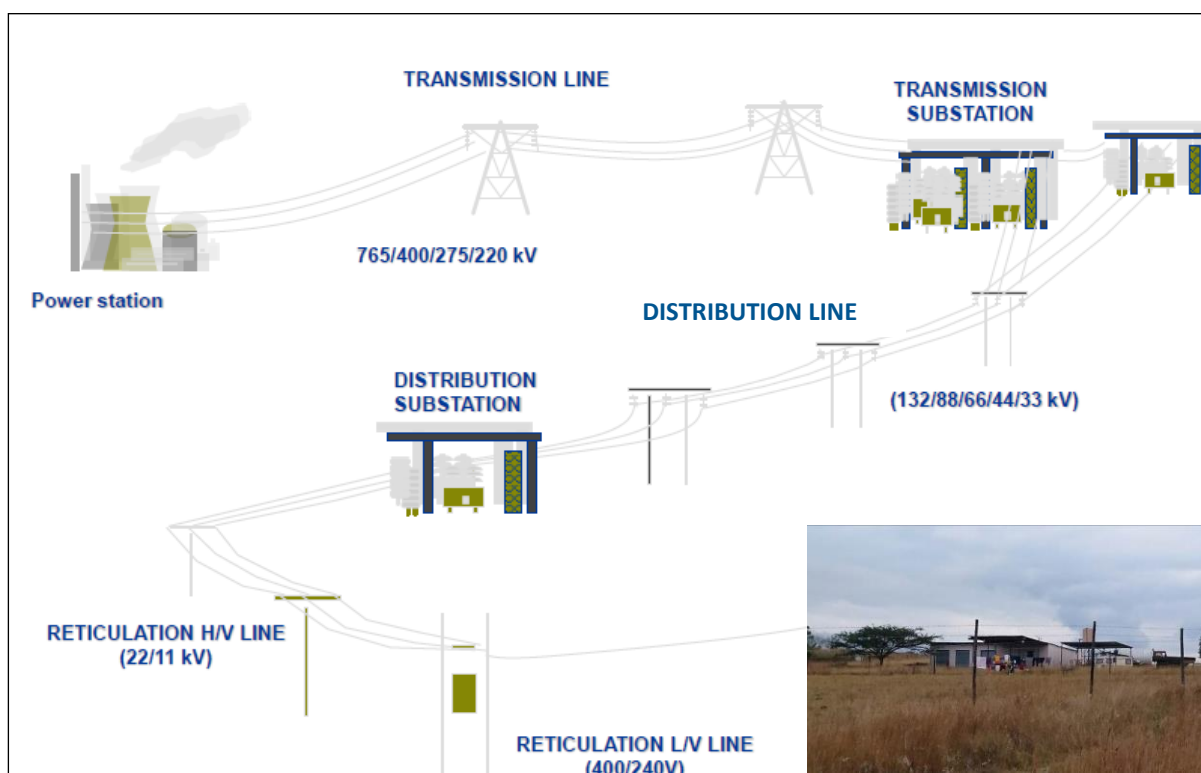


Figure 3.1: Electrical Networks

To reduce the cost of transporting bulk electricity over long distances, the electricity is transmitted at higher voltages typically 765 kV, 400 kV and 275 kV. In South Africa most of

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the load centres are situated far from the generators, therefore the voltage is stepped-up (increased) at the generation point and stepped-down (decreased) near the load. Substation transformers are used to step-up or step-down voltages to adjust the voltage along the network (long distance transmission lines to sub-transmission and distribution lines). For safety reasons power is generally distributed to consumers at lower voltages.

The electrical power system must be expanded and strengthened over time to meet the increasing demand for electricity as the new customers get connected. The current electricity requirements in Northern KZN are presently met by 132 kV sub transmission lines. The demand will exceed the transfer capability of the existing 132 kV system going forward. This will lead to thermal overloading of the infrastructure (switchgear and lines) and low network voltages in the affected area.

Thermal overloading is caused by operating the equipment beyond its rated capability. As the power run along the power system increase, the hotter the switchgear and powerlines get. This can lead to equipment failure and drooping of powerlines. The powerline can slump way below the allowable ground-to-line clearance, which could create a short circuit with nearby structures. Low voltage is a result of an inability of the network to supply the required reactive power to meet the demand. Low voltages can cause damage to motors and electrical appliances. Electricity utilities normally cut off the affected part of the network when the network experiences thermal overloading and/or low voltages to avoid cascading network failures.

The proposed new Iphiva Substation will provide the additional capacity to cater for the projected growth in demand and to ensure the system operates within the acceptable limits as stipulated in the South African Grid Code. The bulk electricity to Iphiva substation will be transmitted from Normandie substation near Piet Retief and Duma substation between Empangeni and Ulundi. The electricity will be stepped-down to 132 kV for distribution to the respective load centres via 132 kV sub transmission powerlines.

3.2 DESCRIPTION OF THE PROPOSED 400 KV TRANSMISSION POWERLINE

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

Typical possible tower types include:

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- Cross Rope Towers (**Figure 3.2** and **Plate 1**);
- Self-Supporting Tower (**Figure 3.3** and **Plate 2**), or
- Guyed Vee Tower (**Figure 3.4** and **Plate 3**).

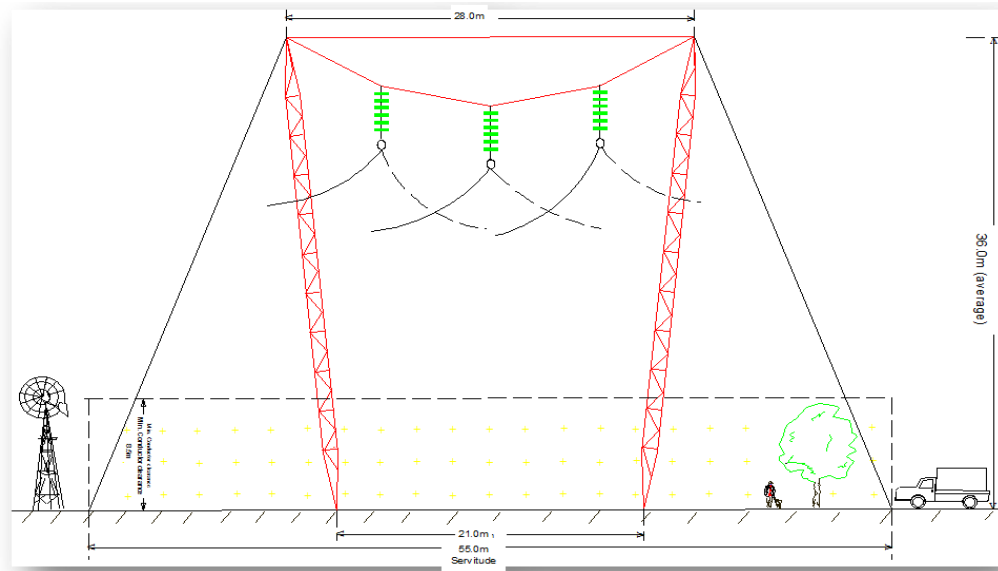


Figure 3.2: Cross Rope Tower



Plate 1: Cross Rope Tower

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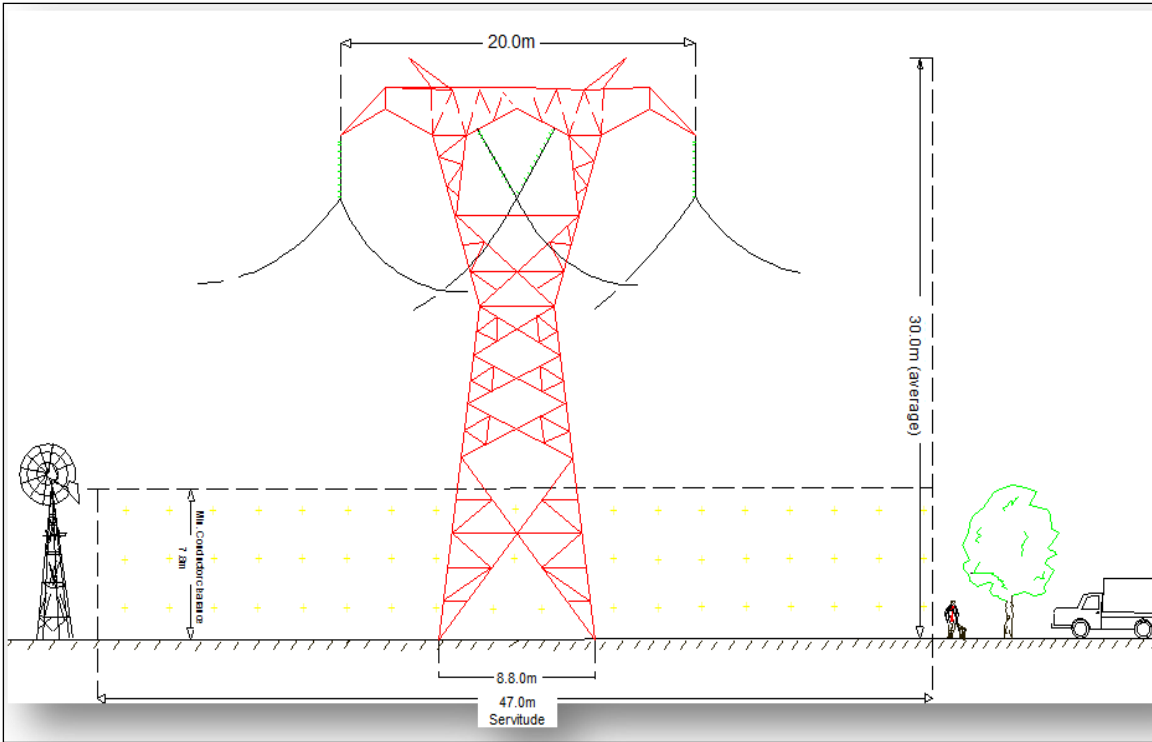


Figure 3.3: Self-Supporting Tower



Plate 2: Self-Supporting Tower

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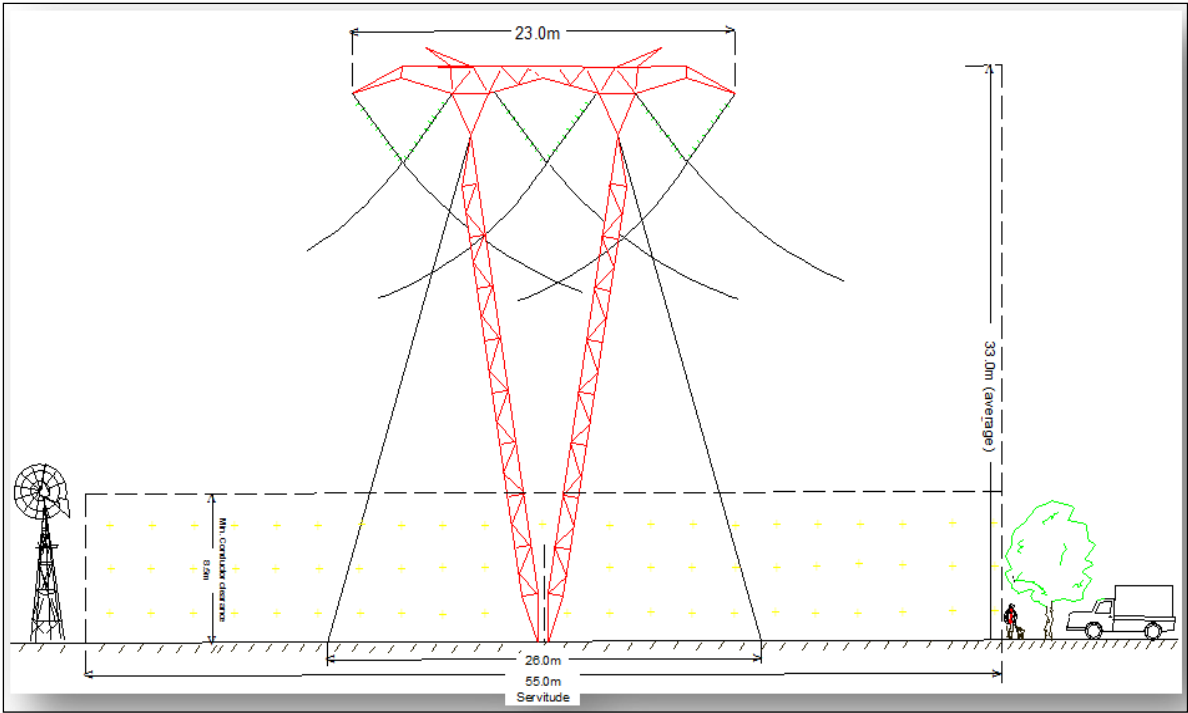


Figure 3.4: GUYED VEE Tower



Plate 3: GUYED VEE Tower

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

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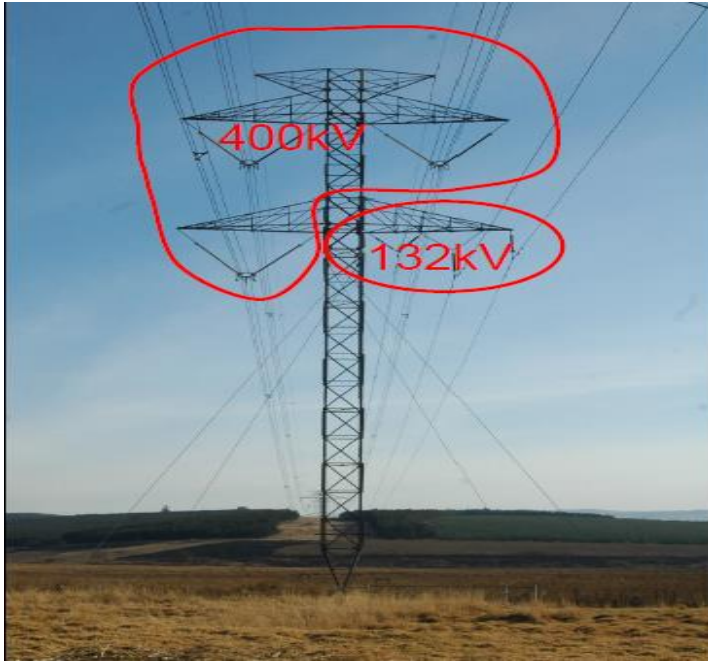


Plate 4: Multi-circuit tower

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

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

The minimum vertical clearance to any fixed structure that does not form part of the powerline is 5.6 m. The minimum distance from a powerline running parallel to a proclaimed public road is 90 m from the centreline of the road servitude. The maximum crop height within the servitude is 4.3 m. The maximum operation height under the conductors is 2 m. The construction process is described in **Section 3.4**.

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3.3 LISTED ACTIVITIES TRIGGERED BY THE PROPOSED NORMANDIE-IPHIVA 400 kV POWERLINE

Listed Activities triggered by the proposed Normandie-Iphiva 400 kV Transmission Powerline are listed in **Table 3.1**.

Table 3.1: Listed Activities Triggered by the proposed 400 kV powerlines

Listed activity as described in GN R 983 984 and 985, as amended	Description of project activity that triggers listed activity
GN R. 983 (19) as amended by GN R. 327 (19): The infilling or depositing of any material of more than 10 cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic meters from – (i) a watercourse.	The upgrading or construction of access roads may require the infilling or depositing of material of more than 10 cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic meters from a watercourse.
GN R. 983 (24) as amended by GN R. 327 (24): The development of a road- for which an environmental authorisation was obtained for the route determination in terms of activity 5 in GN387 of 2006 or activity 18 in GN545 of 2010; or with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres; but excluding a road- which is identified and included in activity 27 in Listing Notice 2 of 2014; where the entire road falls within an urban area; or which is 1 kilometre or shorter.	Access roads for the construction and operation of the towers may be required.
GN R. 983 (28) as amended by GN R. 327 (28) Institutional developments wherever such land was used for agriculture, game farming, equestrian purposes or afforestation after 1 April 1998, outside an urban area where the total land is bigger than 1 ha.	The construction of the powerline may require the use of some land that is currently being used for agriculture, game farming and/or afforestation.
GN R. 983 (56) as amended by GN R. 327 (56): The widening of a road by more than 6 meters, or the lengthening of a road by more than 1 kilometre- (i) where the existing road reserve is 13, 5 meters; or (ii) where no reserve exists, where the existing road is wider than 8 meters; excluding where widening or lengthening occur inside and urban area.	Upgrading of access roads may require The widening of a road by more than 6 meters, or the lengthening of a road by more than 1 kilometre- where the existing road reserve is 13, 5 meters; or where no reserve exists, where the existing road is wider than 8 meters; outside of urban areas.
GN R 984 (9) as amended by GN R. 325 (9): The development of facilities or infrastructure for the transmission and distribution of electricity with a capacity of 275 kV or more, outside an urban area or industrial complex excluding the development of bypass infrastructure for the transmission and distribution of electricity where such bypass infrastructure is —	The powerline is infrastructure that is part of the system for the transmission of 400 kV of electricity outside of urban areas and industrial complexes.

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Listed activity as described in GN R 983 984 and 985, as amended	Description of project activity that triggers listed activity
<p>(a) temporarily required to allow for maintenance of existing infrastructure;</p> <p>(b) 2 kilometres or shorter in length;</p> <p>(c) within an existing transmission line servitude; and</p> <p>(d) will be removed within 18 months of the commencement of development.</p>	
<p>GN R. 985 (4) as amended by GN R. 324 (4):</p> <p>Development of a road wider than 4 m with a reserve less than 13, 5 metres. (d) In KZN (iii) Community Conservation Areas; (v) Biodiversity Stewardship Programme Biodiversity Agreement areas; (vi) A protected area identified in terms of NEMPAA, excluding conservancies; (vii) Sites or areas identified in terms of an International Convention; (viii) Critical Biodiversity areas as identified in systemic biodiversity plans adopted by the competent authority or bioregional plans; (ix) Core areas in Biosphere Reserves; (x) Areas designated for conservation use in Spatial Development Frameworks adopted by competent authority or zoned for conservation purpose; (xi) Sensitive areas as identified in an environmental management framework as contemplated in Chapter 5 of the Act and as adopted by the competent authority; (xii) Outside urban areas (i) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any terrestrial protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve.</p>	<p>Access roads may be constructed or upgraded. This will be located on a site outside of urban areas on a site not previously used for this purpose, and could be a Community Conservation Area, Biodiversity Stewardship Programme Biodiversity Agreement area, a protected area identified in terms of NEMPAA, a sites or area identified in terms of an International Convention, a Critical Biodiversity areas as identified in systemic biodiversity plans adopted by the competent authority or bioregional plans, a core areas in a Biosphere Reserves, an areas designated for conservation use in a Spatial Development Framework adopted by a competent authority or zoned for conservation purpose, a sensitive area as identified in an environmental management framework as contemplated in Chapter 5 of the Act and as adopted by the competent authority, within 10 kilometres from national parks or world heritage sites or 5 kilometres from any terrestrial protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve. The exact details will be confirmed during the EIA.</p>
<p>GN R. 985 (12) as amended by GN R. 324 (12): Clearance of an area of 300 m² or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance plan. In (b) KZN: (ii) community conservation areas; (iv) within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an areas that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; (v) Critical biodiversity areas as identified is systemic biodiversity plans adopted by the competent authority or in bioregional plans; (vii) On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning; (viii) A protected area</p>	<p>The tower footprints will be cleared of vegetation. Some of these areas are in KZN and in community conservation areas; within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an areas that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; Critical biodiversity areas as identified is systemic biodiversity plans adopted by the competent authority or in bioregional plans; On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning; A protected area identified in terms of NEMPAA, excluding conservancies; Areas designated for conservation use in Spatial Development Frameworks adopted by competent authority or zoned for a conservation purpose; or Sensitive areas as identified in an</p>

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Listed activity as described in GN R 983 984 and 985, as amended	Description of project activity that triggers listed activity
identified in terms of NEMPAA, excluding conservancies; (xi) Areas designated for conservation use in Spatial Development Frameworks adopted by competent authority or zoned for a conservation purpose; (xii) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority.	environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority.

3.4 CONSTRUCTION PROCESS

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

The co-ordinates of the centre line of the route and position of the towers will be determined by surveyors after a final route corridor has been approved by the environmental authorities.

The construction process consists of the following phases:

- Contractor site establishment;
- Survey and pegging of tower positions;
- Access road negotiation and construction;
- Gate installation and vegetation clearing;
- Foundation excavation and installation;
- Tower assembly and erection;
- Conductor stringing and tensioning, and
- Servitude clean-up and rehabilitation.

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

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

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Vehicle access is usually required along the entire route for construction, maintenance and operation purposes. Existing roads will be used as far as possible and the construction of roads and bridges will be kept to the minimum. Any additional authorisation required (for example water use licences from the Department of Water and Sanitation (DWS)) is a condition of the EMPr and will be obtained during the implementation phase of the project and prior to construction of the relevant component of the project. Gates will be installed on all fences that the powerline crosses. Any existing infrastructure will be maintained in its existing condition. Access points and roads will be negotiated with the relevant landowners.

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

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

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

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

Construction is scheduled to start in July 2022 and be completed by December 2024, after which the operational phase will commence.

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3.5 OPERATION AND MAINTENANCE

Ongoing maintenance of the powerlines will be required throughout its lifespan.

3.5.1 Line Inspections

Powerline inspections are usually undertaken once or twice per annum. The maintenance process involves the identification and correction of defects which could have detrimental effect on future line operation. This include a means of inspection, evaluation and repair of the identified defects in a reasonable period so as to prevent imminent failure, mal-operation or reduced reliability. This may be done via the access routes, or by helicopter. The Eskom document, TST41-637, Routine Inspection and Maintenance, details the philosophy employed in the inspection and maintenance of overhead Transmission powerlines.

3.5.2 Servitude maintenance

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

Transmission's overhead powerlines

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

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

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

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

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3.5.3 Insulators

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

The methods of washing, whether by hand or spray washing, shall be determined by the urgency and the resources at hand. Alternatively, where regular cleaning/washing is required at a great expense, the glass insulators should be replaced with polymeric, silicone insulators. Insulators should be scanned with a corona camera to ascertain the extent of corona. On detection of corona activity, a program should be put in place to monitor and replace the insulators.

3.5.4 Hardware

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

3.5.5 Anti-climbs

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

3.5.6 Foundations

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

3.5.7 Tower Earthing

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

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3.5.8 Tower corrosion protection

TSP41-608 addresses the methodologies to be followed for the corrosion protection of steel structures on Transmission powerlines. The painting or coating of structures must be preceded by a thorough surface preparation which encompasses, removal of loose paint, scale and rust by means of scraping or sanding, followed by washing using clean sponges and clean potable water. The specification details the procedure to be followed under various corrosive environments. It also addresses the type of coating system suited for specific applications, with recommended and approved products for use. It is imperative that the operational powerlines staff are guided in the optimum application of coating systems by the relevant corrosion specialists.

3.5.9 Live Line Maintenance

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

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

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

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4 LEGISLATION AND GUIDELINES CONSIDERED

GN 982 Appendix 3:

3(1) (e) a description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context;

This EIA is being undertaken in terms of NEMA. The following Regulations promulgated in terms of NEMA in 2014, subsequently amended, apply:

- GN 982 – specifies the process that must be undertaken to obtain an Environmental Authorisation;
- GN 983 – Listing Notice 1 which identifies activities that would require environmental authorisations prior to commencement of that activity for which a Basic Assessment is required;
- GN 984 – Listing Notice 2 which identifies activities that would require environmental authorisations prior to commencement of that activity for which a Scoping and EIA is required; and
- GN 985 - Listing Notice 3 which identifies activities that would require environmental authorisations prior to commencement of that activity in specific identified geographical areas only.

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4.1. LEGISLATION APPLICABLE TO THIS EIA

Table 4.1: Legislation of relevance to the EIA

Legislation	Applicable Legislative Requirements	Implications for the Applicant
<p>Constitution of the Republic of South Africa Act, (No. 108 of 1996)</p> <p>Constitution of the Republic of South Africa Amendment (No. 35 of 1997)</p>	<p>Section 24 – Environmental Rights</p>	<p>Everyone has the right to –</p> <p>An environment that is not harmful to their health or well-being and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that –</p> <ul style="list-style-type: none"> • Prevent pollution and ecological degradation, • Promote conservation, • Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development. <p>The Constitution sets in place all laws of the country and the Applicant should note the protection of the environment in the Bill of Rights, especially in relation to justifiable economic and social development.</p>
	<p>Section 33 – Access to Information</p>	<p>Everyone has the right to administrative action that is lawful, reasonable and procedurally fair.</p> <p>Everyone whose rights have been adversely affected by administrative action has the right to be given written reasons.</p> <p>The provisions of NEMA and its Regulations dictate the manner in which environmental authorisation processes are undertaken, decisions made, and the appeal process; all of which are applicable to the current application.</p>
	<p>Section 32 – Administrative Justice</p>	<p>Everyone has the right of access to:</p> <ul style="list-style-type: none"> • Any information held by the state (unless it is information that is explicitly excluded by the Promotion of Access to Information Act, (No 2 of 2000), • Any information held by another person and that is required for the exercise or protection of any rights. <p>The Applicant will need to make information available to the public if requested.</p>
	<p>Section 38 Enforcement of Rights</p>	<p>Section 38 of the Constitution guarantees the right to approach a court of law and to seek legal relief in the case where any of the rights that are entrenched in the Bill of Rights are infringed or threatened.</p>

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Legislation	Applicable Legislative Requirements	Implications for the Applicant
	and Administrative Review	
NEMA	Section 2 Chapter 1 Chapter 5 Chapter 6	<p>NEMA states that the State must respect, protect, promote and fulfil the social, economic and environmental rights of everyone and strive to meet the needs of previously disadvantaged communities. It states further that sustainable development requires the integration of social, economic and environmental factors in the planning, evaluation and implementation of decisions to ensure that development serves present and future generations.</p> <p>Chapter 1 of NEMA contains a list of principles and states clearly that environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests (NEMA, 1998). It states further that negative impacts on the environment and on peoples' environmental rights must be anticipated and prevented, and if they cannot be prevented, they should be minimised and remedied. It elaborates further on the equity of impacts, and the fact that vulnerable communities should be protected from negative environmental impacts. It refers to the principle that everyone should have equal access to environmental resources, benefits and services to meet their basic human needs (NEMA, 1998). Therefore there is a clear mandate for environmental and restorative justice in the act.</p> <p>Chapter 5 of NEMA aims to promote the use of appropriate environmental management tools, such as an EIA, in order to ensure the integrated environmental management of activities.</p> <p>The general objective of integrated environmental management, as described in NEMA, is to identify, predict and evaluate the impacts of an activity on the social, economic, bio-physical and cultural components of the environment. This assessment includes the risks associated with activities, consequences of the activities as well as considering alternatives and mitigation measures to avoid, minimise or compensate for negative impacts, maximise benefits, and promote compliance with the principles of environmental management as set out in section 2 of NEMA. This is implemented by requiring environmental authorisation for activities that are "listed" in the EIA Regulations, 2014.</p> <p>The purpose of this EIA is to assess the components of this proposed project that are NEMA listed activities for which Eskom has the mandate and intention to implement. The EIA process will provide the information that the environmental authorities require to decide whether the project should be authorised or not, and if so then with what conditions.</p> <p>In terms of public participation NEMA states that people should be empowered to participate in the environmental governance processes, and that their capacity to do so should be developed if it does not exist. All decisions regarding the environment should take the needs, interest and values of the public into account, including</p>

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Legislation	Applicable Legislative Requirements	Implications for the Applicant
		<p>traditional and ordinary knowledge. Chapter 6 of NEMA elaborates on the public participation requirements and is supplemented by the EIA regulations. GN 982 provides requirements for the public participation, the minimum legal requirements for PPPs, the generic steps of a PPP, requirements for planning a PPP and a description of the roles and responsibilities of the various role players.</p> <p>The principles in NEMA also state that community wellbeing and empowerment must be promoted through environmental education, the raising of environmental awareness, sharing of environmental knowledge and experience and any other appropriate means. It states that the social, environmental and economic impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions taken must be appropriate given the assessment and evaluation. NEMA recognises that the environment is held in public trust for the people, and therefore the beneficial use of environmental resources must serve the peoples' interest and protect the environment as the peoples' common heritage.</p> <p>NEMA takes a holistic view of the environment, and promotes the consideration of social, economic and biophysical factors to obtain sustainable development and achieve effective management of the biophysical environment.</p>
National Environmental Management: Air Quality Act (No. 39 of 2004) (NEM:AQA)	Sections 21 and 37	<p>National Ambient Air Quality Standards GN R1210 dated 24 December 2009.</p> <p>GN R893 in Government Gazette 37054 dated 22 November 2013, listing activities and associated minimum emission standards identified in terms of section 21 of the Air Quality Act.</p> <p>Declaration of temporary Asphalt Plants as controlled emitters and establishment of emission standards, in GN R201 in Government Gazette No 37461 dated 28 March 2014.</p> <p>National Dust Control Regulations, in GN R827 in Government Gazette 36974 dated 1 November 2013.</p> <p>Activities include Macadam preparation (the mixing of aggregate and tar or bitumen to produce road surfacing in permanent facilities and mobile plants). These activities require an Atmospheric Emission Licence in terms of Section 37 of the Act.</p>
National Environmental Management: Biodiversity Act, (No. 10 of 2004) (NEMBA)		<p>NEMBA expresses the commitments that South Africa made in approving the Convention on Biological Diversity. The Act aims at resolving the fragmented nature of biodiversity-related legislation that occurred at national and provincial levels by combining different laws and giving effect to the principle of co-operative governance, and at the same time responding to commitments made under the Convention on Biological Diversity.</p> <p>In line with the objectives of the Convention on Biological Diversity, NEMBA provides for:</p>

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Legislation	Applicable Legislative Requirements	Implications for the Applicant
		<ul style="list-style-type: none"> • Management and conservation of South Africa’s biodiversity within NEMA’s framework; • Usage of indigenous biological resources in a sustainable manner; • Fair and equitable sharing among stakeholders of the benefits arising from bio-prospecting involving indigenous biodiversity; • Protection of species and ecosystems that warrant national protection; and • Establishment and functions of the South African National Biodiversity Institute (SANBI). <p>NEMBA restricts activities involving listed threatened or protected species.</p> <p>In addition, the Alien and Invasive Species Regulations (GN R598 of 2014), promulgated in terms of Section 97(1) of NEMBA apply. This Regulation defines Categories of Listed Invasive Species (1a, 1b, 2 and 3), as well as defining restricted activities, and specifying requirements for risk assessments, permits and reporting requirements. The Alien and Invasive Species Lists were published in GN 864 on 26 July 2016. Invasive species are divided into four categories:</p> <ul style="list-style-type: none"> • Category 1a: Invasive species which must be combatted and eradicated. Any form of trade or planting is strictly prohibited. • Category 1b: Invasive species which must be controlled and wherever possible, removed and destroyed. Any form or trade or planting is strictly prohibited. • Category 2: Invasive species, or species deemed to be potentially invasive, in which a permit is required to carry out a restricted activity. Category 2 species include commercially important species such as pine, wattle and gum trees. • Category 3: Invasive species which may remain in prescribed areas or provinces. Further planting, propagation or trade, is however prohibited.
National Environmental Management Protected Areas Act, 2003 (No.57 of 2003) (NEMPAA)	Section 50(5)	No development, construction or farming may be permitted in a nature reserve or world heritage site without the prior written approval of the management authority.

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Legislation	Applicable Legislative Requirements	Implications for the Applicant
National Water Act (No. 36 of 1998) (NWA)	Section 21 GN R.509 of 2016	<p>The construction of the proposed powerline and associated activities involves a number of water uses listed in terms of the NWA, and therefore may require a Water Use Licence.</p> <p>The General Authorisation gazette in GN R. 509 in August 2016 says that 6 (2) “<i>All State Owned Companies (SOC’s), and other institutions specified in Appendix D2 having lawful access to that property or land may on that property use water in terms of section 21 (c) or (i) of the Act as specified under each of the relevant SOC’s and other institution (Appendix D2)</i>”.</p> <p>Appendix D2 says that ESKOM may undertake the construction of new transmission and distribution powerlines, and minor maintenance of roads, river crossings, towers and substations where the footprint will remain the same.</p> <p>If the construction of the substation triggers a water use then it is not covered by the GA.</p> <p>The following water uses could apply: s21 (a): taking water from a water resource; s21 (b): storing of water; s21 (c): impeding or diverting the flow of water in a water course; s21 (e): engaging in a controlled activity (i.e. the generation of hydropower); s21 (i): altering the bed, banks, course or characteristics of a water course, s21 (f): discharge of waste or water containing waste into a water resource through a pipe, canal, sewer or other conduit; and s21 (g): disposing of waste in a manner which may detrimentally impact on a water resource.</p> <p>Registration of water use and the application for any water use licences are not included in the EIA.</p>
National Heritage Resources Act (No. 25 of 1999) (NHRA)	Section 5. General principles for Heritage Resources Management Section 6. Principles for management of heritage resources	<p>The Act requires that Heritage Resources Authorities (HRAs), in this case the South African Heritage Resources Agency (SAHRA), KZN Provincial Heritage Resources Authority, <i>Amafa aKwaZulu Natali</i> (Amafa), and Mpumalanga Provincial Heritage Resources Authority (MPRHA) be notified as early as possible of any developments that may exceed certain minimum thresholds in terms of Section 38(1), or when assessments of impacts on heritage resources are required by other legislation in terms of Section 38(8) of the Act.</p> <p>The activities that apply to the proposed project include: 38(1)(a) - The construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;</p>

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Legislation	Applicable Legislative Requirements	Implications for the Applicant
	Section 7. Heritage assessment criteria and grading Section 38. Heritage resources management	38(1)(c) - Any development or other activity which will change the character of a site exceeding 5 000 m ² in extent; or Involving three or more existing erven or sub-divisions thereof; or involving three or more erven or sub-divisions thereof which have been consolidated within the past five years; and 38(1)(d) - The rezoning of a site exceeding 10 000 m ² in extent. A Needs and Desirability Application (NDA) and Notification of Intent to Develop (NID) has been submitted, as part of the Heritage Resources Management process, to Amafa, SAHRA and MPRHA. A Heritage Impact Assessment (HIA) has been compiled to comply with subsection 3(3)(a) and (b) of the NHRA.
KZN Heritage Act, 2008 (No. 4 of 2008) (KZNHA)		The KZNHA provides for the protection and management of heritage resources within KZN. These heritage resources take account of those under general protection and special protection, including: <ul style="list-style-type: none"> • General protection: <ul style="list-style-type: none"> • Structures under Section 33; • Graves of victims of conflict under Section 34; • Traditional burial places under Section 35; and • Battlefields, archaeological sites, rock art sites, palaeontological sites, historic fortifications, meteorite or meteorite impact sites under Section 36. • Special Protection: <ul style="list-style-type: none"> • Heritage Landmark under Section 38; • Provincial Landmark under Section 39; • Graves of members of the Royal Family under Section 40; • Battlefield sites, public monuments and memorials under Section 41; and • Heritage Objects under Section 43. In terms of the KZNHA, a permit is required to carry out certain listed activities. To accomplish this, a NDA form must be completed for any proposed development. This form is submitted to Amafa for processing after which Amafa will issue comments for further heritage studies, if necessary. A NDA has been submitted, as part of the Heritage Resources Management process, to Amafa and SAHRA. An HIA has been compiled to comply with subsection 3(3)(a) and (b) of the NHRA. The NDA has been compiled to comply with the KZNHA and subsection 38(1) of the NHRA.
National Environmental Management: Waste	GN 921	GN 921 lists Waste Management Activities in respect of which a Waste Management Licence (WML) is required. These include various activities associated with the storage of waste, reuse, recycling and recovery of waste, treatment of waste (which includes the remediation of contaminated land) and disposal of waste. The Schedule to the Notice distinguishes between two categories of waste management activities which require licensing and for

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Act (No. 59 of 2008) (NEMWA)		<p>which a basic assessment process (for Category A Waste Management Activities) or an EIA process (for Category B Waste Management Activities) must be conducted. A third category (Category C) refers to activities for which norms and standards have been set.</p> <p>Construction activities usually result in general as well as hazardous waste.</p> <p>WMLs are required for, amongst others:</p> <ul style="list-style-type: none"> • The storage of general or hazardous waste in lagoons; • The disposal of inert waste to land in excess of 25 tons; • The disposal of any hazardous waste to land; • The disposal of general waste to land covering an area of more than 50 m²; and • The disposal of domestic waste generated on premises in areas not serviced by the municipal service where the waste disposed exceeds 500 kg per month. <p>Schedule 3 of the NEMWA, as amended, defines "general waste" as waste that does not pose an immediate hazard or threat to health or to the environment, and includes:</p> <p>(a) domestic waste;</p> <p>(b) building and demolition waste;</p> <p>(c) business waste; and</p> <p>(d) inert waste; or</p> <p>(e) any waste classified as non-hazardous waste in terms of the regulations made under section 69, and includes non-hazardous substances, materials or objects within business, domestic, inert, building and demolition wastes as outlined in Schedule 3 of the Act.</p> <p>Where</p> <p>"building and demolition waste" means waste, excluding hazardous waste, produced during the construction, alteration, repair or demolition of any structure, and includes rubble, earth, rock and wood displaced during that construction, alteration, repair or demolition; and includes discarded concrete, bricks, tiles and ceramics, discarded wood, glass and plastic, discarded metals, discarded soil, stones and dredging spoil and "other" discarded building or demolition wastes.</p> <p>"inert waste" means waste that—</p> <p>(a) does not undergo any significant physical, chemical or biological transformation after disposal;</p>

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Legislation	Applicable Legislative Requirements	Implications for the Applicant
		<p>the applicant to submit all applications simultaneously to allow for concurrent consideration by the persons authorised by the relevant laws to take the applicable decisions. A member of the Steering Committee must monitor the processing of the application and report to the Steering Committee any undue delays and regulatory concerns emerging for exploration or consideration of solutions thereto.</p> <p>Section 18 concerns environmental assessments specifically and states that whenever an environmental assessment is required in respect of a SIP, such assessment must be done in terms of NEMA, with specific reference to Chapter 5.</p> <p>Time frames are stipulated in Schedule 2 and may not be exceeded without written approval. Schedule 2 refers to “project plans”, “applications” and “mitigation plans” that are not defined in the Act. It is not clear how these apply to the EIA process.</p>
KZN Planning and Development Act (No. 6 of 2008) (SPLUMA)		<p>The SPLUMA came into force on 1 July 2015 and replaces the KZN Planning and Development Act, 2008. However, the two will run in parallel until each Local Municipality has set up the structures required by SPLUMA.</p> <p>In terms of the current KZN Planning and Development Act, 2008, Eskom will need to submit a Planning and Development Application (PDA) to the Local Municipalities. This application will need to meet all the requirements of legislation. Important aspects will include planning considerations, and compliance with the municipality’s Integrated Development Plan and Spatial Development Framework.</p> <p>The exact requirements will depend on the timing of Eskom’s application to the Municipalities and the status of the legislation and by-laws currently applicable at the time in the local municipality.</p>
Promotion of Administrative Justice Act (No. 3 of 2000) (PAJA)		<p>The Bill of Rights in the Constitution of the Republic of South Africa 1996 states that everyone has the right to administrative action that is legally recognised, reasonable and procedurally just. PAJA gives effect to this right. The PAJA applies to all decisions of all State organisations exercising public power or performing a public function in terms of any legislation that negatively affects the rights of any person. The Act prescribes what procedures an organ of State must follow when it takes decisions. If an organ of State implements a decision that impacts on an individual or community without giving them an opportunity to comment, the final decision will be illegal and may be set aside. PAJA also forces State organisations to explain and give reasons for the manner in which they have arrived at their decisions and, if social issues were involved, how these issues were considered in the decision-making process.</p>

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Legislation	Applicable Legislative Requirements	Implications for the Applicant
		PAJA therefore protects the rights of communities and individuals to participate in decision-making processes, especially if these processes affect their daily lives.
Bylaws		All bylaws of the local and district municipalities traversed will apply to the project.

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4.2. GUIDELINES CONSIDERED

The following guidelines have been considered in the undertaking of this EIA:

- DEAT Integrated Environmental Management Information Series 1-5 and 12-15.
- NEMA draft Implementation Guideline.
- IAIA guidelines.
- DEA (2017), Guideline on Need and Desirability, DEA, Pretoria, South Africa.
- Public Participation Guideline published in 2012 (GN 807 of 10 October 2012) in terms of Section J of NEMA (NEMA, 1998).
- According to the guidelines, public participation can be seen as one of the most important aspects of the environmental authorisation process. Public participation is the only requirement of the EIA process for which exemption cannot be given, unless no rights are affected by an application. This stems from the requirement in NEMA that people have a right to be informed about potential decisions that may affect them and that they must be given an opportunity to influence those decisions.
- SAHRA Archaeology, Palaeontology and Meteorites (APM) Guidelines: Minimum Standards for the Archaeological and Palaeontological Components of Impact Assessment Reports (2007). The guidelines provide the minimum standards that must be adhered to for the compilation of a HIA Report. Chapter II Section 7 outlines the minimum requirements for inclusion in the heritage assessment. The Heritage Resource Management process will be completed to adhere to the minimum standards as defined by Chapter II of the SAHRA APM Guidelines (2007).
- Guidelines for Biodiversity Impact Assessments in KZN, 2003 (February 2013, Ezemvelo).
- IUCN Red List (IUCNRedList.org 2016-2).
- Department KZN Biodiversity Conservation Plan (C-Plan) (Updated 2011).

4.3. NATIONAL AND INTERNATIONAL STANDARDS

National and international industry standards aimed at sustainable development and social justice specifically have become abundant in the last decade. Many industries use these standards as indicators for good practice.

4.3.1. ISO 26000:2010/SANS 26000:2010

Performance standards have long been a voluntary tool used by industry to achieve certain outcomes. The first standard on social responsibility, ISO 26000 was published on 1 November 2010 (ISO, 2010). It was developed using a multi-stakeholder approach involving

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experts from more than 90 countries and 40 international or broadly based regional organisations involved in different aspects of social responsibility (ISO, 2010).

The South African Bureau of Standards (SABS), a statutory body that is mandated to develop, promote and maintain South African National Standards (SABS, [sa]) adopted the ISO 26000 Standard as a South African National Standard (SANS) 26000:2010.

4.3.2. International Social Performance Standards/Initiatives

There is a profusion of global initiatives aiming at assisting companies to make their operations more sustainable. The most frequently used in the EIA industry is the International Finance Corporation’s (IFC) principles (IFC, 2012). The IFC is a member of the World Bank group, and as a part of their sustainability framework they created performance standards on environmental and social sustainability (IFC, 2012).

The standards relevant to the social environment are the following:

- 1 Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts
- 2 Performance Standard 2: Labour and Working Conditions
- 3 Performance Standard 4: Community Health, Safety, and Security
- 4 Performance Standard 5: Land Acquisition and Involuntary Resettlement
- 5 Performance Standard 7: Indigenous Peoples
- 6 Performance Standard 8: Cultural Heritage (IFC, 2012).

Issues such as gender, climate change, water and human rights are addressed across the standards. A guidance note accompanies each standard (IFC, 2012:4). Environmental and social risks and impacts must be managed by using an Environmental and Social Management System. The standard applies to all the activities funded by the IFC for the duration of the loan period. A number of private banks adopted most of the IFC standards in an initiative known as the Equator Principles (Esteves, Franks & Vanclay, 2012).

4.4. ESKOM POLICY DOCUMENTS

4.4.1. Control Plans for Alien Invasive Species (AIS)

GNR598 of 2014, Alien and Invasive Species Regulations requires that Eskom as a landowner is legally obliged to clear its properties of alien invasive species. As such, Eskom is required by law to firstly determine if Alien Invasive Species (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.

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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).

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5 NEED AND DESIRABILITY

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3(1) (f) a motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred development footprint within the approved site as contemplated in the accepted scoping report;

5.1. GENERAL PURPOSE AND REQUIREMENT FOR THE PROJECT

Various Distribution substations being fed from the Normandie Main Transmission Substation are experiencing low voltages on the 132 kV busbars which are well below acceptable limits (0.95 p.u). These Distribution substations include: Candover, Makhathini, Nondabuya, Ndumo and Mkuze. With the current electrification load growth in the areas around the listed substations and Gezisa Substation establishment, the busbar voltages will further drop below minimal acceptable limits until the system collapses. The Normandie Substation is not completely backfeedable. A loss of either the Normandie-Vergenoeg 132 kV powerline or the Normandie-Pongola 132 kV powerline will result in load being shed.

Currently the Impala-Nseleni 132 kV powerline is loaded to beyond 90 % of its capacity with Mtubatuba and Hluhluwe experiencing low HV Busbar voltages in the year 2019 and beyond due to an increase in both electrification and industrial load. The Impala Substation is not backfeedable. A loss of the Impala-Nseleni powerline will result in load being shed (approximately 44 000 customers).

With the establishment of Iphiva 400-132 kV Substation together with the seven 132 kV Distribution powerlines evacuating power from the substation the following benefits will be experienced:

- Increases in all substation HV Busbar Voltage Levels to above 1 p.u.;
- Transformer Taps Reduce throughout the system (Fewer Lockouts);
- Accommodates Load Growth for both electrification and industrial loads; and
- 100 % Back-feeding possible during the loss of Normandie-Pongola, Normandie-Vergenoeg and Impala-Nseleni 132 kV powerlines.

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5.2. STRATEGIC AND STATUTORY CONTEXT FOR THE CONSIDERATION OF NEED AND DESIRABILITY

DEA (2017), Guideline on Need and Desirability, says that when evaluating project specific applications, the strategic context of such applications and the broader societal needs and the public interest should be considered. The contents of Municipal Integrated Development Plans (IDP), Strategic Development Frameworks (SDF), Environmental Management Frameworks and other relevant plans frameworks and strategies must be taken into account. Whether a proposed activity will be in line with or deviate from the plan, framework or strategy per se is not the issue, but rather the ecological, social and economic impacts that will result because of the alignment or deviation". Where an application deviates from a plan, framework or strategy the EIA must show why the deviation might be justifiable.

Considering the merits of a specific application in terms of the need and desirability consideration, it must be decided which alternative represents "the most practicable environmental option", which in terms of the definition in NEMA and the purpose of the EIA Regulations are "that option that provides the most benefit and causes the least damage to the environment as a whole, at a cost acceptable to society, in the long-term as well as the short-term". This is the ultimate goal of the EIA process.

The DEA 2017 Guideline on Need and Desirability says that during Scoping the questions presented in the guideline document should be used to identify issues to be addressed in the EIA process and alternatives that should be considered. In the EIA Report, the questions must again be considered, but for those questions that were fully addressed in Scoping, it can simply be reported that the questions were dealt with. The remaining questions should be considered in terms of the additional information generated during the impact assessment stage. Most of the questions were addressed in the Scoping Report and are not repeated here. **Table 5.1** presents the questions where responses emanate from additional information that has been generated during the assessment stage.

Table 5.1: Questions from DEA 2017 Need and Desirability Guideline Document

	Question in guideline document	Response
1.	How will this development (and its separate elements/aspects) impact on the ecological integrity of the area?	This has been addressed in the Fauna and Flora and Wetlands Specialists studies (Appendix G and I and Section 10.4.1 and 10.4.3)

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	Question in guideline document	Response
2.7	How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following: 2.7.1. Negative impacts: e.g. health (e.g. HIV-AIDs), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts? 2.7.2. Positive impacts. What measures were taken to enhance positive impacts ?	Has been addressed in the Social Specialist Study (Appendix D and Section 10.4.6) .
2.8	Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?	This has been addressed in the Social Specialist Study (Appendix D and Section 10.4.6) .
2.9	What measures were taken to pursue the selection of the " best practicable environmental option " in terms of socio-economic considerations?	This has been addressed in the Social Specialist Study (Appendix D and Section 10.4.6) .
2.16	Describe how the development will impact on job creation.	This has been addressed in the Social Specialist Study (Appendix D and Section 10.4.6) .
2.19	Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?	Yes, the EAP believes that the mitigation measures proposed are realistic. This is a long terms project (50 years plus). When/if the project is decommissioned at a later stage, then the land that has been affected will have to be rehabilitated to acceptable levels. That will be subject to a separate authorisation process.
2.11	Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?	Alternatives are discussed in Chapter 6 .
2.12	Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area?	This has been addressed in the Social Specialist Study (Appendix D and Section 10.4.6) .

5.2.1. National Development Plan

On 11 November 2011 the National Planning Commission released the National Development Plan: Vision for 2030 (NPC, 2012) for South Africa and it was adopted as government policy in August 2012. The National Development Plan (NDP) was undertaken to vision what South

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Africa should look like in 2030 and what action steps should be taken to achieve this (RSA, 2013). The aim of the NDP is to eliminate poverty and reduce inequality by 2030.

5.2.2. Sustainable Development Goals

All 189 Members States of the United Nations (UN), including South Africa, adopted the United Nations Millennium Declaration in September 2000 (UN, 2000). The commitments made by the Millennium Declaration are known as the Millennium Development Goals (MDGs), and 2015 was targeted as the year to achieve these goals. The UN Open Working Group of the General Assembly identified seventeen sustainable development goals, built on the foundation of the MDGs as the next global development target (UN, 2014). The sustainable development goals include aspects such as ending poverty, addressing food security, promoting health, wellbeing and education, gender equality, water and sanitation, economic growth and employment creation, sustainable infrastructure, reducing inequality, creating sustainable cities and human settlements, and addressing challenges in the physical environment such as climate change and environmental resources (UN, 2014). These aspects are included in the NDP, and it can therefore be assumed that South Africa’s development path is aligned with the international development agenda.

5.2.3. Strategic Environmental Assessment for Electricity Grid Infrastructure

In order to facilitate the efficient roll out of [Strategic Integrated Projects](#) (SIPs) lead by the PICC and detailed in the [National Infrastructure Plan](#), the DEA, mandated by Ministers and Members of the Executive Council (MinMec), commissioned the [Council for Scientific and Industrial Research](#) (CSIR) in January 2014 to undertake a Strategic Environmental Assessment (SEA) linked to SIP 10: Electricity Transmission and Distribution for all. The CSIR has partnered with Eskom and the [South African National Biodiversity Institute](#) (SANBI) to deliver on project outputs (<https://egi.csir.co.za/> accessed on 6 January 2017). The corridors being assessed in this EIA do not fall in any of the identified suitable routing corridors that will enable the efficient and effective expansion of key strategic transmission infrastructure designed to satisfy national transmission requirements up to the 2040 planning horizon, in this SEA (**Figure 5.1**). This is, however, not a problem as the SEA did not prioritise the load centre served by this project on the national level. The need for the project, on a regional level, is still justified.

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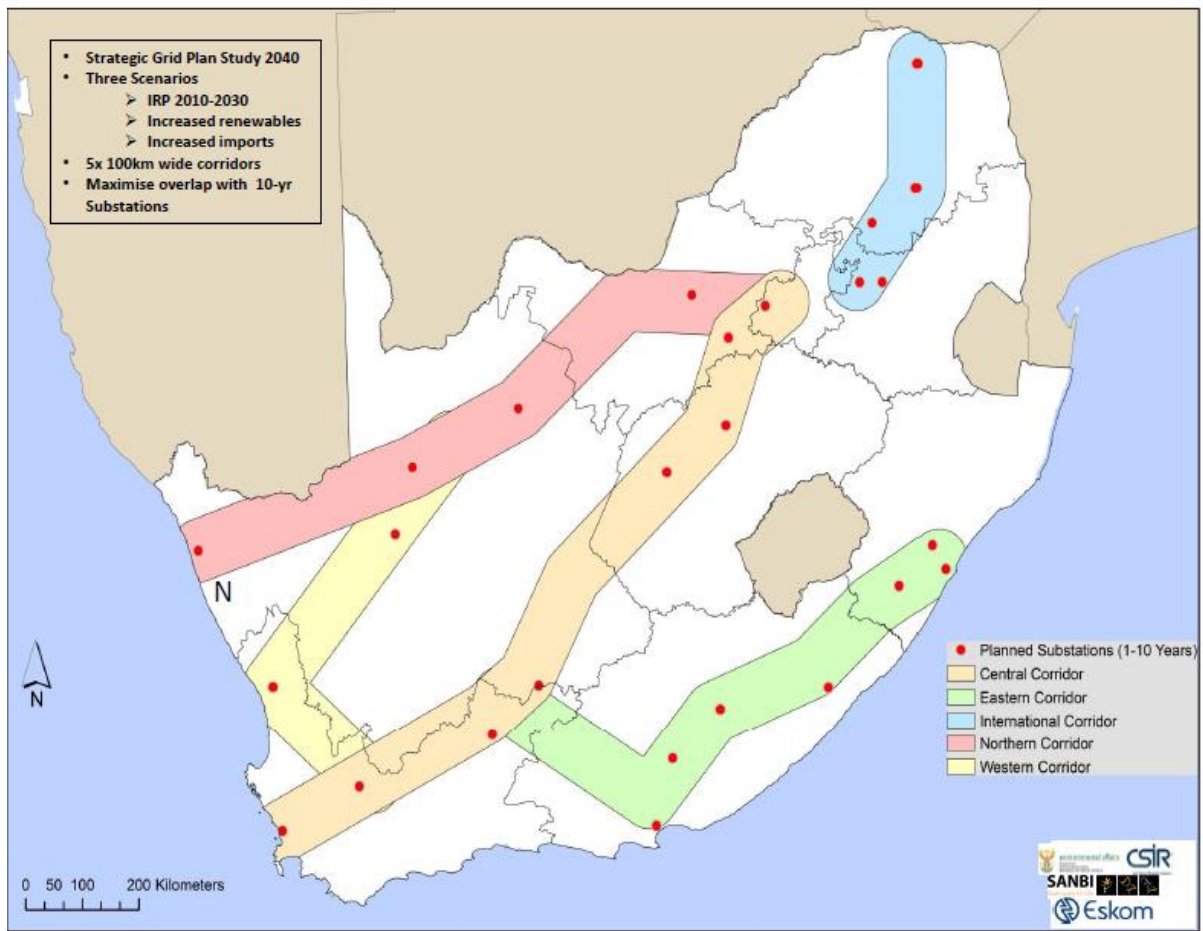


Figure 5.1: SEA suitable electricity routing corridors

Source: (<https://egi.csir.co.za/> accessed on 6 January 2017)

Electricity grid infrastructure (EGI) Expansion corridors

5.2.4. Provincial Growth and Development Strategies

Provinces play an important role in contextualising acts and other tools of governance and grounding them within the realities of each province. The provincial governments must guide the local government in the implementation and development of IDPs and other programmes for sustainable development. Provincial Growth and Development Strategies (PGDS) are a critical tool to guide and coordinate the allocation of national, provincial and local resources and private sector investment to achieve sustainable development outcomes. They are not a provincial government plan, but a development framework for the province as a whole (Department Provincial and Local Government [DPLG], 2005).

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PGDS are not a legislative requirement, but play an important role in ensuring effectiveness and coordinating delivery of the overall objectives of South Africa as a developmental state. PGDS are based on a long-term view of the provinces' development route. Their primary purpose is to provide a collaborative framework to drive implementation within a province (DPLG, 2005). The Mpumalanga Economic Growth and Development Path (MEGDP, 2011), and KZN Provincial Spatial Development Strategy (KZN PGDS, 2011) are relevant to this application.

The Mpumalanga Economic Growth and Development Path (MEGDP, 2011) has as its focus to:

- Improve labour absorption of the economy;
- Reduce carbon emissions; and
- Strengthen the link between science and technology and growth and jobs.

The Mpumalanga Government has identified the following sectors to prioritise efforts to support employment creation in:

- Infrastructure development;
- Climate change and the green economy;
- Agriculture and agro-processing and rural development;
- Minerals and beneficiation;
- Manufacturing;
- Knowledge based sectors
- Tourism and business services,
- The social economy;
- Public sector;
- Regional economy.

Linking to this, the MEGDP has identified five job drivers:

- Infrastructure;
- Main economic sectors;
- Seizing the potential of new economies;
- Investing in social capital and public services; and
- Spatial development.

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The KZN PGDS strategy consists of seven long-term goals and 30 objectives (KZN PGDS, 2011)”

1. Job creation
 - 1.1. Unleash agricultural potential
 - 1.2. Enhance industrial development through Trade, Investment & Exports
 - 1.3. Expand Government-led job creation programmes
 - 1.4. Promote SMME, entrepreneurial and youth development
 - 1.5. Enhance the knowledge economy
2. Human resource development
 - 2.1. Improve early childhood development, primary and secondary education
 - 2.2. Support skills alignment to economic growth
 - 2.3. Promote and enhance youth skills development & life-long learning
3. Human and community development
 - 3.1. Alleviate poverty and improve social welfare
 - 3.2. Enhance health of communities and citizens
 - 3.3. Safeguard sustainable livelihoods & food security
 - 3.4. Sustain human settlements
 - 3.5. Enhance safety & security
 - 3.6. Advance social cohesion
 - 3.7. Promote youth, gender and disability advocacy & the advancement of women
4. Strategic infrastructure
 - 4.1. Develop ports and harbours
 - 4.2. Develop road & rail networks
 - 4.3. Develop Information and Communication Technology infrastructure
 - 4.4. Improve water resource management
 - 4.5. Develop energy production capacity
5. Responses to climate change
 - 5.1. Increase productive use of land
 - 5.2. Advance alternative energy generation
 - 5.3. Manage pressures on biodiversity
 - 5.4. Manage disaster
6. Governance and policy
 - 6.1. Strengthen policy, strategy coordination and Inter Governmental Relations
 - 6.2. Build Government capacity
 - 6.3. Promote participative, facilitative & accountable governance

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7. Spatial equity
 - 7.1. Promote spatial concentration
 - 7.2. Facilitate integrated land management & spatial planning

The KwaZulu Natal Provincial Spatial Development Strategy has been developed in order to achieve the goals and objectives of the PGDS in a targeted and spatial coordinated manner (KZN PGDS, 2011).

5.2.5. Integrated Development Plans

The South African government operates on three spheres, namely local (municipal), provincial and national. IDPs are compulsory through the Municipal Systems Act 32 of 2000 on municipal level. Integrated Development Planning is a process by which municipalities prepare 5-year strategic development plans. The IDP is the written plan that results from the integrated development planning process. It is the principle strategic planning instrument that guides and informs all planning, management, investment, development and implementation decisions and actions in the local area and supersedes all other plans that guide local development (Coetzee, 2002).

The White Paper on Local Government (RSA, 1998) has contextualised the IDP as a tool for developmental local government with the intention of enabling municipalities to:

- Help align scarce resources behind agreed policy objectives and programmes;
- Make sure that actions are prioritised around urgent needs;
- Ensure the necessary integration with other spheres of government, serving as a tool for communication and interaction with them, and
- Serve as a basis for engagement between local government and communities/residents.

“Although the following municipalities have IDP documents that have been obtained, they are not specifically relevant to this application because the powerlines only traverse them in order to bring electricity to other regions”.

Mpumalanga Province

- Gert Sibande District Municipality
 - Mkhondo Local Municipality

KZN Province

- Zululand District Municipality
 - eDumbe Local Municipality

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- uPhongolo Local Municipality
- Abaqulusi Local Municipality
- Jozini Local Municipality

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6 ALTERNATIVES

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3(1) (h) a full description of the process followed to reach the proposed development footprint within the approved site as contemplated in the accepted scoping report, including:

(i) details of the development footprint alternatives considered;

(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;

(ix) if no alternative development footprints for the activity were investigated, the motivation for not considering such; and

(x) a concluding statement indicating the location of the preferred alternative development footprint within the approved site as contemplated in the accepted scoping report;

6.1. NO PROJECT ALTERNATIVES

The major load centres in northern KZN, specifically Pongola and the Makhathini Flats, currently experience high voltage drops in the 132 kV network that services them, and the voltages are approaching unacceptable low voltage levels as the demand increases. Contingencies on the main 132 kV supplies also lead to thermal overloading of the remaining network. The objective of the applications for the overall scheme is to strengthen and alleviate current and future network constraints in the area. The Iphiva 400/132 kV Main Transmission Substation will also de-load the main sub-transmission network and improve the voltage regulation in the area.

If the projects do not go ahead, then the existing electricity supply to the area as well as future economic development will be limited and compromised. Eskom will then not be fulfilling its mandate, making it an unacceptable scenario.

In the Final Scoping Report, that was accepted by the DEA, the EAP therefore recommended that the no-go alternative be rejected and no assessment of the no project alternative takes place in the Impact Assessment Phase of the project.

6.2. CORRIDOR ALTERNATIVES

Iphiva Substation sites 3 and 6, the alternative substation sites being assessed in a separate application, are in close proximity to each other and do not affect the selection of alternative

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Normandie-Iphiva 400 kV corridors for further investigation. The two end points of the proposed powerline are therefore known. Eskom and the EAP, in consultation with specialists and I&APs identified technically possible 2 km wide corridors within which a 55 m servitude to construct the 400 kV powerline could be acquired. In the Scoping phase of the project, ABFGD (N-I 2) and AEFGD (N-I 3) were recommended for further assessment (**Figure 2.1**).

6.2.1. Section A-B of Normandie-Iphiva 2

The western most section of AB is immediately adjacent to an existing 132 kV powerline (**Plate 5**). It first traverses commercial farms associated with the Moolman Farmers Association. Land use includes limited patches of forestry and cultivated land, including irrigation with centre pivots and grazing. Farm workers also have dwellings in the corridor. A-B then traverses rural areas with dispersed dwellings and associated primary and secondary schools (**Plate 6**). The challenges in this corridor are commercial farming activities in the west, some large steep valleys that will have to be crossed and potential impact on dwellings. Existing access roads may not always be inadequate for construction (**Plate 7**) and providing new access roads may be challenging in areas.



Plate 5: Corridors in Section A-B adjacent to the N2

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Plate 6: Typical dwelling adjacent to the N2 in Section A-B



Plate 7: Typical access roads to tower positions on ridges in Section A-B

6.2.2. Section B-F of Normandie-Iphiva 2

Section B-F is a link between A-C and E-G from the existing Pongola Substation and follows the R66. This portion of the corridor is common with the proposed Iphiva-Pongola (2) 132 kV powerline assessed in the Distribution powerlines application. Besides one farm with centre

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pivots in this section of the corridor, it is mainly covered by open bush and not formally protected for conservation purposes.

6.2.3. Section F-G of Normandie-Iphiva 3

Corridor section F-G is common to both Normandie-Iphiva 2 and 3. It crosses to the south of the Mkuze River and the Somkhanda Game Reserve until it intersects with the P234. Land use is a mixture of commercial farming with some irrigation, and informal rural settlements. The Iphiva Substation sites are located at G.

6.2.4. Section A-E of Normandie-Iphiva 3

Proceeding from the Normandie Substation in a south-easterly direction, the first portion of the Corridor AE traverses areas where forestry takes place. A servitude that avoids or minimises the impact on forestry will have to be found if this corridor is used. Normandie-Iphiva 3 affects significantly more forestry than Normandie-Iphiva 2.

Once the corridor turns to the east it traverses rolling hills which are mostly grasslands with dispersed dwellings (**Plates 8 and 9**). Cattle-grazing is common. A portion has relatively difficult topography and game fenced game farms are found in the area. Some areas have steep valleys where construction will be difficult and routing away from this area will have to be considered.



Plate 8: Typical landscape of corridor AE

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Plate 9: Dwelling in corridor AE

6.2.5. Section E-F of Normandie-Iphiva 3

Corridor section E-F starts at the R66 and turns northwards to approximately the R66 / R69 intersection. It then follows the R69, for a considerable distance. The land use is a mixture of forestry, grassland and open bushveld.

It appears that construction of the line adjacent to the R69 (section E-F) will not be problematic. Access to towers is easy and there is enough space on relatively flat land for the line. This corridor is, however, in the buffer area of the Ithala Nature Reserve for a short distance.

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Plate 10: Typical landscape in the western section of the southern corridors, with protected plant species in the foreground



Plate 11: Inaccessible hilly area

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Plate 12: Typical dispersed homestead

6.3. MULTI CIRCUIT TOWERS

Where two or more powerlines are constructed in the same corridor, it is possible to reduce impacts by using double or multiple-circuit towers to carry two or more powerlines. This applies to section G-F and F-B of the Normandie-Iphiva corridors where Iphiva-Pongola 2, a 132 kV powerline, shares the corridor.

6.4. DEVIATIONS

Significant environmental impacts are avoided by comparing and recommending a corridor that has the least significant impacts, or is the Best Practical Environmental Option. In some cases, significant impacts can be further avoided by implementing deviations from the original corridors assessed.

Two minor deviations from the Normandie-Iphiva Corridors have been recommended for further assessment by specialists and/or I&APs:

- Normandie-Iphiva 2; and
- Normandie-Iphiva 3.

6.4.1. Normandie-Iphiva 2

The deviation to Normandie-Iphiva 2 is a widening of the 2 km corridor by approximately 1 km to the north from where the Normandie-Iphiva 2 and 3 corridors split after exiting the

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Normandie Substation for approximately 6 km. The objective of this deviation is to avoid impacts on Mr de Waals property and specifically his house (**Figure 6.1**).

6.4.2. Normandie-Iphiva 3

The economic specialist recommended the widening of a section of Normandie-Iphiva 3 between the R 69 and P 234 roads to avoid crossings smaller properties in a way that will cut them in half and to allow for servitudes to favouring follow property boundaries to reduce the impacts on landowners (**Figure 6.2**).

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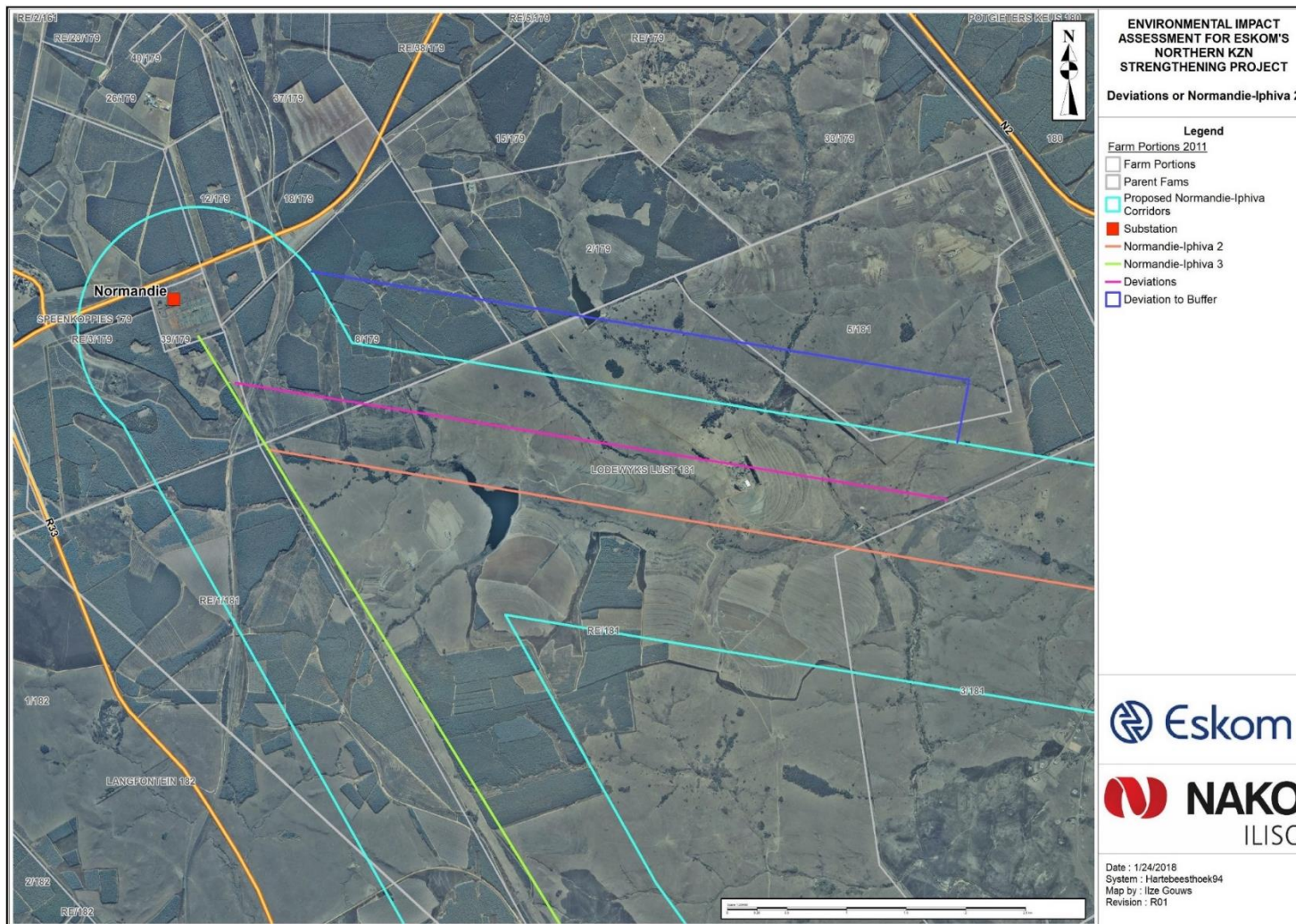


Figure 6.1: Normandie-Iphiva 2 Deviation

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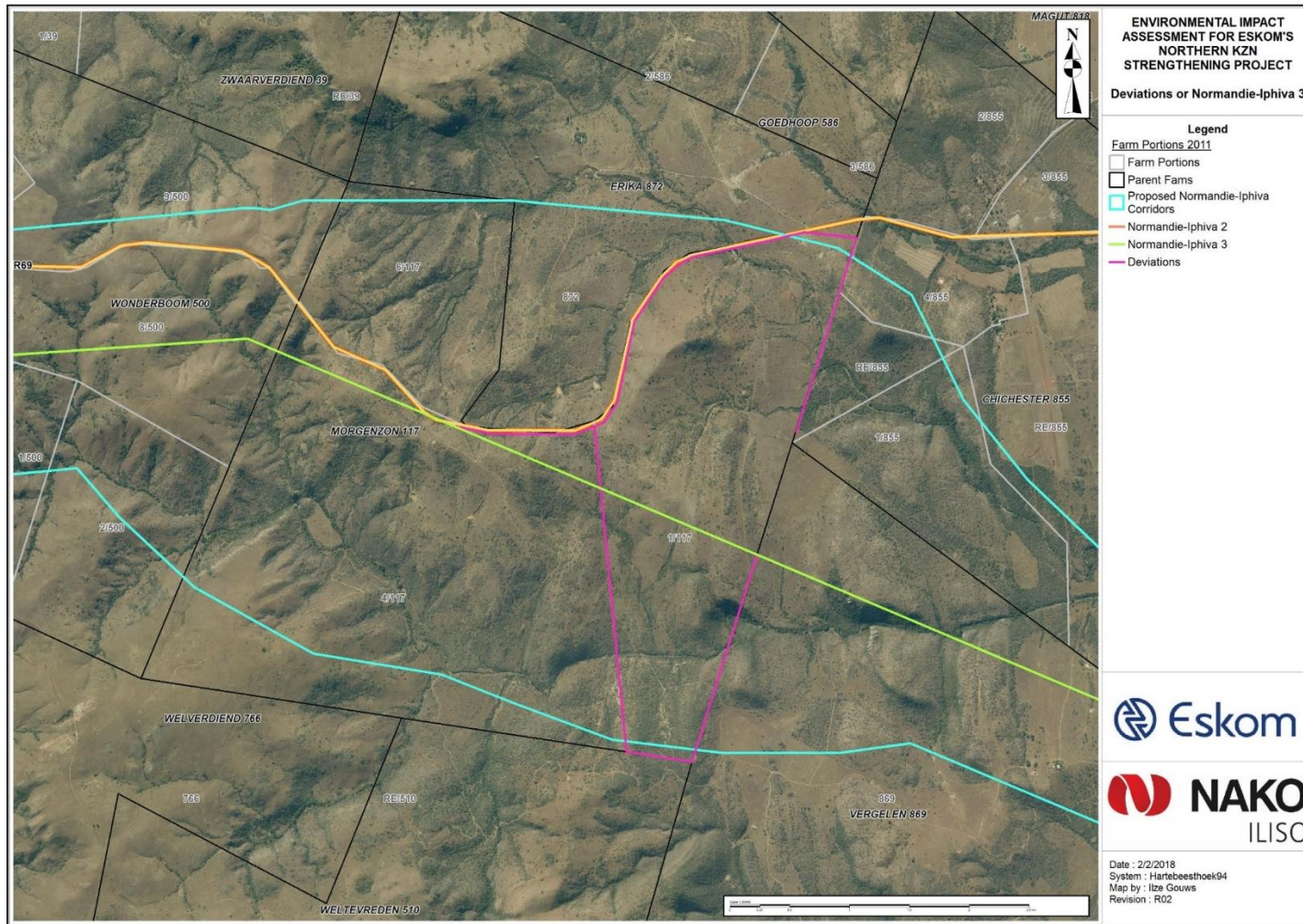


Figure 6.2: Normandie-Iphiva 3 Deviation

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7 PUBLIC PARTICIPATION PROCESS

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3(h)(1) (ii) details of the PPP undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;

Due to the cumulative and interrelated nature of the four components of the Northern KZN Strengthening Project (the substation, two 400 kV powerlines and 165 km of 132 kV powerlines) a combined PPP is being undertaken. The PPP therefore covers the greater study area.

7.1. LEGAL REQUIREMENTS

Public participation is a legal requirement for an application for environmental authorisation and is defined in NEMA (as amended) as the “*process by which potential I&APs are given opportunity to comment on, or raise issues relevant to the application*”.

Section 24(4)(a)(v) of NEMA requires that such public information and participation procedures “*provide all I&APs, including all organs of state in all spheres of government that may have jurisdiction over any aspect of the activity, with a reasonable opportunity to participate in those information and participation procedures*”.

The PPP required is prescribed in Chapter 6 of GN R982 of December 2014, as amended and is also guided by relevant principles contained in Chapter 2 of NEMA. The PPP for the EIA of this Project is designed to satisfy the requirements laid down in the above legislation. The International Association for Impact Assessment (IAIA) Fast Tips have also been taken into account as a guideline.

The following are the minimum legal requirements of by GN R982:

- Regulation 39 (1) Obtaining written consent of the landowner or person in control of the land to undertake the activity on that land, except for linear activities (the powerline is a linear activity);
- Give notice to all Interested and Affected Parties (I&APs) by:
 - Fixing a notice board to the boundary of the proposed and all alternative sites and/or along the corridors

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- Giving written notice in accordance with Section 47D of NEMA (as below) to the owners, occupiers or persons in control of the proposed site and alternatives, adjacent land, municipal ward councillors, any organisation of ratepayers, the municipality, any organ of state having jurisdiction in respect of any aspect of the activity, and any other party as required by the competent authority
- Placing an advertisement in one local newspaper or Gazette
- Placing an advertisement in at least one provincial or national newspaper,
- Maintain a register of I&APs, and
- Comments and responses must be recorded in reports and plans submitted to the authorities.

- 1) Section 47D of NEMA says that “A notice or other document in terms of NEMA or a specific environmental management Act may be issued to a person—
- (a) by delivering it by hand;
 - (b) by sending it by registered mail—
 - (i) to that person’s business or residential address; or
 - (ii) in the case of a juristic person, to its registered address or principal place of business;
 - bA) by faxing a copy of the notice or other document to the person, if the person has a fax number;
 - bB) by e-mailing a copy of the notice or other document to the person, if the person has an e-mail address; or
 - bC) by posting a copy of the notice or other document to the person by ordinary mail, if the person has a postal address;
 - (c) where an address is unknown despite reasonable enquiry, by publishing it once in the Gazette and once in a local newspaper circulating the area of that person’s last known residential or business address.

[Subsection 1 amended by section 23(a) of Act No. 30 of 2013]

- (2) A notice or other document issued in terms of subsection (1)(b), (bA), (bB), (bC) or (c) must be regarded as having come to the notice of the person, unless the contrary is proved.

[Subsection 2 amended by section 23(b) of Act No. 30 of 2013]. “

The PPP will give all registered I&APs a period of at least 30 days to submit comment on each of the documents that form part of the EIA as they are completed, i.e. the scoping report, the

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EIA Report and EMP, and all information that reasonably has or may have the potential to influence the decision with regard to the application.

7.2. SERVITUDE NEGOTIATION AND THE EIA PROCESS

7.2.1. Servitude Negotiation and the EIA Process

Transmission powerlines are constructed and operated within a servitude (55 m wide for 400 kV lines) that is established along its entire length. The servitude allows Eskom Transmission certain rights and controls that support the safe and effective operation of the line.

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

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

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

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

However, it may be required that the negotiation process needs to start earlier, and may begin before or run in parallel to the EIA process. This may be due to tight timeframes, knowledge of local conditions and constraints, etc. Eskom Transmission has a right to engage with any

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landowner at any time, though they do so at risk if environmental authorisation has not been awarded.

7.2.2. The Negotiation Process

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

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

7.3. PUBLIC PARTICIPATION TASK LEADER

The PPP Task Leader, **Bongi Shinga**, has 15 years of experience in communications management, stakeholder engagement and PPPs, in support of environmental management and development processes. She has extensive experience in running complex yet successful communication programmes, particularly in the bulk water and energy sectors. She has been involved in various water resources development assignments for the DWS and infrastructural development projects for Eskom. She also has actively managed PPPs for the review of policies and management plans in the conservation sector. Her ability to communicate and interact with all levels of stakeholders (local, provincial and national), in both rural and urban settings has contributed to effective approaches for monitoring and maintaining stakeholder relationships. She is well-versed in the requirements of public participation as applied in

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environmental assessments in South Africa. Her role includes facilitation of the public, focus group and key stakeholder meetings.

7.4. THE EIA PROCESS AND LINKS TO THE PUBLIC PARTICIPATION PROCESS

An EIA is a planning and decision-making tool. It identifies the potential negative and positive consequences of a proposed project or development at an early stage, and recommends ways to enhance positive impacts and to avoid, reduce or minimize negative impacts. The EIA findings will also inform further technical and financial investigations and decisions. The EIA is undertaken in terms of section 24C of NEMA.

Public participation is an important aspect of any EIA, with the objective to assist stakeholders to table issues of concern, suggestions for enhanced benefits and to comment on the findings of the EIA. The PPP is designed to provide sufficient and accessible information to I&APs in an objective manner.

Public Participation can be divided into the following phase:

1. **Announcement Phase** – I&APs are identified and notified of the proposed project. They are given an opportunity to raise any concerns that they have and suggest any alternatives not considered.
2. **Scoping Phase** – During the Scoping Phase I&APs will have an opportunity to provide written comment on the Draft Scoping Report. During this phase they should check that the issues they have raised have been accurately captured and will be addressed by the specialist studies.
3. **Impact Assessment Phase** – The findings and recommendations of the specialist studies and impact assessment will be presented to the I&APs in this phase, primarily by an opportunity to comment on the Draft EIA Report.
4. **Decision making phase** – I&APs will be notified of DEA’s decision regarding the project and of their opportunity to appeal.

One of the approaches of the PPP in this EIA is to limit the amount of printing as much as possible, without compromising the effectiveness of the process. Digital methods of making information available (e-mail, webpages and CDs) are therefore used wherever possible.

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7.5. PUBLIC PARTICIPATION ACTIVITIES IN THE ANNOUNCEMENT AND SCOPING PHASES

7.5.1. Stakeholder Identification

The legal requirements set out in Regulations 39 – 44, were taken into account when identifying, notifying and registering I&APs.

Through newspaper advertisements, networking, referral to existing databases of projects undertaken in the study area, stakeholder and/or public meetings, there are currently 1 017 I&APs registered on the database for the Project.

An effort was made to ensure that individuals and/or organisations were identified from an institutional and geographic point of view. The KZN Department of Cooperative Governance and Traditional Affairs (COGTA) assisted the Public Participation Team in identifying stakeholders within the Zululand District.

I&APs identified and notified included the following:

- National and Provincial government departments:
 - DWS,
 - Department of Agriculture, Forestry and Fisheries,
 - Department of Local Government and Traditional Affairs,
 - AMAFA/Heritage KZN,
 - Ezemvelo,
 - Department of Agriculture and Rural Development (DARD),
 - KZN Department of Economic Development, Tourism and Environmental Affairs,
 - KZN Department of COGTA,
- Organs of state which have jurisdiction in respect of the activity to which the application relates:
 - Eskom Holdings SOC Limited
- District Municipalities:
 - Gert Sibande District Municipality – Piet Retief
 - Zululand District Municipality
- The Local Municipalities:
 - Mkhondo Local Municipality – Piet Retief
 - uPhongolo Local Municipality
 - Jozini Local Municipality
 - Abaqulusi Local Municipality

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- eDumbe Local Municipality
- Landowners/Land Occupiers.
 - Private Landowners
 - Game Reserves and Tourism Establishment Operators
 - Community Trusts
- Traditional Councils within Zululand District
 - Ndlangamandla Traditional Council
 - Sibiya Traditional Council
 - Msibi Traditional Council
 - Simelane Traditional Council
 - Gumbi Traditional Council
 - Emgazini Traditional Council
 - Ntshangase Traditional Council
 - Mavuso Traditional Council
 - Klwana Traditional Council
 - Msiyane Traditional Council
 - Empangisweni Traditional Council
 - Khambi Traditional Council
 - Emathongeni Traditional Council
 - Hlahlindlela Traditional Council
 - Othaka Traditional Council
 - Mandlakazi Traditional Council
 - Usuthu Traditional Council
 - Dlamini Traditional Council
 - Ndlela Traditional Council
 - Mthethwa Traditional Council

A GIS map of the study area (**Appendix C**) has been developed with property boundaries shown and where landowners/traditional authorities have been notified or registered on the database shaded in. This gives a visual representation of the extent of landowner consultation.

7.5.2. I&AP Database

An Excel database has been used which allows for stakeholders to be registered, categorised into sectors and for a full record of their participation in the project, to be recorded (**Appendix C**).

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7.5.3. Newspaper Adverts

Advertisements were drafted, translated into isiZulu and placed in the newspapers listed in **Table 7.1**. Copies are included in the Scoping Report.

Table 7.1: Newspapers where advertisements have been published

Newspaper	Language	Geographic area covered	Date of publication
Mercury Regional newspaper	English	Mkhuze, Pongola, Paulpietersburg, Duma and Vryheid	11 August 2016
Excelsior News	English	Piet Retief	11 August 2016
Isolezwe	Zulu	Mkhuze, Pongola, Paulpietersburg, Duma and Vryheid	11 August 2016

A second round of newspaper advertisements were placed in the same newspapers to announce the availability of the DSR for comment, and to invite I&APs to the second round of Key Stakeholder and Authorities Meetings, that took place in 2017.

7.5.4. Onsite Notices

Twenty-three (23) onsite notices were erected at the locations indicated on **Figure 7.1**. Notices have complied with GN 982 Regulation 41 (2), (3) and (4).



Plate 16: Examples of onsite notice

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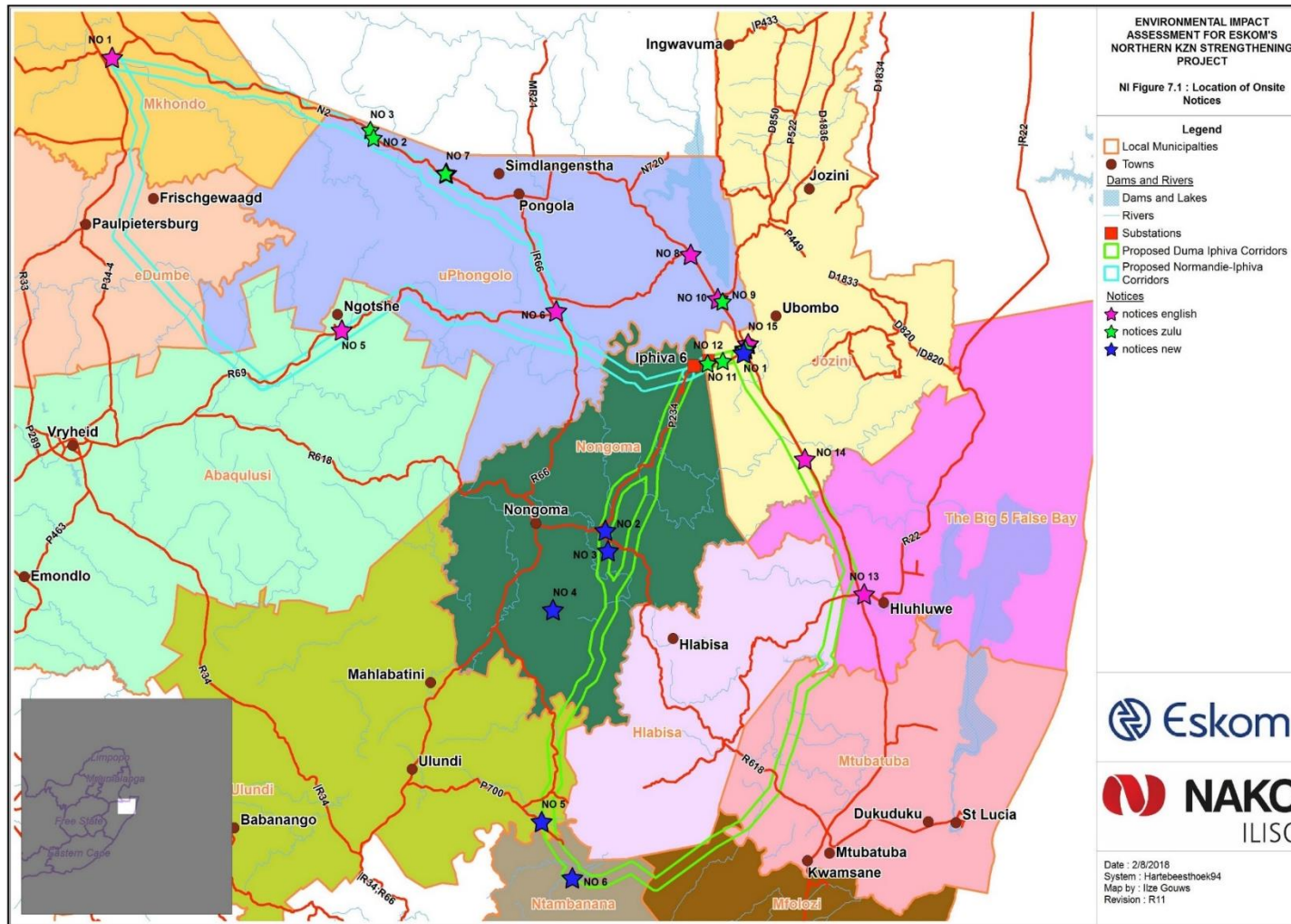


Figure 7.1: Location of onsite notices

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7.5.5. Written Notice

Notification letters (copies included in the Scoping Report) were given to the municipal councilors of the wards affected by the project, the district and local municipalities and organs of state indicated in **Section 7.5.1**. Notices were e-mailed with a copy of the Background Information Document (BID) (copy included in the Scoping Report) and I&AP registration form.

7.5.6. Background Information Document

A 6 page x A4 BID was compiled in English, translated into isiZulu and distributed with the notification letters. Additional copies were made available at the first round of key stakeholder and authorities' meetings, FGMs and traditional council meetings (copy was included in the Scoping Report).

7.5.7. Draft Report Comment Periods

The 2014 EIA Regulations require a 30 day comment period for all draft reports prior to submission to the competent authority. The first comment period was for the DSR. Registered I&APs were notified by e-mail (or fax, post or phone if they do not have an e-mail address), of the availability of the draft documents for comment, and were invited to attend public meetings. The availability of the draft Scoping Report and details of public meetings was also advertised in newspapers as detailed in **Table 7.2**.

Table 7.2: Newspapers where availability of the Draft Scoping Report was advertised

Newspaper	Geographics	Language	Areas covered	Insertion Date
The Mercury	Regional	English	Mkhuze, Pongola, Paulpietersburg, Duma and Vryheid	04 September 2017
Excelsior News	Local	English	Piet Retief	01 September 2017
Isolezwe	Regional	Zulu	Northern KZN	04 September 2017
Ilanga	Regional	Zulu	Northern KZN	05 September 2017

Hard copies of the draft documents were made available at four (4) public places in the study area, as indicated in **Table 7.3**. Pdf versions of the documents were uploaded to the NAKO ILISO website. 20 CDs of each of the sets of draft reports were prepared and made available to I&APs at the meetings and as requested.

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Table 7.3: Placing of draft documents at public venues

Area	Venue	Address	Contact Details
Piet Retief	Piet Retief Public Library	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

All comments received have been recorded in the Comments and Responses Report (CRR) (**Appendix C**).

Minutes of meetings that have taken place since the Final Scoping Report have been prepared and distributed to all attendees with the opportunity to provide corrections within 14 days. Final minutes are included in (**Appendix C**).

7.5.8. Key Stakeholder and Authorities Meetings

The first round of Key Stakeholder and Authorities' Meetings took place in September 2016 (**Table 7.4**).

Table 7.4: Venues for Key Stakeholder Meetings

Area	Date	Venues	Time	Attendees
Piet Retief	Monday, 05 Sept 2016	Piet Retief Country Club West End Street, Piet Retief	10H00 – 12H30	9
Pongola	Tuesday, 06 Sept 2016	Pongola Country Lodge 14 Jan Mielie Street Pongola	10H00 – 12H30	13
Mkhuze	Wednesday, 07 Sept 2016	Ghost Mountain Inn Fish Eagle Road, Mkhuze	10H00 – 12H30	14
Hluhluwe	Thursday, 08 Sept 2016	Protea Hotel 104 Main Road, Hluhluwe	10H00 – 12H30	9

Invitations (copies were included in the Scoping Report) were sent to all registered I&APs. Minutes were prepared and distributed to all attendees with the opportunity to provide corrections within 14 days. Final minutes were included in the Final Scoping Report.

A second round of Key Stakeholder and Authorities meetings took place in September 2017. Due to the poor turnout at the first round of meetings, the second round of meetings were only arranged for Pongola and Mkhuze.

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The public and focus group meeting that took place during September 2017 to present the draft Scoping Reports and project description for the Distribution powerlines are listed in **Table 7.5**.

Table 7.5: Public and Focus Group Meetings during the Draft Scoping Report Comment Period

Area	Date	Venues	Time	Attendance
Paulpietersburg Farmers	Monday, 18 September 2017	Mr Mr Eckard Hiestermann's farm	14:00 – 15:00	8
Pongola	Tuesday, 19 Sept 2017	Pongola Country Lodge	10H00 – 12H30	15
Mkhuze	Wednesday, 20 Sept 2017	Ghost Mountain Inn	10H00 – 12H30	22

7.5.9. Focus Group Meetings

Two (2) focus group meetings were held during announcement phase and one during the Draft Scoping Report Comment Period the as follows:

Table 7.6: Focus Group Meetings

No	Date	Group/Target Audience	Venue	Time
1	09 September 2016	Ezemvelo	Queen Elizabeth Park, 1 Peter Brown Drive; Pietermaritzburg	10h00 – 11h30
2	25 October 2016	Landowners potentially affected by Iphiva Substation Sites	Ghost Mountain Inn	09h00 – 11h30
2	18 September 2017	Farmers in the Paulpietersburg area	Mr Hiestermann's Farm	14h00-15h00

Minutes of FGMs were compiled and distributed to attendees. (copies were included in the Scoping Report). FGMs will also be arranged during the DSR Comment Period, if required.

7.5.10. Meetings with traditional councils

32 Traditional Councils within the study area that could be affected by the project have been identified. Meetings have taken place with each of these councils as shown in **Table 7.7**. Minutes were included in the Scoping Report.

Table 7.7: Focus Group Meetings with Traditional Councils that have taken place

No	Meeting With	Venue	Date
1	Makhasa Traditional Council	Makhasa Tribal Court (Hluhluwe)	12 Sept 2016

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No	Meeting With	Venue	Date
2	Nibela Traditional Council	Nibela Tribal Court (Hluhluwe)	13 Sept 2016
3	AbakwaHlabisa Traditional Council	AbakwaHlabisa Tribal Court (Hlabisa)	14 Sept 2016
4	Mdletshe Traditional Council	Mdletshe Tribal Court (Hlabisa)	14 Sept 2016
5	Mpembeni Traditional Council	Mpembeni Tribal Court (Hlabisa)	15 Sept 2016
6	Myeni/Ntsinde Traditional Council	Myeni Tribal Court (Obonjeni)	20 Sept 2016
7	Ngwenya/Ntsinde Traditional Council	Ngwenya Tribal Court (Mkuze)	20 Sept 2016
8	Ndlangamandla Traditional Council	Ndlangamandla Tribal Court (Pongola)	21 Sept 2016
9	Sibiya Traditional Council	Sibiya Tribal Court (Pongola)	22 Sept 2016
10	Msibi Traditional Council	Msibi Tribal Court (Emgulatshani)	23 Sept 2016
11	Simelane Traditional Council	Simelane Tribal Court (Pongola)	26 Sept 2016
12	Gumbi Traditional Council	Gumbi Tribal Court (Pongola)	27 Sept 2016
13	Emgazini Traditional Council	Emgazini Tribal Court (Pongola)	28 Sept 2016
14	Ntshangase Traditional Council	Ntshangase Tribal Court (Pongola)	29 Sept 2016
15	Mavuso Traditional Council	Mavuso Tribal Court (Pongola)	03 Oct 2016
16	Klwana Traditional Council	Klwana Tribal Court (Piet Retief)	03 Oct 2016
17	Msiyane Traditional Council	Msiyane Tribal Court (Louwsberg)	04 Oct 2016
18	Empangisweni Traditional Council	Empangisweni Tribal Court (Langkraans)	05 Oct 2016
19	Khambi Traditional Council	Khambi Tribal Court (Gluckstadt)	06 Oct 2016
20	Emathongeni Traditional Council	Emathongeni Tribal Court (Vryheid)	07 Oct 2016
21	Hlahlindlela Traditional Council	Hlahlindlela Tribal Court (Swart Umfolozi)	12 Oct 2016
22	Othaka Traditional Council	Othaka Tribal Court (Nqutu)	12 Oct 2016
23	Mandlakazi Traditional Council	Mandlakazi Tribal Court (Emondlo)	13 Oct 2016
24	Usuthu Traditional Council	Usuthu Tribal Court (Nongoma)	13 Oct 2016
25	Dlamini Traditional Council	Dlamini Tribal Court (Nongoma)	18 Oct 2016
26	Ndlela Traditional Council	Ndlela Tribal Court (Paulpietersburg)	18 Oct 2016
27	Bhovungane Traditional Council	Bhovungane Tribal Court (Paulpietersburg)	19 Oct 2016
28	Mthethwa Traditional Council	Mthethwa Tribal Court (Paulpietersburg)	20 Oct 2016
29	Mpukunyoni Traditional Council	Mpukunyoni Tribal Court (Paulpietersburg)	21 Oct 2016
30	Usuthu Traditional Council	Usuthu Tribal Court (Mtubatuba)	25 Oct 2016

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No	Meeting With	Venue	Date
31	Gumbi Traditional Council	Gumbi Tribal Court (Nongoma)	26 Oct 2016
32	Mandlakazi Traditional Council	Mandlakazi Tribal Court (Pongola)	28 Oct 2016

All Traditional Council meetings were conducted in Zulu. Zulu BIDs were also distributed at these meetings. Additional copies were also provided to the Councilors, Izinduna and AmaKhosi. All comments received at these meetings have been incorporated into the CRR.

7.6. PUBLIC PARTICIPATION ACTIVITIES IN THE IMPACT ASSESSMENT PHASE

The following focus group meetings have taken place after the completion of the Final Scoping Report (minutes included in **Appendix C**):

- Birds Focus Group Meeting on 13 December 2018 in Johannesburg;
- Moolman Farmers Focus Group Meeting on 22 November 2017 in Piet Retief;
- Moolman Farmers site visit to the Normandie Substation 23 November 2017;
- EKZNW Meetings on 09 September 2016 in Queen Elizabeth Park.

This Draft EIA Report will be available for public comment from 26 April to 29 May 2018.

The comments received during this period will be incorporated into the Final EIA Report, and submitted to the DEA who will decide whether the project should go ahead and if so under which conditions. I&APs will be notified of DEA's decisions once it has been made.

The availability of the documents for public comment have been advertised in the following newspapers:

No	Publication	Insertion Date
1	Excelsior News	27-Apr-18
2	Ilanga	26-Apr-18
3	Mercury	25 or 26-Apr-18
4	Isolezwe	25 or 26 Apr-18

Pdf versions of the documents will be uploaded to the NAKO ILISO website. Provision has been made to cut 10 CDs of each of the sets of draft reports. These will be available at key stakeholder and authorities and focus group meetings, or posted to I&APs on request.

Table 7.8: Placing of draft documents at public venues

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Area	Venue	Address	Contact Details
Piet Retief	Piet Retief Public Library	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

All comments received will be recorded in the CRR.

The Draft EIA Report will also be presented at Key Stakeholder and Authorities meetings as listed in **Table 7.9**.

Table 7.9: Key Stakeholder and Authorities Meetings

Date and Time	Area	Address
Wednesday 09 May 2018 10h00 – 12h30	Pongola	Pongola Country Lodge 14 Jan Mielie Street, Pongola
Thursday 10 May 2018 10h00 – 12h30	Mkhuze	Ghost Mountain Inn Fish Eagle Road, Mkhuze

Invitations will be sent to all registered I&APs.

7.6.1. Focus Group Meetings

Focus group meetings scheduled for the Draft EIA Report comment period are presented in **Table 7.10**. Additional meetings will be scheduled as requested.

Table 7.10: Focus Group meetings scheduled for the Draft EIA Report comment period

Meeting Type and Target Audience	Day, Date and Time	Area	Venue & Physical Address
Public Meeting: Comondale Farmers Association	Monday 07 May 2018 15h00 – 17h30	Between Paulpietersburg and Piet Retief	Comondale Farmers Association
Public Meeting: Moolman Farmers Association	Tuesday 08 May 2018 10h00 – 12h30	Piet Retief	TWK Agri 11 De Wet Street Piet Retief

7.6.2. Meetings with traditional councils

Traditional Councils within the study area that could be affected by the project have been identified. Meetings with each of the Traditional Councils took place during the Scoping Phase. Follow up meetings are planned for the public comment period for the Draft EIA report. All Traditional Council meetings will be conducted in Zulu. All comments received at these meetings have been incorporated into the CRR.

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7.7. PUBLIC PARTICIPATION IN THE AUTHORISATION PHASE

Once the competent authority has made a decision on the project I&APs will be informed in writing and advised of their opportunity and the mechanism by which they can appeal.

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8 ISSUES RAISED

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3(h) (iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;

An issue is a point of concern around which debate can be held. These have been identified during the Scoping Phase of the project. An impact is how the natural, social or economic environment will be affected by a specific activity. These have been assessed in this phase (Impact Assessment Phase) of the project. The following key issues were identified by the EAP in consultation with I&APs, the applicant and specialists:

- Areas protected by National or Provincial conservation legislation;
- Fauna and Flora (including birds);
- Land use;
- Heritage;
- Social;
- Access;
- Construction Impacts; and
- Cumulative impacts.

8.1. PROTECTED AREAS

How will the Northern KZN Strengthening Project impact on areas protected by Provincial or National conservation legislation and associated biodiversity, tourism and investment value?

The study area is characterised by large number of protected and conservation areas (varying from provincially proclaimed reserves to private game reserves) (**Figure 9.5**), including (from the South African Protected Areas Database (2016)):

- Bendor Private Nature Reserve;
- Itala Nature Reserve;
- Ntendeka Wilderness Area;
- Somkhanda Game Reserve;
- Umkoonyan No1 Private Nature Reserve;
- Welkom Private Nature Reserve; and
- Witbad Nature Reserve.

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Private game reserves, such as the Manyoni Private Game Reserve (previously called the Zululand Rhino Reserve), which is owned by a consortium of owners, and the proposed Zimanga Private Game Reserve (owned by Mr Charl Senekal) develop facilities in the reserve for their own and tourist use. These reserves rely on income from tourists that make use of the facilities to fund their operations. The owners are concerned that **visual** impacts from the Iphiva Substation and/or any above-ground powerlines will reduce the number of visitors to lodges in the private game reserve, or the price that visitors are prepared to pay for the experience. This could impact on the **economic viability** of the existing lodges and potential **future developments and investors**.

If this happens, then it will reduce the **job opportunities** provided by the Reserves, as well as additional **income to the region** from tourists visiting the facilities, negatively impacting the **livelihoods of local communities**. Less income to the Reserves will also result in less funds available for looking after (e.g. supplementary feeding) and protecting important **Red Data species** such as rhinos and wild dogs.

If there is any construction inside a protected area, the Reserve management will have to provide additional **security** to protect the construction workers from the wild animals during construction, which will have a **cost**.

Construction will require the **clearing of vegetation** impacting on the biodiversity of the area. Removing some of the vegetation below the powerlines may have an impact on the **carrying capacity** of the Reserves that could financially impact the Reserve and its shareholders. Construction workers in the park increase the risk of **poaching**.

Response

The EAP recommends that any new powerlines in existing protected areas should be completely avoided, and believes that this is possible. It will, however, not be possible to completely avoid having sight of the powerlines from all protected areas, although this will be minimised as far as is possible.

The concern from the landowners is based on **sense of place**, and the value the owners and tourists place on the sense of place (which is subjective and will differ from person to person). It can be difficult to prove that any losses are specifically due to powerlines, as there are

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numerous factors that could impact on tourism, such as economic conditions, tourism trends, environmental aspects such as droughts etc.

The construction phase is a specifically vulnerable phase, as it is the phase with most activities.

These impacts have been assessed by a number of specialists.

A viewshed analysis has been undertaken for the lodges that are particularly close to potential impacts to test the impact (Visual Specialist Study in **Appendix J**). The assessment has been undertaken qualitatively as visual impact is a perception, and by nature, differs from person to person.

The economic specialist has assessed the potential economic impacts on these parties (**Appendix K**).

8.2. FAUNA AND FLORA

What impacts will the construction and operation of the Northern KZN Strengthening Project have on the natural environment (flora and fauna) of the region?

The construction of surface infrastructure will entail the removal/clearing of vegetation, which will affect the current vegetation present in the study area. Habitat utilised by mammals, amphibians, reptiles and birds species will also be lost. Open areas will facilitate the establishment of alien invasive plant species. Protected plant and animal species could be affected by construction activities.

The potential impacts on Red Data Species and Birds were raised by I&APs. Birds are impacted by Electrocutions, Collisions, Habitat Destruction and Disturbance.

Electrocutions

The electrocution of birds on overhead powerlines can cause unnatural mortality of a number of bird species in Southern African. The larger terrestrial dwelling species and birds of prey are the most susceptible. The electrocution can occur when a bird is perched or attempts to perch on the electrical structure and causes an electrical short circuit by physically bridging the air gap between live components and/or live and earthed components (Van Rooyen 2004). Electrocution is possible on 400 and 132 kV powerlines, especially where large raptors and

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vultures feature prevalently. It is very likely that vultures will occur in the study area as well as large eagles, ibises and buzzards, so the risk of electrocution is high.

Collisions

Collisions are the biggest single threat posed by over-head powerlines to birds in Southern Africa (Van Rooyen 2004). In general, large powerlines with earth wires that are not always visible to birds can have the largest impact in terms of these collisions. Most heavily impacted upon are korhaans, bustards, storks, cranes and various species of water birds. These species are mostly heavy-bodied birds with limited manoeuvrability, which makes it difficult for them to take the necessary evasive action to avoid colliding with powerlines (Van Rooyen 2004). Unfortunately, many of the collision sensitive species are considered threatened in Southern Africa.

Red Data, rare and endemic species vulnerable to powerline collisions are generally long living, slow reproducing species. Some of the larger terrestrial dwelling species like bustards and cranes require very specific conditions for breeding, resulting in very few successful breeding attempts, or breeding might be restricted to very small areas. These species have not evolved to cope with high adult mortality, with the results that consistent high adult mortality over an extensive period could have a serious effect on a population's ability to sustain itself in the long or even medium term. The project area has a number of these species that are susceptible to powerline collisions.

Many of the anthropogenic threats including habitat destruction, disturbance and powerlines all contribute to adult mortality of these larger Species of Special Concern and it is not known what the cumulative effect of these impacts could be over the long term. Collisions of certain large flying bird species such as Great White Pelican (*Pelecanus onocrotalus*), Pink-backed Pelican (*Pelecanus rufescens*), Saddle-billed Stork (*Ephippiorhynchus senegalensis*), Yellow-billed Stork (*Mycteria ibis*), Woolly-necked Stork (*Ciconia episcopus*), Lesser Flamingo (*Phoenicopterus minor*), Black-bellied Bustard (*Lissotis melanogaster*), Secretarybird (*Sagittarius serpentarius*) and the three crane species, are all a possibility within the project area.

A number of new species of special concern are now regarded as being of high collision threat. These include African Pygmy Goose (*Nettapus auritus*), Southern Ground Hornbill (*Bucorvus*

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leadbeateri), Hooded Vulture (*Necrosyrtes monachus*), Bateleur (*Terathopius ecaudatus*), African Marsh Harrier (*Circus ranivorus*) and Black Harrier (*Circus maurus*).

Habitat destruction

Habitat clearing and alteration inevitably takes place during the construction of powerlines. This happens with the construction of access roads, and the clearing of servitudes. Servitudes also have to be cleared of excess vegetation at regular intervals during the operational phase. These activities impact on breeding, foraging and roosting in or in close proximity of the servitude through modification of habitat (Van Rooyen, 2004).

Disturbance

Similarly, the above mentioned construction and maintenance activities impact on birds through disturbance, particularly during ground breeding activities within species. Uncontrolled vehicle access results in unnecessary loss of indigenous and riparian vegetation and preferred habitat for breeding bird species such as lark, pipit, lapwing, courser and bustard species.

Response

These impacts have been assessed in the fauna and flora and avifauna specialists' studies. Impacts, as a result of powerlines, are linked to the risk that they present for bird collisions and mortality and to a lesser extent the limitations on flora in the servitude. As such, the impacts are potentially more significant for the access roads during **construction**, whereas for powerlines during **operations**.

Alien Invasive plant species can be controlled with the implementation and regular monitoring of Eskom's Invasive Species management plan.

Impacts on Protected Plant and Animal Species must be addressed through a species of special concern management plan (EMPr). Impacts could be addressed through avoidable, mitigation, rehabilitation, compensation and offsets.

8.3. COMMERCIAL FARMING

What impacts will the construction and operation of the Northern KZN Strengthening Project have on commercial farming in the region?

In terms of commercial farming, sugar cane and forestry are concerns when it comes to the presence of powerlines (**Figure 8.1**).

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Sugar cane needs to be burnt. If it is burnt below powerlines the smoke provides a conductor and creates arcs to the ground resulting in the risk of powerlines tripping. Although there are methods other than burning to harvest sugar cane, these are more expensive and labour intensive.

Fire is a great risk for the forestry sector, and a spark or a snapped powerline could cause extensive damage.

Farmers in the north west of the study area have voiced their concerns in a series of focus group meetings (**Appendix C**). Their concerns included:

- Late identification and involvement in the EIA process;
- Impacts on homesteads;
- Loss of forestry, grazing and cultivated lands;
- Noise pollution and health hazards;
- Visual impacts;
- Long terms financial losses;
- Using a local wood fuelled power station as an alternative to Transmission Powerlines from the coal fires power stations;
- Impacts on cell phone communication;
- Safety for small planes and helicopters used for firefighting and crop spraying;
- Risk of fire;
- Maintenance of fire breaks; and
- Impacts on farm workers.

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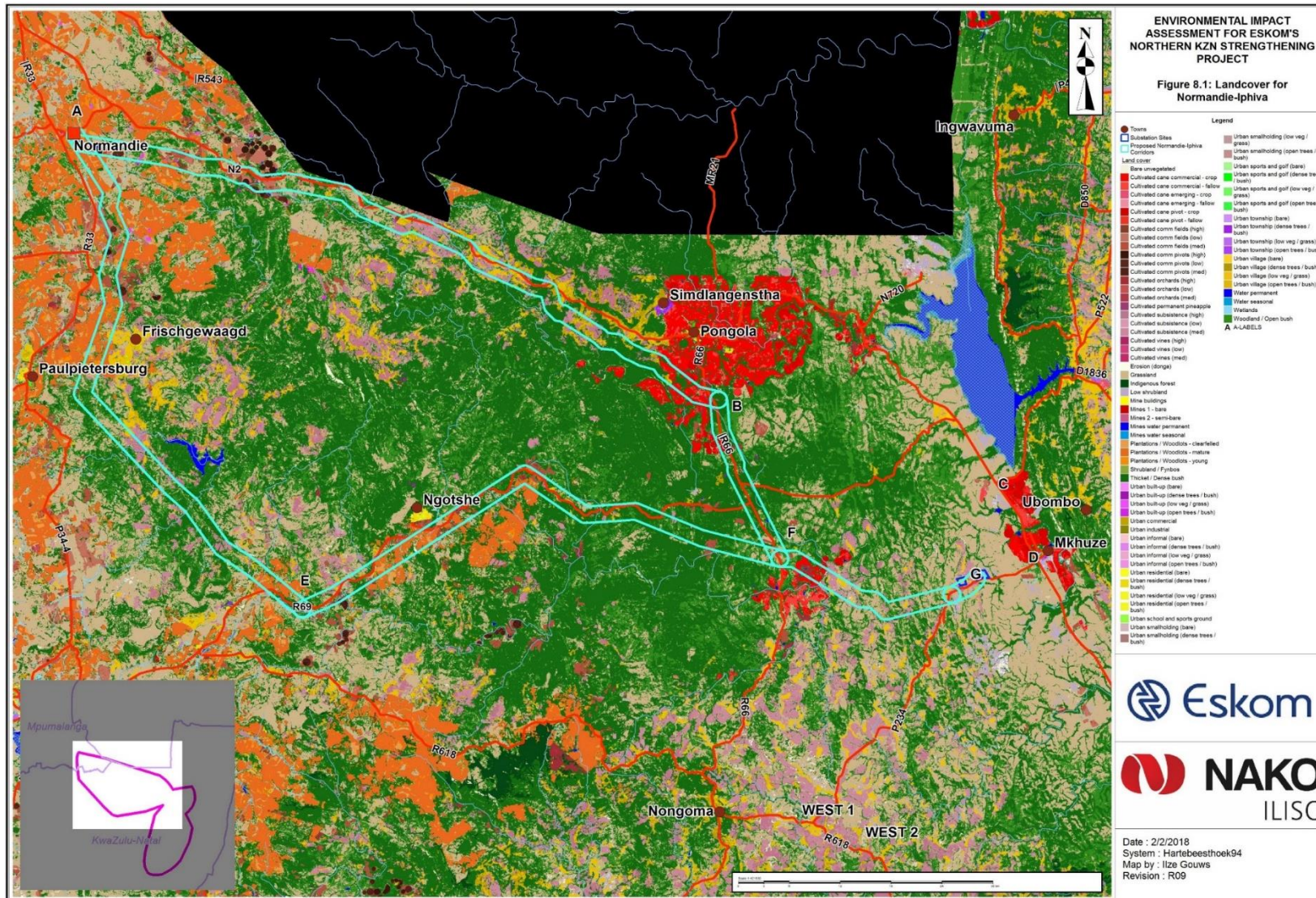


Figure 8.1: Land cover

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8.4. HERITAGE

What effects will the construction of the powerline have on cultural heritage resources?

An impact to a heritage resource from a project related activity may manifest in several ways. These impacts are not always comparable in scale. In addition, project activities can influence the significance of heritage resources without any actual physical impact on the resources taking place.

Heritage impacts can therefore generally be placed into three broad categories (adapted from Winter & Bauman 2005: 36):

- **Direct or primary heritage impacts** affect the fabric or physical integrity of the heritage resource, for example, destruction of an archaeological site or historical building. Direct or primary impacts may be the most immediate and noticeable. Such impacts are usually ranked as the most intense, but can often be erroneously assessed as high-ranking; and
- **Indirect, induced or secondary heritage impacts** can occur later in time or at a different place from the causal activity, or as a result of a complex pathway. For example, restricted access to a heritage resource resulting in the gradual erosion of its significance that may be dependent on ritual patterns of access. Although the physical fabric of the resource is not affected through any primary impact, its significance is affected that can ultimately result in the loss of the resource itself.

Response:

The Heritage Specialist Study (**Appendix F**) identifies and assesses the impacts of this project on Heritage Resources.

8.5. SOCIAL

What are the potential social impacts associated with the construction and operation of the proposed powerline?

A social impact is something that is experienced or felt by humans. It can be positive or negative. Social impacts can be experienced in a physical or perceptual sense. Therefore, two types of social impacts can be distinguished:

- Objective social impacts – i.e. impacts that can be quantified and verified by independent observers in the local context, such as changes in employment patterns, in standard of living or in health and safety.
- Subjective social impacts – i.e. impacts that occur “in the heads” or emotions of people, such as negative public attitudes, psychological stress or reduced quality of life.

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It is important to include subjective social impacts, as these can have far-reaching consequences in the form of opposition to, and social mobilisation against the project (Du Preez & Perold, 2005).

It is very likely that a number of social change processes will be set in motion by the project. Whether or not these processes cause social impacts will depend on the successful implementation of mitigation measures. The social environment is, however, dynamic and constantly changing, making it difficult to predict exact impacts. External processes not related to the project, like political changes or global economic changes can alter the social environment in a short period of time, and therefore alter the predicted impacts.

Sources of social impacts are often not as clear-cut as those in the biophysical environment. Social impacts are not site-specific, but occur in the communities surrounding the proposed site – where the people are.

Response:

A Social Special study has been undertaken (**Section 10.4.6** and **Appendix D**).

8.6. ACCESS

In order to implement the proposed powerline, Eskom and its contractors will require access to tower positions and servitudes.

Existing roads will be used, and upgraded if necessary, wherever possible. In some cases, new temporary or permanent access roads may need to be constructed within the corridors assessed. Access roads are therefore included in the application, project description, assessment and EMPr.

Initial field work has revealed that some areas of the study area already have significant erosion resulting from other activities.

Response

The comparative assessment of the initial alternatives undertaken in the Scoping phase considered access roads. The soils and agricultural potential specialist study has considered

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erosion in (Section 10.4.5 and Appendix E). Mitigation measures and monitoring requirements have been included in the EMPr.

8.7. CONSTRUCTION IMPACTS

What impacts will the common construction activities of powerlines have?

Construction activities cause a well-known suite of impacts and risks. These include dust, noise, visual intrusion, increased traffic, erosion, pollution, waste generation and social impacts as a result of an influx of construction workers.

A real potential exists for surface and groundwater pollution as well as impacting on the volume and flow patterns of surface and groundwater.

Response

These impacts have been addressed in the EMPr, which includes mitigation measures recommended by specialists in their studies. Although no specialist studies on the impacts on surface and groundwater was commissioned mitigation plans have been prescribed.

8.8. CUMULATIVE IMPACTS

What cumulative effects will the proposed powerline contribute to?

GN 982 defines a cumulative impact in relation to an activity as “*the past, current or reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities*”.

In terms of cumulative impacts, this project is directly affected by the proposed Iphiva Substation because the powerline will have to loop into that new substation. If the new powerline is constructed next to an existing powerline then this would also be considered a cumulative impact. The Iphiva-Pongola 2 132 kV Powerline also shares part of the Normandie-Iphiva 2 corridor. No other reasonably foreseeable future activities that will result in cumulative impacts have been identified.

Response

The Normandie-Iphiva 400 kV powerline is not being assessed in isolation, but in conjunction with the proposed new Iphiva Substation, as well as the other 400 kV powerline and 132 kV

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powerlines that will link into Iphiva. Therefore the foreseeable future has been taken into account, in both the Scoping comparative assessment and this phase. This is also the main reason that the four applications are being assessed together as part of an overall scheme.

Impacts from past and current activities have also been taken into account in description of the receiving environment (**Chapter 9**).

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9 ENVIRONMENTAL ATTRIBUTES

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3h(1) (iv) the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;

As components of the Northern KZN Strengthening Project (the substation, two 400 kV powerlines and 165 km of 132 kV powerlines) impact on each other and are being assessed concurrently, the environmental attributes discussed below generally cover the greater study area that include all these components.

9.1. CLIMATE

The area has warm to hot summers, high evaporation, dry warm winters and a mean annual rainfall between 495 and 1 560 mm. Average rainfall is higher in the western parts next to the hills and decreases gradually to the eastern parts further from the hills.

9.2. GEOLOGY

This region of KZN is underlain by lithostratigraphic units associated with the Karoo Supergroup (Main Karoo Basin), ranging in age from Late Carboniferous to Middle Jurassic. The Karoo Supergroup is famously known for its terrestrial vertebrate fossils, distinctive plant assemblages, thick glacial deposits and extensive dolerite dykes and sills.

9.3. LANDSCAPE AND TOPOGRAPHY

The dominant landscape features are valley slopes to undulating hills and flat plains with a network of trailing rivers and smaller streams.

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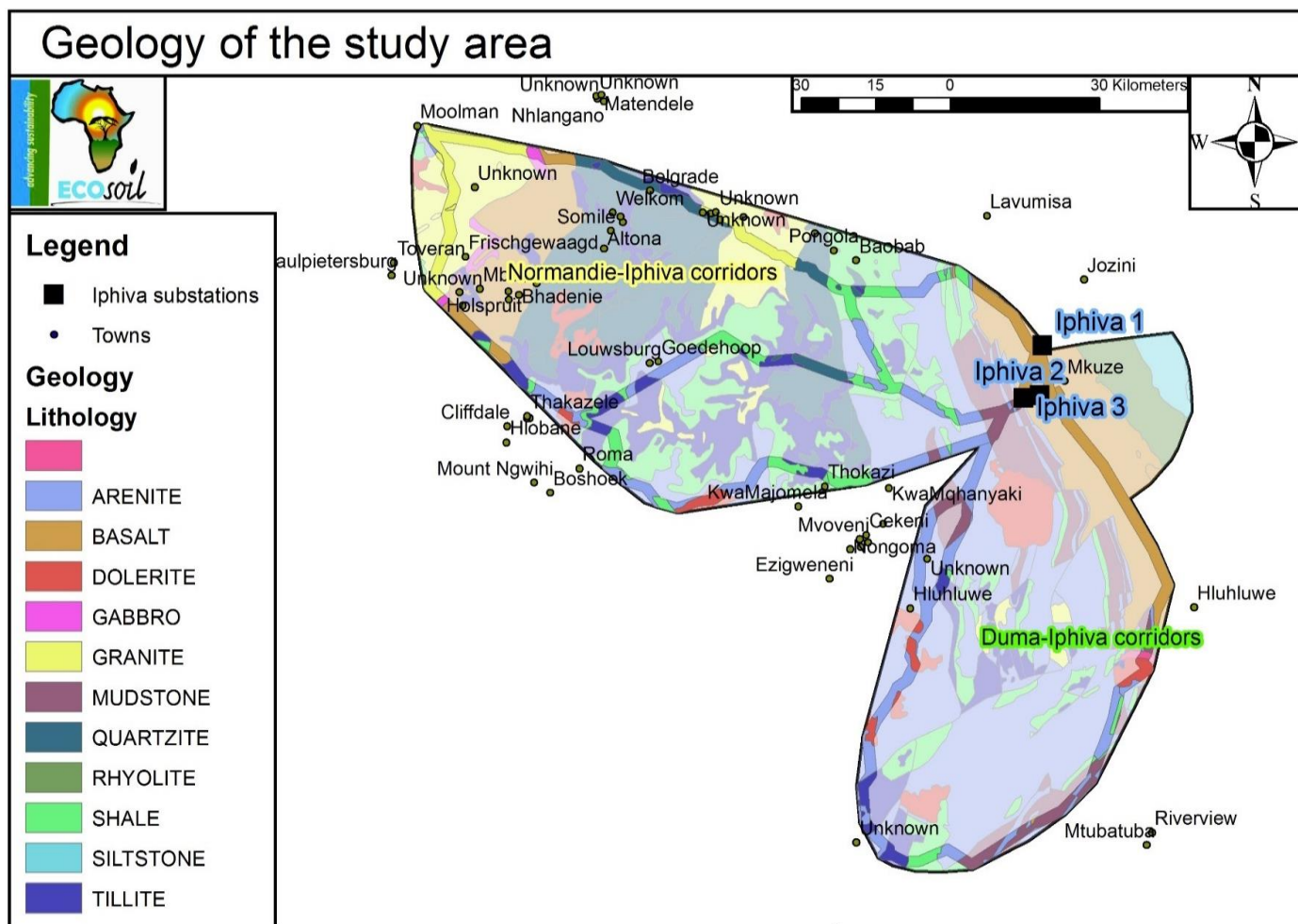


Figure 9.1: Geology

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Mean elevation ranges from 0 m above mean sea level (mamsl) to 1 560 mamsl. The typical height increases as one moves further away from the coast. Eastern areas ranges from 0 – 910 mamsl, while areas in the west ranges from 655 – 1 560 mamsl.

9.4. SOILS

The Fb soil group occupies a large percentage (42.6 %) of land in the Normandie-Iphiva corridors. These Fb group of soils are shallow and of low agricultural potential and have rock or weathered rock as underlying material.

Small numbers of hectares have deep soils (>750 mm) in the corridors and soil depth is more likely to be between 450 to 750 mm. Clay contents is generally between 15 and 35 % in both corridors. Almost 10.2 % of the soils in the Normandie-Iphiva corridors have clay contents more than 35 % and may therefore be susceptible to water erosion. Soils should always be kept covered with plants or crops to prevent erosion.

31.6 % of the soils have a restricted soil depth associated with rockiness.

9.5. AGRICULTURE POTENTIAL

The areas presently affected for agricultural and forestry purposes and communal activities are indicated in **Figure 9.2**. The present agricultural activities in the ranking order within the Normandie-Iphiva 400 kV Powerline Corridors include:

- Game farming
- Forestry
- Commercial farming include:
 - Maize and other grain crops
 - Sugarcane under irrigation
 - Macadamia
 - Citrus
 - Pineapples
 - Essential oils
 - Subtropical fruit like banana, mango
 - Vegetables
 - Cattle, sheep production
- Subsistence farming and Communal Activities
- Natural vegetation for grazing

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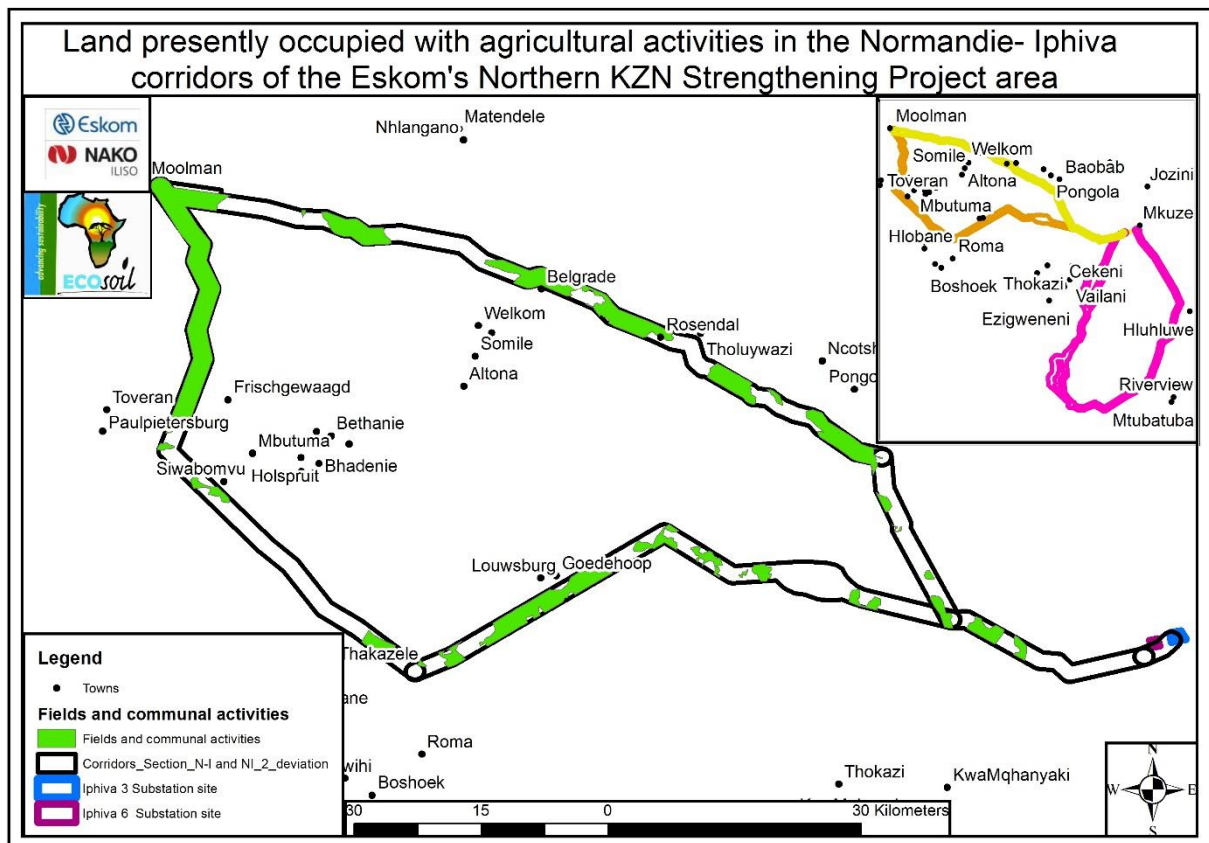


Figure 9.2. Land presently occupied by agricultural activities in the Iphiva-Normandie corridors of Eskom’s Northern KZN Strengthening Project area

52.2% of soils is not suitable for arable agriculture, but is suitable for forestry or grazing. Only small patches in the study area have a high potential agricultural value.

9.6. WATER RESOURCES

9.6.1. Drainage and Quaternary Catchments

The proposed powerline routes will directly traverse a total of 13 quaternary catchments, as listed in **Table 9.1**.

Table 9.1: Quaternary catchments

Quaternary Catchment	Major watercourse
W21K	White Mfolozi River; Nhlungwane ¹ ; and Mbilane tributary ¹ .
W21L	White Mfolozi River; Munywana tributary ¹ ; and Mayayeni tributary ¹ .
W22J	Black Mfolozi River.
W22K	Wela tributary ² ; and Mvalo tributary ² .
W23A	Mfolozi River; Mvamanzi tributary ³ ; Nkatha tributary ³ ; and Mbukwini tributary ³ .

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Quaternary Catchment	Major watercourse
W31F	Nkunzana tributary ⁴ ; and Mpuphisi tributary ⁴ .
W31G	Mkuze River; and Mtiki tributary ⁴ .
W31H	Mkuze River; and Kwasekane tributary ⁴ .
W31K	Msunduzi tributary ⁴ ; Ntweni tributary ⁴ ; Msebe tributary ⁴ ; and Mduna tributary ⁴ .
W32C	Mzinene tributary ⁵ ; Mhlosinga tributary ⁵ ; Ngweni tributary ⁵ ; and Munywana tributary ⁵ .
W32E	Hluhluwe River ⁵ .
W32F	Nzimane tributary ⁶ ; Manyisa tributary ⁶ ; and Manzabomvu tributary ⁶ .
W32G	Nyalazi River ⁵ ; Hlazane tributary ⁵ ; Sikhathula tributary ⁵ ; Mnyaba tributary ⁵ ; and Nsane tributary ⁵ .

Key: ¹ denotes tributaries of the White Mfolozi River; ² denotes tributaries of the Black Mfolozi River; ³ denotes tributaries of the Mfolozi River; ⁴ denotes tributaries of the Mkuze River; ⁵ denotes tributaries of the St Lucia estuary; ⁶ denotes tributaries of the Hluhluwe River.

The major rivers associated with wetland and riparian habitat along the powerline routes include: the Pongola River and its tributaries traversed by the Normandie-Iphiva corridors, as well as the Mkuze and Hluhluwe Rivers.

9.1.1 National Freshwater Ecosystem Priority Areas

The National Freshwater Ecosystem Priority Areas (NFEPA) (Nel *et. al.*; 2011) are strategic spatial priorities for conserving the country's freshwater ecosystems and supporting sustainable use of water resources were considered to evaluate the importance of the wetland areas located within the project area (Nel *et. al.*; 2011). **Figure 9.3** shows the distribution of NFEPA wetlands associated with the study area.

Section A-B of the Normandie-Iphiva route traverses a large valley flat wetland of rank 2 (important for the maintenance of biodiversity), as well as numerous rank 4 (wetlands in good ecological condition) and 5 (wetlands identified for future rehabilitation efforts) wetlands.

A rank 1 wetland has been identified by NFEPA, which is attributable to the presence of a Ramsar wetland associated with the study site (found 2 km from the study area). The St Lucia Ramsar site consists of a complex arrangement of coastal dune forest, marine, estuarine and fresh water wetlands and hygrophilous grassland to the east of the study area. As a consequence, any wetlands linked to the adjacent Ramsar site should be conserved.

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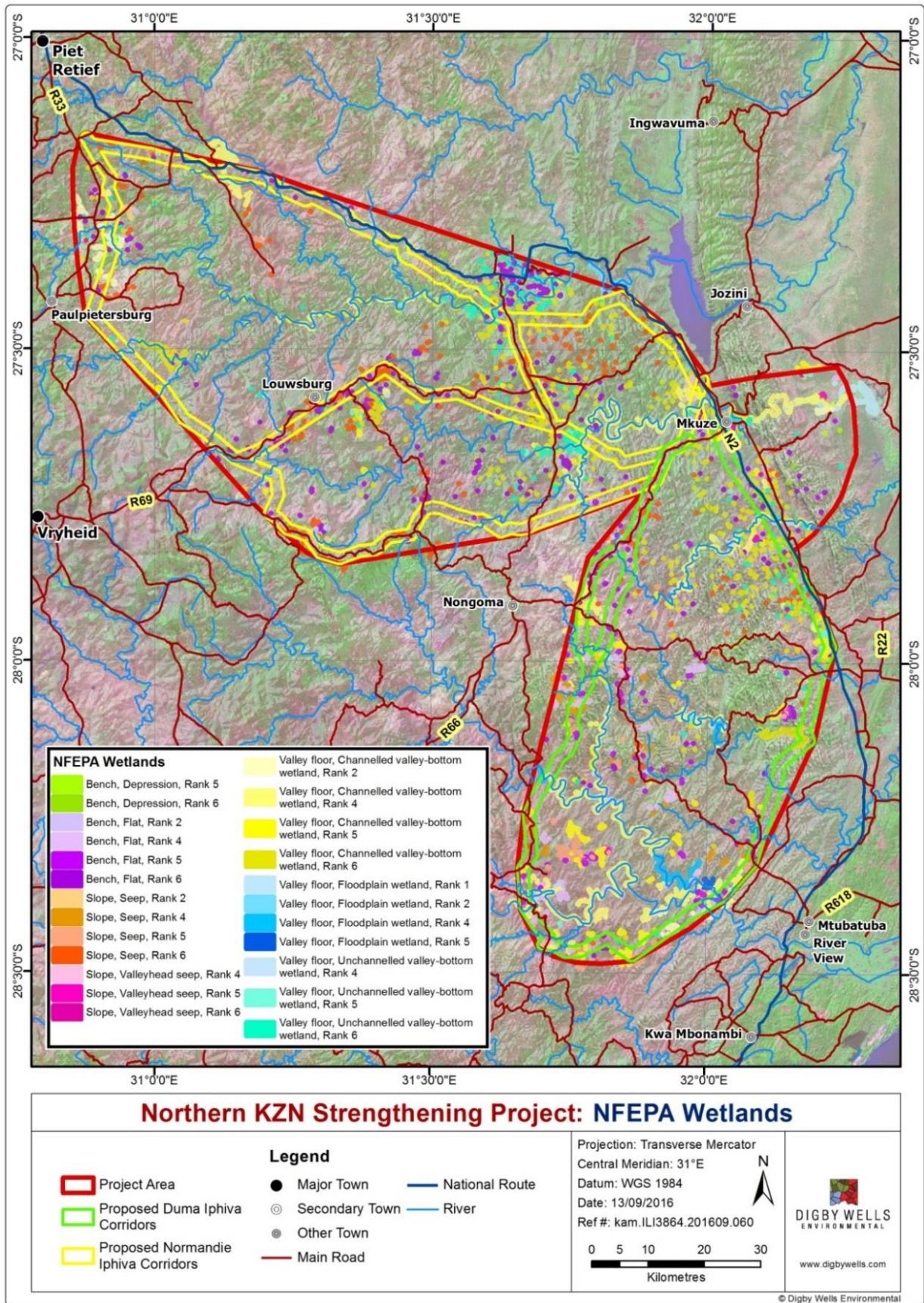


Figure 9.3: National Freshwater Ecosystems Priority Areas

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9.7. FAUNA AND FLORA

9.1.2 Regional Vegetation

The KZN Vegetation Type map has undergone several changes since the publication of the Mucina and Rutherford (2006) national Vegetation Types. Ezemvelo has, in collaboration with various government departments, NGOs, Working Groups and Forums e.g. KZN Wetland Forum, IAIA (members of the International Association for Impact Assessment), municipalities and parastatals, refined the KZN Vegetation Types to develop an accurate representation of the pre-transformation extent of the vegetation types present. As a result of the finer scale mapping and classification, KZN vegetation types map has in some cases identified new vegetation types and or subtypes within the vegetation types identified at national level. The sub-types in some instances have different red data statuses from the main vegetation type, and are indicated as such (**Appendix G**). The fauna and flora specialist focussed on high conservation status vegetation in his field.

9.1.3 Flora

Species of Special Concern

The Red Data listed species that have been recorded previously in relevant 26 Quarter Degree Square Grid (QDS grids) are listed in the Fauna and Flora Specialist study (**Appendix G**). This list is supplemented with data received from Ezemvelo in January 2017. Within this list three species are designated as Critically Endangered, 15 species as Declining, ten species as Endangered, 13 species as Near Threatened, five species as Rare, one species as Threatened and 21 species as Vulnerable. No champion trees occur within the route alignments. (DAFF 2012).

9.1.4 Fauna

Mammals

A database search for mammal species that have been recorded in the 26 QDS grids, on the virtual museum of the Animal Demography Unit (<http://www.adu.org.za>) was performed (**Appendix G**). This database forms part of the Department of Biological Science at the University of Cape Town.

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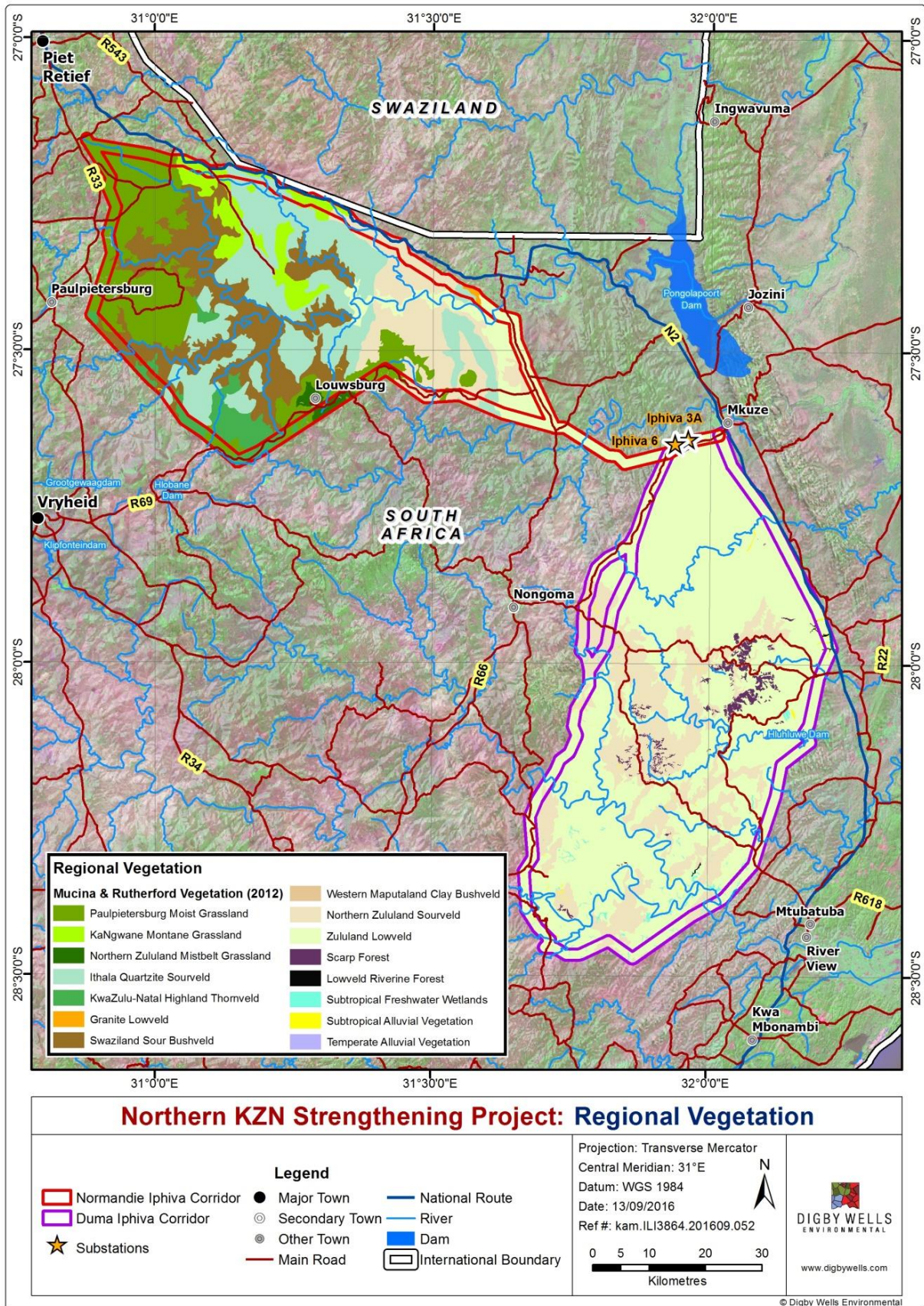


Figure 9.4: Regional Vegetation Types (Mucina and Rutherford 2012)

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Mammal species expected to occur in the study area of include eight Vulnerable species, two Near Threatened, one Critically Endangered species and two Endangered. The variety of vegetation types occurring in the study area ensures an ecologically diverse assemblage of plant species which in turn could support a variety of mammal species, therefore the expected species list could be more extensive than is currently.

21 bat species of conservation concern can possibly be present in the area of interest.

Reptiles

Reptiles are ectothermic (cold-blooded) meaning they are organisms that control body temperature through external means. As a result reptiles are dependent on environmental heat sources. Due to this many reptiles regulate their body temperature by basking in the sun, or in warmer areas. Substrate is an important factor determining which habitats are suitable for which species of reptile.

According the Animal demography unit's virtual museum a total of 60 species have been recorded in the relevant QDS grids in the past (<http://sarca.adu.org.za/>). Only three protected species are expected to occur within the Transmission powerline corridors and proposed substation sites.

Amphibians

Amphibians are viewed be good indicators of changes to the whole ecosystem because they are sensitive to changes in the aquatic and terrestrial environments (Waddle, 2006). According to Carruthers (2009), frogs occur throughout southern Africa. No protected amphibian or NEMBA protected species are expected to occur in the study area.

Invertebrates

Butterflies are a good indication of the habitats available in a specific area (Woodhall 2005). Although many species are eurytropes (able to use a wide range of habitats) and are widespread and common, South Africa has many stenotrope (specific habitat requirements with populations concentrated in a small area) species which may be very specialised (Woodhall 2005). Butterflies are useful indicators as they are relatively easy to locate and catch, and to identify.

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Birds

The project area falls within the northern section of KZN and the region is well known for its large wetlands, river systems, grassland hills, bushveld and diverse micro-habitats. 58 of Southern Africa's endemic and near endemic avifaunal species are found within the project area, many of them confined to the grassland, riparian and wetland systems. Although the summer months are more productive for the diversity of species due to the arrival of breeding migrants, winter provides large congregations of water birds around some of the nationally important wetlands found within or close to the project area.

The site falls within the Maputaland-Pondoland Centre of Endemism, which is a biodiversity hotspot. There is an Important Bird Area (IBA) within the current proposed project area, namely; the Ithala Game Reserve. There are a further three IBAs in close proximity, namely the Hluhluwe–Umfolozzi National Park, the Pongola Nature Reserve and the Mkuze Game Reserve which forms part of the greater Isimangaliso Wetland Park.

Collectively these IBA's would constitute some of the most avifaunal rich and diverse areas in South Africa. Many of the areas outside these IBAs will have similar habitat and species will therefore not be restricted to the protected areas.

The Ithala Game Reserve is located 15 km from the town of Louwsburg south of the Pongola River. This IBA is known to support more than 300 bird species, a diversity that can be attributed to its variety of habitat it supports including Ithala Quartzite Sourveld Grassland vegetation (Mucina and Rutherford, 2006). In the higher altitude areas the vulnerable Southern Bald Ibis (*Geronticus calvus*), Blue Crane (*Anthropoides paradiseus*) and several large bird of prey species including the endangered White-backed Vulture (*Gyps africanus*), Lappet-faced Vulture (*Torgos tracheliotos*), Martial Eagle (*Polemaetus bellicosus*), Bateleur (*Terathopius ecaudatus*) and Tawny Eagle (*Aquila rapax*) occur. African Grass Owl (*Tyto capensis*) occurs in the grassland areas. (Birdlife.org.za).

The Pongola Nature Reserve IBA is located 30 km south-east of Pongola town. The Pongola River flows in from the north-west and only a small section of the river lies inside the reserve. The vegetation predominantly consists of Zululand Lowveld (Mucina and Rutherford, 2006). The associated wetlands are important for wetland-dependent birds such as the Pink-backed Pelican (*Pelecanus rufescens*) which has bred in the past, making this one of only two sites in South Africa where it does so.

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Globally threatened species include the endangered vulture species such as Lappet-faced Vulture (*Torgos tracheliotos*), White-headed Vulture (*Trigonoceps occipitalis*), White-backed Vulture (*Gyps africanus*) and Martial Eagle (*Polemaetus bellicosus*). Regionally threatened species are Marabou Stork (*Leptoptilos crumeniferus*), African Marsh Harrier (*Circus ranivorus*), African Grass Owl (*Tyto capensis*) and Tawny Eagle (*Aquila rapax*). Biome-restricted species include White-throated Robin-Chat (*Irania gutturalis*), Gorgeous Bush-Shrike (*Telophorus viridis*) and Rudd's Apalis (*Apalis ruddi*).

The Mkuze IBA is located on the western edge of the Isimangaliso Wetland Park which is both a Ramsar Site and a World Heritage Site. Here a number of large pan systems exist and therefore the IBA is home to a number of Red Data Listed wetland and aquatic species. There are important water courses and wetlands that are associated with the river systems in the central and southern region of the study area, as well as in the east within the Mkuze Game Reserve. These wetlands may well be seasonal but occasionally inundated with water and associated with the “Subtropical Alluvial Vegetation” vegetation type (Mucina & Rutherford 2006). The larger rivers and associated sandbanks provide habitat for various wading species including, Lapwings, Plovers, Stilts and Sandpipers.

Rivers and drainage lines also represent important flight paths for many species. These areas will be very important for assorted water bird species, and construction of the new powerline in close proximity to these areas should be avoided.

The Hluhluwe–Umfolozu IBA is located 20 km north-west of the town Mtubatuba, at the junction of the coastal plain and the foothills of the KZN interior. The local vegetation is classified as Zululand Lowveld and Northern Zululand Thornveld (Mucina and Rutherford, 2006). This region to the south of the proposed project area is known to support more than 400 bird species, about 46% of the species found in the southern African sub-region (birdlife.org.za). The bird diversity within the region can be attributed to the variety of habitats in this area. This diversity includes a number of important populations of large, widespread Red Data Listed birds of prey that have suffered outside the protected areas.

Large terrestrial species found here and are susceptible to powerline collisions include Black Stork (*Ciconia nigra*), Woolly-necked Stork (*C. episcopus*), African Openbill (*Anastomus lamelligerus*) and Saddle-billed Stork (*Ephippiorhynchus senegalensis*). Several endangered vulture species that are rare outside South Africa's large parks are locally common here.

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Various sensitivity zones have been identified on a desk top level, associated with protected areas and IBAs, including potentially pristine or secondary grassland, bushveld/thornveld and sand forest, wetlands, pans and rivers. Avifaunal input into the Final EMPr will be compiled via a walkdown of the final powerline route when a specialist will identify the areas for marking and areas to install deflectors to mitigate for bird collisions.

The South African Bird Atlas Project data (SABAP2) has recorded a total of 29 Red Data species according to the International Union for Conservation of Nature (IUCN, 2016), these comprise 3 Endangered species, 11 Vulnerable species and 13 Near-threatened species and are presented in the Avifauna Specialist Study in Appendix H.

9.8. IDENTIFICATION OF ENVIRONMENTAL SENSITIVITIES

In terms of ecological sensitivity, the following features are assessed to determine how sensitive the habitat identified within the transmission line corridors is:

- Presence or absence of Red Data or protected plant and animal species;
- Presence or absence of exceptional species diversity;
- Extent of intact habitat in good ecological condition in the absence of disturbance; and
- Presence or absence of important ecosystems such as Protected Areas, areas demarcated for future protected area status (National Protected Areas Expansion Strategy [NPAES]) and wetlands.

Terrestrial conservation priorities highlighted in the Terrestrial Systematic C-Plan for the Province (EKZNW, 2010). According to this plan, the majority of the project site and proposed corridors fall within areas known as Biodiversity areas, all the alternatives cross Critical Biodiversity areas 1 Mandatory, or Critical Biodiversity areas Optimal.

Biodiversity Priority Areas (BPAs) refer to natural areas that are viewed as necessary to ensure protection of biodiversity, environmental sustainability, and human well-being. The importance of the biodiversity features in BPAs and the associated ecosystem services is sufficiently high that, if their existence and condition are confirmed, the likelihood of a fatal flaw for new development projects is high (i.e. development projects are likely to be significantly constrained or may not receive necessary environmental authorizations).

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9.8.1. Critical Biodiversity Areas including Centres of Endemism

The Transmission powerline corridors falls within the Maputaland-Pondoland Centre of Endemism, this is a biodiversity hotspot. Stretching along the east coast of southern Africa, from southern Mozambique through KZN and the Eastern Cape in South Africa, the recently recognized Maputaland-Pondoland-Albany Hotspot is an exceptionally diverse area.

The hotspot is the meeting point of six of South Africa's eight major vegetation types. The region boasts an unusually high number of unique species and ecosystems, with one type of forest (sand forest), six types of bushveld and five types of grassland restricted to the hotspot, as well as an entire vegetation type called "subtropical thicket."

The hotspot is a refuge for the critically endangered Black Rhino. It is estimated that only 3,600 Black Rhino remaining in the wild (compared with 65,000 animals recorded in the 1970s), most of which are restricted to this hotspot.

The hotspot is also home to most of South Africa's natural forests, and with nearly 600 tree species it has the highest tree diversity of any temperate forest in the world. The region is home to the 'Big Five' game animals (elephant, lion, rhino, leopard and Cape buffalo).

Critical Biodiversity Areas are areas required to meet biodiversity targets for ecosystems, species and ecological processes, as identified in a systematic biodiversity plan.

9.8.2. Sensitivity and Conservation Planning Tools

There are several assessments for South Africa as a whole, as well as on provincial levels that allow for detailed conservation planning as well as meeting biodiversity targets for the country's variety of ecosystems. These guides are essential to consult for development projects, and have formed an important part of the sensitivity analysis. Areas earmarked for conservation in the future, or that are essential to meet biodiversity and conservation targets should not be developed, and have a high sensitivity as they are necessary for overall functioning. In addition, sensitivity analysis in the field based in much finer scale data can be used to ground truth the larger scale assessments and put it into a more localised context.

Protected areas

Officially protected areas, either provincially or nationally that occur close to a project site could have consequences as far as impact on these areas are concerned. Protected areas

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that occur within the broader study area (South African Protected Areas Database (2016) are presented on **Figure 9.5**.

Nationally Threatened Ecosystems

The list of national Threatened Ecosystems has been gazetted (NEM:BA: National list of ecosystems that are threatened and in need of protection) and result in several implications in terms of development within these areas (**Figure 9.6**).

National Protected Areas Expansion Strategy

The NPAES are areas designated for future incorporation into existing protected areas (both National and informal protected areas). These areas are large, mostly intact areas required to meet biodiversity targets, and suitable for protection. They may not necessarily be proclaimed as protected areas in the future and are a broad scale planning tool allowing for better development and conservation planning (**Figure 9.7**).

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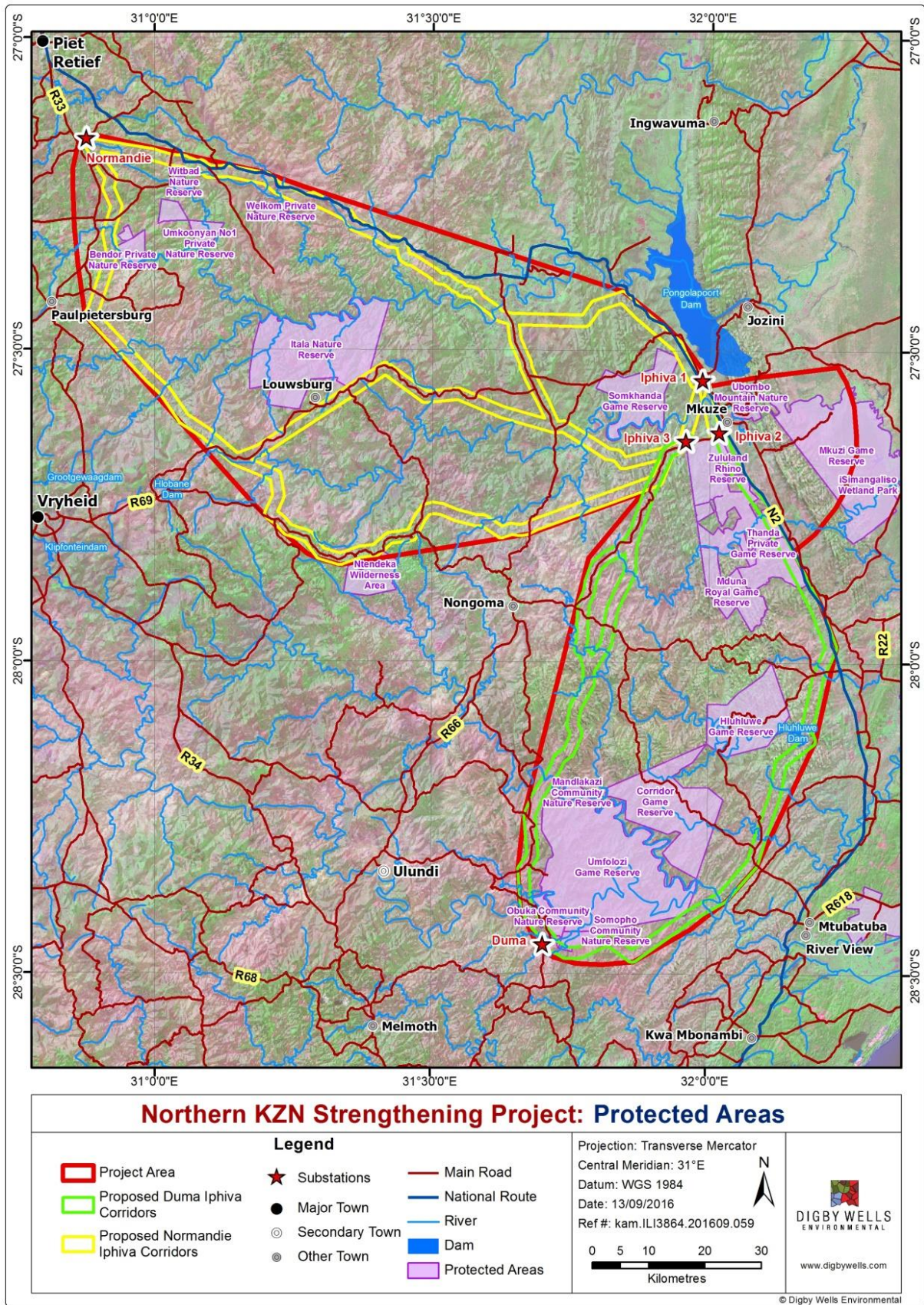


Figure 9.5: Protected area in relation to the study site

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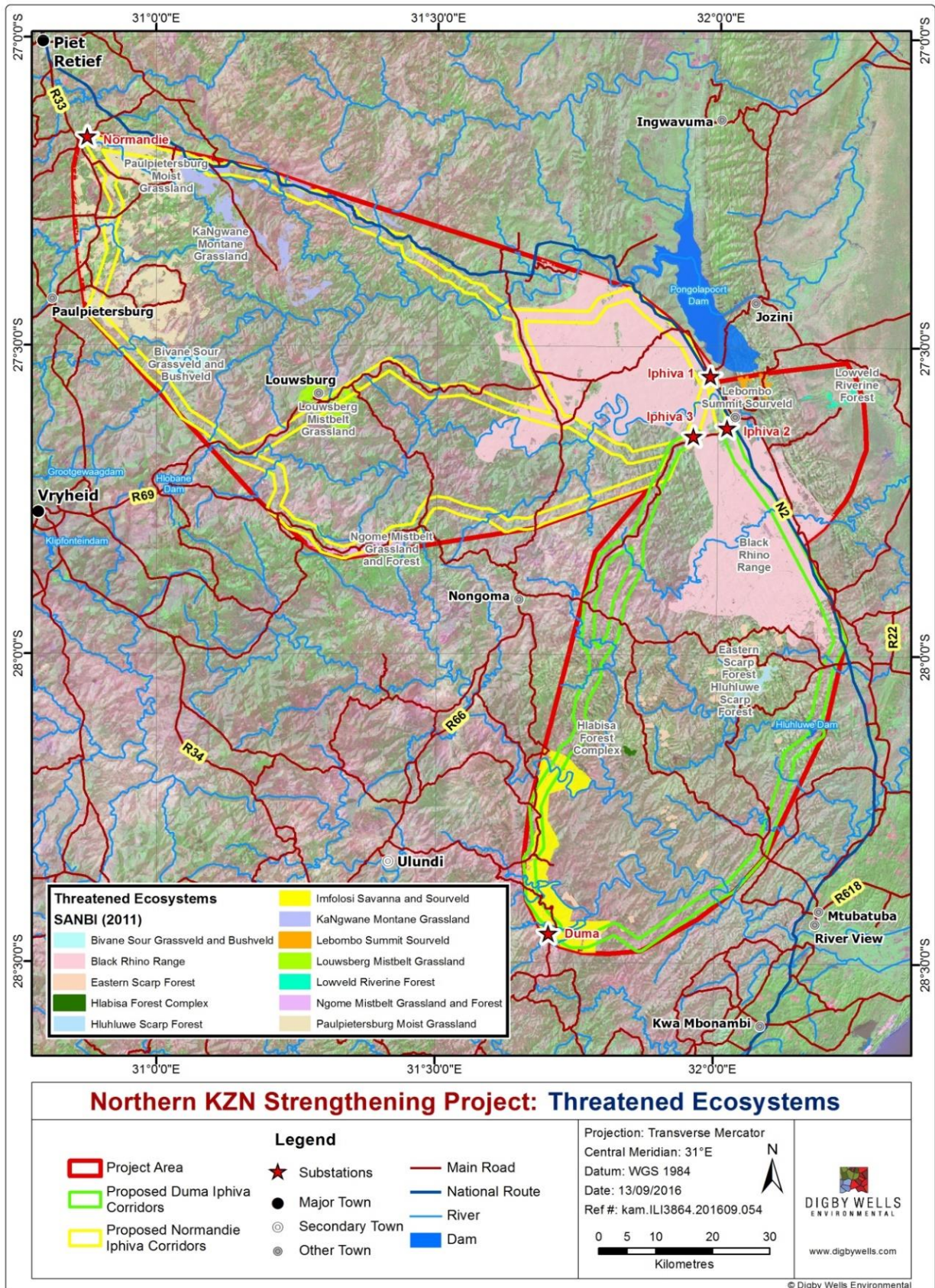


Figure 9.6: Nationally Threatened Ecosystems

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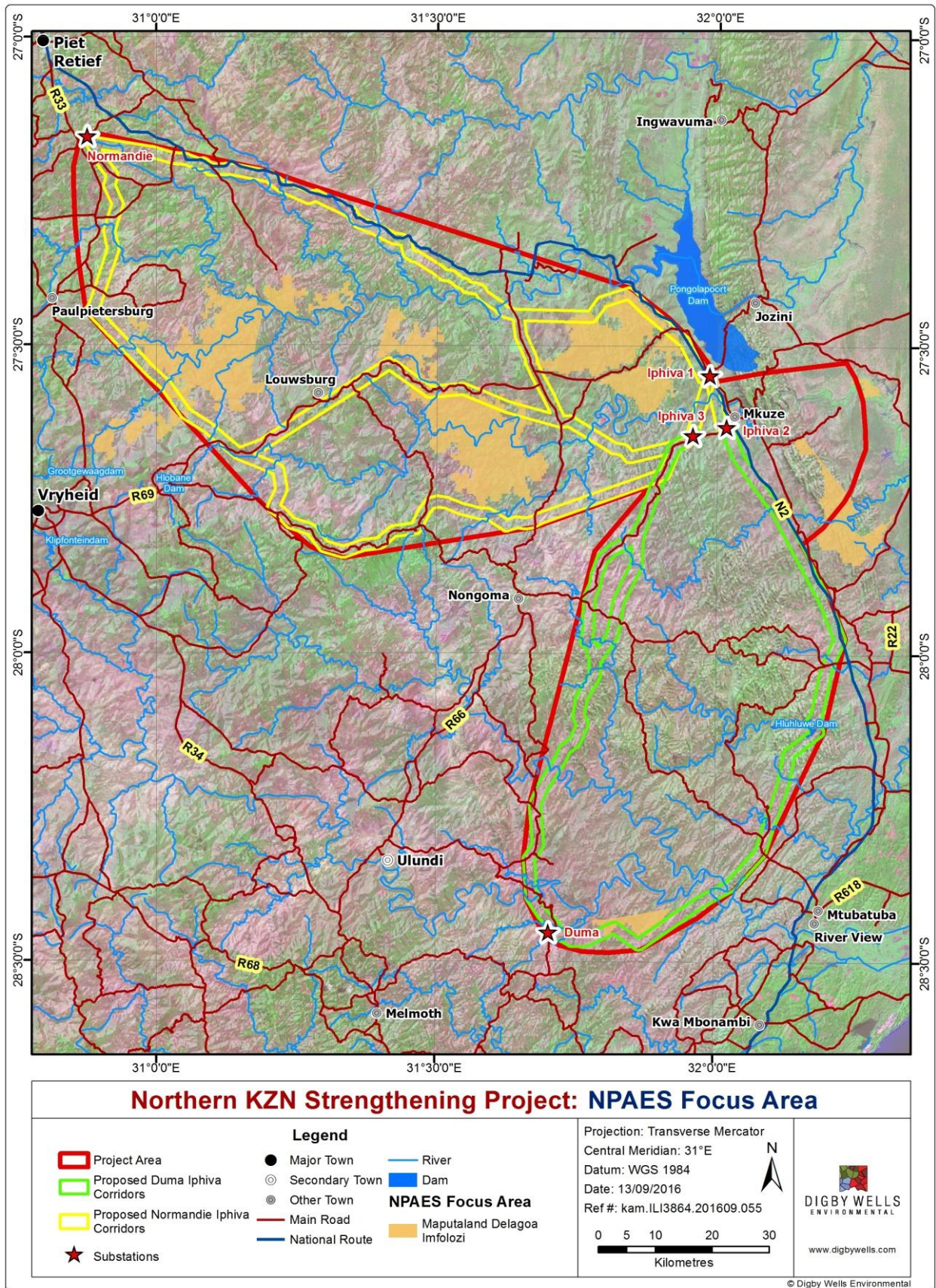


Figure 9.7: NPAES Focus Areas

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9.9. HERITAGE

The baseline profile and identified heritage resources show that the study area is underlain by a palaeontologically sensitive area. Known heritage resources and events span from the Stone Age through to the historical period.

While surface disturbance through project related activities are unlikely to expose fossiliferous material, rock outcrops would need to be surveyed to identify any potential fossil heritage.

Archaeological resources associated with the Stone Age, rock art and farming community period have been identified in the region. *In situ* archaeological sites and heritage resources are more likely to be identified in areas that have been minimally disturbed through anthropogenic processes. Open / undisturbed areas are therefore considered to be of high sensitivity, where minimally disturbed areas, such as field, or heavily disturbed areas such as urban / settlements are considered to be of medium and low sensitivity respectively.

Heritage resources associated with the historical period that have been identified in the study area include the following:

- Battlefields;
- Monuments and memorials;
- Historic built structures; and
- Burial grounds and graves.

With the exception of the identified battlefield, the majority of the heritage resources associated with the historical period occur within urban / settlement areas that have been altered through time by people. While the individual resources themselves may be considered to have a high cultural sensitivity, the proposed development will like have a negligible impact to these resource types.

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9.10. LAND USE

The majority of the study area's land use consists of:

- **Commercial farming** - large sugarcane plantations occur around Pongola as well as an area on the R66 towards Nongoma, where the R66 crosses the Mkhuze River. Croplands coincide with the more evenly sloped areas.
- **Forestry** - Significant forestry areas occur in the following high-lying areas:
 - Areas north of Frischgewaagd; and
 - Along the R69 to Louwsburg.
- **Dispersed rural settlement** - informal housing settlements (villages) and single isolated homesteads are scattered throughout the study area, coinciding with subsistence agriculture.
- **Larger formalised towns** - these include Louwsburg, located more towards the west of the study area and Pongola, located towards the north of the study area.
- **Existing infrastructure** – The presence of infrastructure such as roads, rail and powerlines affect the visual sensitivity of the landscape.
- **Conservation / game farming** – there are large areas in the study area with formal status under NEM:PAA.

9.11. SOCIO-ECONOMIC CHARACTERISTICS

The study area is mostly located in the KZN province, with a small portion located in the Mpumalanga Province. There are only a few large towns in the area. The rest of the area consists of settlements in areas under traditional leadership, commercial farms as well as some game reserves.

For the baseline description of the area, data from Census 2011, Community Survey 2016, municipal IDP's and websites were used. It must be noted that some of the municipalities amalgamated or were incorporated in other municipalities on 3 August 2016. As the most of the data is based on the 2011 demarcation boundaries, these are used for a description of the area (**Table 9.2**) (**Figure 9.8**).

The results should be viewed as indicative of the population characteristics in the area and should not be interpreted as absolute.

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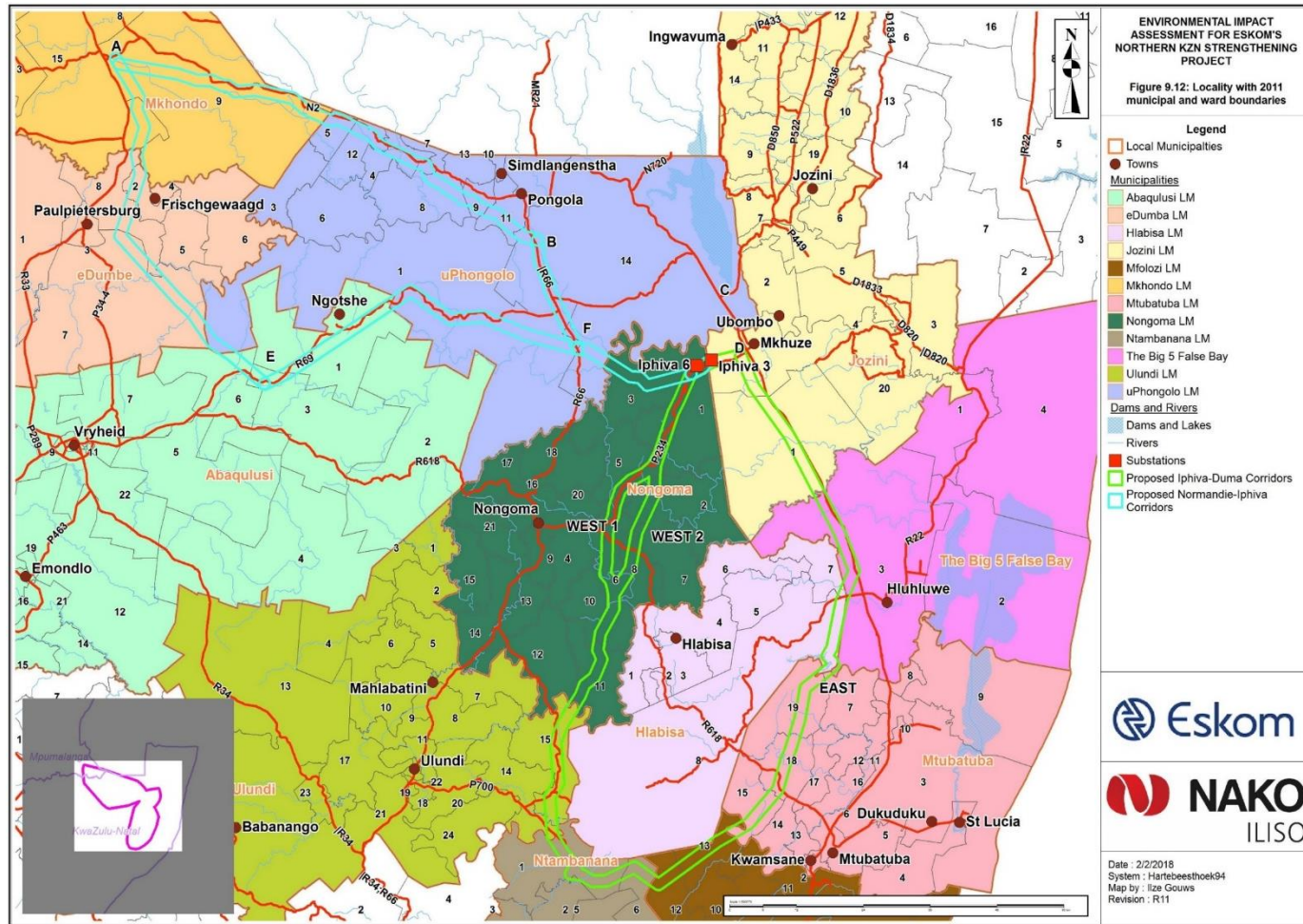


Figure 9.8: Locality with 2011 municipal and ward boundaries

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Table 9.2: Project area in municipal context (2011 demarcation boundaries)

Province	District Municipality	Local Municipality	Wards
Mpumalanga	Gert Sibande	Mkhondo	9, 15
KZN	Zululand	eDumbe	2, 4, 5, 6, 7, 8
		uPhongolo	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
		Abaqulusi	1, 2, 3, 4, 5, 6, 7
		Nongoma	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 17, 18, 19, 20
		Ulundi	14, 15

All the land that was owned or belonged to the KZN Government is held by the Ingonyama Trust (www.ingonyamatrust.co.za) since 1994. The mandate of the trust is to hold the land for “the benefit, material welfare and social well-being of the members of the tribes and communities” living on the land. The Zulu King is the sole trustee of the land. The Ingonyama Trust Board administers the affairs of the Trust and the Trust land. Most, if not all, the land in KZN that is under traditional authority belongs to the Ingonyama Trust.

The Normandie-Iphiva 400 kV Powerline will run from near the town of Piet Retief (Mkhondo LM) in Mpumalanga to just outside the town of Mkuze (Jozini LM) in KZN. The N-I 2 Option runs parallel with the N2 road to close to the town of Pongola where it will run parallel with the R66 road to a point where it will turn in the direction of the town of Mkuze. The N-I 3 Option runs in the direction of Paulpietersburg more or less parallel with the R33 route. Close to Paulpietersburg it will turn in the direction of the R69 road and then run parallel with the road until it turns in the direction of the town of Mkuze. With both routes most of the Powerline will be located in the Zululand District Municipality with a portion in the Gert Sibande and Umkhanyakude District Municipalities respectively.

The N-I 2 Option runs through farm land in Mpumalanga more or less up to the border with KZN. From the KZN border up to Pongola, the area is densely populated with areas under traditional leadership of different traditional leaders. From Pongola to Mkuze, the Option runs through farm land and passes private game reserves. It also passes through areas under traditional leadership again, but these areas are not as densely populated as the area adjacent to the N2.

The N-I 3 Option runs through farm land, passes areas under traditional leadership as well as private game reserves.

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Although the area next to the N2 road where the N-1 2 Options runs, are densely populated, the Uphongolo LM has the lowest population density in the Zululand DM, but showed the second greatest increase in population size since 2011 and the greatest growth in households. The dependency ratio for the Zululand DM is much higher than for the Mkhondo LM and the Jozini LM, with the lowest dependency ratio on the Mkhondo LM. The poverty intensity is very similar for the different areas that the Powerline will run through.

More than 50% of the population in the KZN area where the line will run through is younger than 20 years of age with more than half of the total population being female. Education levels vary according to ward, but tend to be low in general, as is levels of employment. Access to piped water, sanitation, electricity and refuse removal vary by ward from high to low levels of access.

According to the Community Survey 2016, the population of South Africa is approximately 55.7 million and has shown an increase of about 7.5% since 2011. The household density for the country is estimated on approximately 3.29 people per household, indicating an average household size of 3-4 people (leaning towards 3) for most households, which is down from the 2011 average household size of 3.58 people per household. Smaller household sizes are in general associated with higher levels of urbanisation.

In the study area the Mtubatuba LM (15.25%) and the Abaqulusi LM (14.28%) showed the greatest increase in population since 2011, much greater than on a national level. The population in the Ntambanana LM (0.61%) showed virtually no increase.

More than 90% of the population in the study area belong to the Black population group. In some wards, especially in the urban areas, the proportions differ and larger proportions of people belonging to other population groups are found.

The average age in all the municipal areas are below 27 years, with the lowest average age (22.91) in the Nongoma LM. More than half of the population in the Nongoma LM are younger than 20 years of age. Such a young population place a lot of pressure on resources and infrastructure of the area, and a great demand for future infrastructure and creation of livelihoods can be expected.

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In all the municipalities in the study area, there are more females than males. Females are usually regarded as more disadvantaged in terms of resources, especially in areas under traditional leadership, and are therefore a very vulnerable group. Many males of economically active age have migrated to the cities and other urban areas in search of employment.

IsiZulu is the home language of more than 90% of the residents of the area (Census 2011), except in the Mkhondo LM, where only 89.06% of people have isiZulu as home language.

The highest proportion of people with no schooling who are aged 20 years or older are in the Jozini LM (27.37%) and the Big 5 False Bay LM (26.05%) (Census 2011). These proportions vary on a ward level within the municipal areas and in some wards more than 30% of the population older than 20 years have received no schooling. These high levels of illiteracy should be taken into consideration when consulting with these communities on the project.

The area is characterised by scattered settlement patterns with only a few towns. Levels of employment vary, with the highest proportion of employed people in the Mkhondo LM (29.98%) (Census 2011) in Mpumalanga. The proportion of employed people vary on a ward level within the local municipalities. The wards with the highest levels of employment are not the wards where the towns are located and it can be assumed that commercial farms, forestry and/or tourism attractions are located in these wards.

The Mkhondo LM in Mpumalanga has a well-diversified economy with the main activities being forestry, commercial agriculture, some coal mining and a few tourism attractions. There is industry in the area that supports forestry. In the remaining local municipalities the economy is not well diversified and the economic activities are mostly limited to agriculture and tourism in the form of game farms, private and public game reserves. In terms of agriculture two main types of agricultural activities can be identified, namely commercial agriculture and then small-scale and subsistence farming. The communities in the areas under traditional leadership rely heavily on small-scale and subsistence farming for their livelihoods. Informal trading is another important livelihood strategy in the study area and some municipalities are trying to regulate or manage informal trading, acknowledging the importance of this strategy for the communities. There is very little industry that supports commercial agricultural activities in most of the municipal areas.

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Most of the dwellings in the study area are houses or brick/concrete block structures that are on a separate yard, stand or farm (Census 2011), followed by traditional dwellings/huts/structures made of traditional materials. The proportions differ per municipal area as well as per ward in each municipal area. Ntambanana LM is the only area where there are slightly more traditional dwellings (45.58%) than brick structures (45.13%).

The majority of the dwellings in the study area are owned and fully paid off, or occupied rent free (Census 2011). It must be noted that the Ingonyama Trust is the custodian of the land under traditional authority in KZN, and although a household may own their dwelling, they may not own the land the dwelling was built on.

More than 40% of households in the Big 5 False Bay LM (49.14%), Uphongolo LM (44.51%), Mkhondo LM (40.72%) and the Abaqulusi LM (40.5%) have only one or two members (Census 2011). Most of large towns in the study area are located in these municipalities. In the municipalities with a more traditional character such as Nongoma, Hlabisa and Ntambanana, the household sizes tend to be larger. There are large differences between the wards in the municipalities, giving an indication of the character of the different wards.

Access to basic services such as water, sanitation and electricity relate to standard of living according to SAMPI (Statistics South Africa, 2014). Households that use paraffin, candles or nothing for lighting; or fuels such as paraffin, wood, coal, dung or nothing for cooking or heating; have no piped water in the dwelling or on the stand and do not have flush toilets can be described as deprived in terms of these basic services.

The majority of households in all the local municipalities, except for Nongoma and Hlabisa have access to water from a local or regional water scheme (Census 2011). The majority of households in Nongoma or Hlabisa get their water from a river or a stream. In Ntambanana quite a large proportion of households get their water from water tankers. The source of water differ between wards in local municipalities. More than half of the households, except in Big 5 False Bay (43.52%), Hlabisa (34.34%), Jozini (30.33%), Nongoma (27.48%) and Ntambanana (22.28%) have access to piped water inside their dwellings or yards (Census 2011).

The incidence of flush toilets (connected to sewerage system or septic tank) is relative low in most areas except for Mkhondo (42.11%) and Abaqulusi (43.76%) (Census 2011). The

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highest incidence of households with no access to toilet services is in Nongoma (29.1%), Uphongolo (27.45%), Ntambanana (24.26%) and Jozini (23.13%).

Access to electricity for lighting purposes give an indication of whether a household has access to electricity, as poor households sometimes only use electricity for lighting, but use other sources of energy for heat and cooking. The Jozini LM (29.09%) has the lowest incidence of households with access to electricity for lighting purposes, followed by Big 5 False Bay (42.57%) (Census 2011). This differs on a ward level, and a number of the wards in the study area have a low incidence of access to electricity.

The incidence of refuse removal varies across municipalities and according to wards, and in many areas people have their own refuse dumps. In municipalities like Ntambanana (2.19%), Nongoma (4.25%), Hlabisa (5.39%), and Mfolozi (7.18%) the incidence of refuse removal once a week by local authorities or a private company is less than 10%.

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10 IMPACT AND RISK ASSESSMENT

3 (h) (v) the impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts—

(aa) can be reversed;

(bb) may cause irreplaceable loss of resources; and

(cc) can be avoided, managed or mitigated;

(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;

(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;

10.1. APPROACH

For this project, authorisation of a corridor (approximately 2 km wide) within which a 55 m servitude for the powerline can be acquired will be applied for. The acquisition of the servitudes and identification of the tower positions will only be undertaken after Environmental Authorisation (EA) has been received. The EA will therefore be obtained without doing detailed ground surveys of the full corridors by the different specialists. The commenting authorities are expected to stipulate that further studies will be required during implementation. The DEA is expected to issue the authorisation with the detailed studies (walk-down) to be done during implementation as conditions.

10.1.1. Regulated activities and the scope of Impact Assessment

The NEMA 2014 EIA Regulations require authorisation for specific **activities** only, as detailed in **Table 3.1**. The EMP, however, required in terms of these Regulations, however, requires the management of a broader set of aspects. The impact assessment, therefore, needs to extend beyond these activities.

10.1.2. Activities, Aspects and Impacts

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

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The Regulations (GN 982 Appendix 2 item 2 (i) (ii) to (v), as amended by Appendix 2 item 2(h)(ii), (iii), (iv) of GN 326 of 7 April 2017) require that **aspects** be described and assessed in the impact assessment.

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

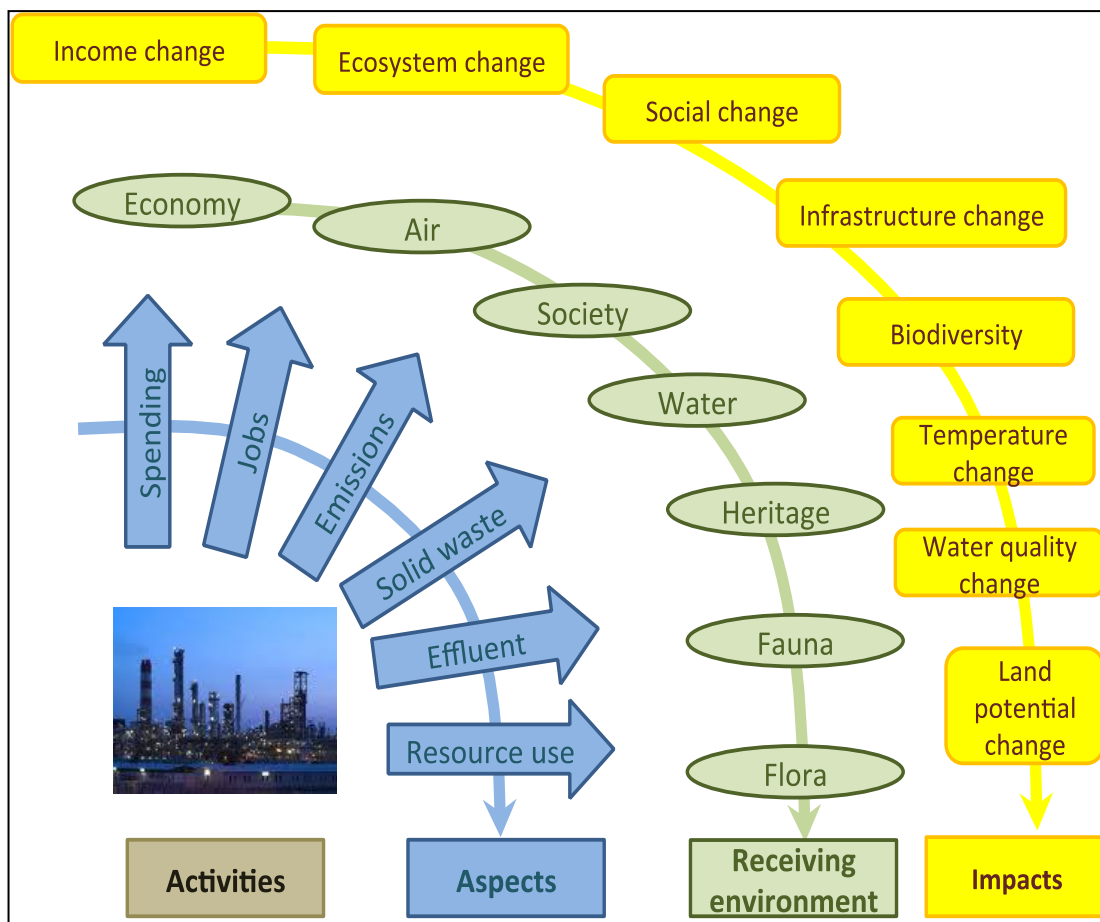


Figure 10.1: Schematic presentation of how activities bring about environmental and social aspects, which result in changes to the receiving environment, which are defined as impacts

Source: O’Beirne, S: Draft Good Practice Manual, prepared for IAIA, 2017

The aspects that have been identified for the project are listed in **Table 10.1**.

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Table 10.1: Aspects assessed by specialists

Aspect Category	Aspect	Specialist study that will address this aspect
Resource use	Water	None
	Energy	None
	Land (land transformation)	Fauna and Flora, Avifauna, Heritage, Wetlands, Agricultural potential, Visual Impact Assessment and Social
	Raw materials	None
Waste and pollution	Atmospheric emissions	None
	Effluent	None
	Solid/liquid wastes	None
	Energy emitted (noise, light)	Visual Impact Assessment
Socio-Economic	Jobs	Socio-economic
	Spending	Socio-economic
	Skills	Socio-economic

10.2. ASPECTS ASSESSED BY SPECIALISTS

The following specialist studies have been undertaken:

- Social (see **Section 11.1** for a summary);
- Soils and Land Capability (i.e. agricultural potential) (see **Section 11.2** for a summary);
- Heritage (see **Section 11.3** for a summary);
- Fauna and Flora (see **Section 11.4** for a summary);
- Avifauna (see **Section 11.5** for a summary);
- Wetlands (see **Section 11.6** for a summary);
- Visual (see **Section 11.7** for a summary); and
- Economic (see **Section 11.8** for a summary).

10.3. ASSESSMENT METHODOLOGY

The key issues identified informed the terms of reference of the specialist studies. Each issue consists of components that on their own or in combination with each other give rise to potential impacts, either positive or negative, from the project onto the environment or from the environment onto the project. The significance of the potential impacts have been considered before and after identified mitigation is implemented, for direct, indirect, and cumulative impacts, in the short and long term.

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A description of the nature of the impact, any specific legal requirements and the stage (construction or operation) have been detailed in the specialist studies given. A separate EIA will be required at a later stage for decommissioning.

The following criteria have been used to evaluate significance:

- **Nature:** This is an appraisal of the type of effect the activity is likely to have on the affected environment. The description includes what is being affected and how. The nature of the impact will be classified as positive or negative, and direct or indirect.
- **Extent:** This indicates the spatial area that may be affected (**Table 10.2**).

Table 10.2: Geographical extent of impact

Rating	Extent	Description
1	Site	Impacted area is only at the site – the actual extent of the activity.
2	Local	Impacted area is limited to the site and its immediate surrounding area
3	Regional	Impacted area extends to the surrounding area, the immediate and the neighbouring properties.
4	Provincial	Impact considered of provincial importance
5	National	Impact considered of national importance – will affect entire country.

- **Duration:** This measures the lifetime of the impact (**Table 10.3**).

Table 10.3: Duration of Impact

Rating	Duration	Description
1	Short term	0 – 3 years, or length of construction period
2	Medium term	3 – 10 years
3	Long term	> 10 years, or entire operational life of project.
4	Permanent – mitigated	Mitigation measures of natural process will reduce impact – impact will remain after operational life of project.
5	Permanent – no mitigation	No mitigation measures of natural process will reduce impact after implementation – impact will remain after operational life of project.

- **Intensity / severity:** This is the degree to which the project affects or changes the environment; it includes a measure of the reversibility of impacts (**Table 10.4**).

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Table 10.4: Intensity of Impact

Rating	Intensity	Description
1	Negligible	Change is slight, often not noticeable, natural functioning of environment not affected.
2	Low	Natural functioning of environment is minimally affected. Natural, cultural and social functions and processes can be reversed to their original state.
3	Medium	Environment remarkably altered, still functions, if in modified way. Negative impacts cannot be fully reversed.
4	High	Cultural and social functions and processes disturbed – potentially ceasing to function temporarily.
5	Very high	Natural, cultural and social functions and processes permanently cease, and valued, important, sensitive or vulnerable systems or communities are substantially affected. Negative impacts cannot be reversed.

- **Potential for irreplaceable loss of resources:** This is the degree to which the project will cause loss of resources that are irreplaceable (**Table 10.5**).

Table 10.5: Potential for irreplaceable loss of resources

Rating	Potential for irreplaceable loss of resources	Description
1	Low	No irreplaceable resources will be impacted.
3	Medium	Resources can be replaced, with effort.
5	High	There is no potential for replacing a particular vulnerable resource that will be impacted.

- **Probability:** This is the likelihood or the chances that the impact will occur (**Table 10.6**).

Table 10.6: Probability of Impact

Rating	Probability	Description
1	Improbable	Under normal conditions, no impacts expected.
2	Low	The probability of the impact to occur is low due to its design or historic experience.
3	Medium	There is a distinct probability of the impact occurring.
4	High	It is most likely that the impact will occur
5	Definite	The impact will occur regardless of any prevention measures.

- **Confidence:** This is the level of knowledge or information available, the environmental impact practitioner or a specialist had in his/her judgement (**Table 10.7**).

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Table 10.7: Confidence in level of knowledge or information

Rating	Confidence	Description
1	Low	Judgement based on intuition, not knowledge/ information.
2	Medium	Common sense and general knowledge informs decision.
3	High	Scientific / proven information informs decision.

- **Consequence:** This is calculated as extent + duration + intensity + potential impact on irreplaceable resources.
- **Significance:** The significance will be rated by combining the consequence of the impact and the probability of occurrence (i.e. consequence x probability = significance). The maximum value which can be obtained is 100 significance points (**Table 10.8**).

Table 10.8: Significance of issues (based on parameters)

Rating	Significance	Description
1-14	Very low	No action required.
15-29	Low	Impacts are within the acceptable range.
30-44	Medium-low	Impacts are within the acceptable range but should be mitigated to lower significance levels wherever possible.
	Medium-high	Impacts are important and require attention; mitigation is required to reduce the negative impacts to acceptable levels.
	High	Impacts are of great importance, mitigation is crucial.
81-100	Very high	Impacts are unacceptable.

- **Cumulative Impacts:** This refers to the combined, incremental effects of the impact, taking other past, present and future developments in the same area into account. The possible cumulative impacts will also be considered.
- **Mitigation:** Mitigation for significant issues will be incorporated into the EMP.
- Digby Wells undertook the Fauna and Flora, Avi-fauna, Wetlands and Heritage specialist studies. Their methodology differs quite significantly from the above and their matrix has a rating range that extends from -147 to +147. A table that converts the Digby Wells significance ratings to the NAKO ILISO scale is included in **Table 10.9**.

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Table 10.9: Conversion of Digby Wells to NAKO ILISO Scoping Systems

NAKO ILISO Rating	NI Significance	NI Description	DWE Rating	DWE description	DWE Significance
1-14	Very low	No action required.	3 – 35	Negligible	A small positive impact. The impact will result in medium to short term effects.
					An acceptable negative impact for which mitigation is desirable but not essential.
15-29	Low	Impacts are within the acceptable range.	36 – 72	Minor	An important positive impact.
					An important negative impact which requires mitigation.
30-44	Medium-low	Impacts are within the acceptable range but should be mitigated to lower significance levels wherever possible.	72 – 90	Moderate	A beneficial impact which may help to justify the implementation of the project.
45-59	Medium-high	Impacts are important and require attention; mitigation is required to reduce the negative impacts to acceptable levels.	91 – 108		A serious negative impact which may prevent the implementation of the project.
60-80	High	Impacts are of great importance, mitigation is crucial.	109 – 127	Major	A very beneficial impact which may be sufficient by itself to justify implementation of the project.
81-100	Very high	Impacts are unacceptable.	128 – 147		A very serious negative impact which may be sufficient by itself to prevent implementation of the project.

10.4. FINDINGS OF IMPACT ASSESSMENTS

Detailed assessment tables have been included in each specialist study (**Appendices D to K**) and are summarised in **Section 10.4.1 to 10.4.8**.

10.4.1. Fauna and Flora

The construction of various surface infrastructure components will mean the removal, partial or complete of vegetation/habitat types present.

Table 10.10: Potential Impacts on Fauna and Flora of Construction of the Normandie-Iphiva 400kV Powerline Infrastructure

Activity and Interaction Construction of infrastructure require vegetation clearing			
Dimension	Rating	Motivation	Significance
Impact Description: Direct loss of floral species/vegetation types and biodiversity			
<i>Prior to mitigation/ management</i>			
Duration	Permanent (7)	Total loss of floral species/vegetation will occur on selected footprint sites.	Moderate (negative) – 91
Extent	Limited (2)	Species/habitat loss will only occur within and immediately around the project site (pylon infrastructure).	
Intensity x type of impact	Serious (4)	The footprint of N-I covers multiple undisturbed vegetation types.	
Probability	Definite (7)	It is likely that total destruction of vegetation types will occur.	
Nature	Negative		
<i>Mitigation/ Management actions</i>			
<ul style="list-style-type: none"> ▪ Limit degradation and destruction of natural environment to designated project area by keeping the footprint of the disturbed areas to the minimum and within designated areas only, preferably cultivated land. Re-vegetate open areas to limit erosion, which will also aid in water infiltration and flood attenuation. ▪ Avoid sensitive landscapes such as riparian and wetland areas that were encountered on and east of the site. Water Use Licences/Registrations must be obtained for any construction in a regulated area (below 1:00 floodline or 100 m from water course and 500 m from a wetland). ▪ Manage nationally restricted alien invasive plant species by ensuring the removal of vegetation during construction and operation are controlled so that no open areas occur. 			
<i>Post- mitigation</i>			
Duration	Permanent (5)	Project life.	

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Activity and Interaction Construction of infrastructure require vegetation clearing			
Dimension	Rating	Motivation	Significance
Extent	Limited (2)	If contractors adhere to mitigation such as to limit the footprint of disturbance to only essential areas.	Moderate (negative) – 69
Intensity x type of impact	Moderate (-2)	Dependent on sensitivity of the specific site.	
Probability	Definite (7)	This impact will occur	
Nature	Negative		

Activity and Interaction Construction of infrastructure require vegetation clearing)			
Dimension	Rating	Motivation	Significance
Impact Description: Loss of species of special concern (protected species)			
<i>Prior to mitigation/ management</i>			
Duration	Project Life (5)	Loss floral species/vegetation will occur within the footprints of the pylons.	Moderate (negative) – 84
Extent	Provincial (5)	Species/habitat loss will only occur within the project site, and will be limited to the corridor but will extend across a very long corridor.	
Intensity x type of impact	High (4)	Natural vegetation occur in this substation site.	
Probability	High (6)	It is likely that destruction of vegetation types will occur without management measures.	
Nature	Negative		
Mitigation/ Management actions			
<ul style="list-style-type: none"> ▪ Limit degradation and destruction of natural environment to designated project areas by keeping the footprint of the disturbed areas to the minimum and within designated areas only. Re-vegetate open areas to limit erosion, which will also aid in water infiltration and flood attenuation. ▪ Avoid known areas of faunal and floral species of special concern. ▪ Avoid sensitive landscapes such as riparian and ridge areas that were encountered on site. Water Use Licences/Registrations must be obtained for any construction in a regulated area (below 1:00 floodline or 100 m from water course and 500 m from a wetland. ▪ Applications for permits for removal of certain plants, where required by provincial authorities. If plant species of special concern are to be removed, they should be either translocated to a similar habitat to the donor site or relocated to a nursery. 			

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Activity and Interaction Construction of infrastructure require vegetation clearing)			
Dimension	Rating	Motivation	Significance
<i>Post management</i>			
Duration	Medium term (3)	With vegetation management including rehabilitation, vegetation can recover in 1-5 years.	Minor (negative) – 55
Extent	Municipal area (4)	If contractors adhere to mitigation such as to limit the footprint of disturbance to only essential areas.	
Intensity x type of impact	Ongoing - negative (4)	Dependent on sensitivity of the specific site.	
Probability	Likely (5)	Rehabilitation with correct species and techniques are critical for success.	
Nature	Negative		

Activity and Interaction Construction of infrastructure require vegetation clearing			
Dimension	Rating	Motivation	Significance
Impact Description: Alien vegetation establishment			
<i>Prior to mitigation/ management</i>			
Duration	Long term (4)	Alien vegetation will colonise any area that is available (open areas).	Minor (negative) – 48
Extent	Municipal area (4)	Such an infestation can easily spread to the entire municipal area, and infest water sources.	
Intensity x type of impact	Moderate - (-4)	Serious loss of sensitive habitats due to alien vegetation colonisation.	
Probability	Probable (4)	It is unlikely that without mitigation measures, alien vegetation will establish	
Nature	Negative		
<i>Mitigation/ Management actions</i>			
<ul style="list-style-type: none"> ▪ Manage nationally restricted alien invasive plant species by ensuring the removal of vegetation during construction and operation are controlled so that no open areas occur. ▪ If alien vegetation is encountered, remove these plants, in the correct way and timeously. Alien plants should be removed as seedlings before they reach seed-bearing age. Alien plants can establish on a site after removal for up to 2-7 years, therefore appropriate monitoring must take place. 			
<i>Post management</i>			

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Activity and Interaction Construction of infrastructure require vegetation clearing			
Dimension	Rating	Motivation	Significance
Duration	Medium term (3)	Alien vegetation colonisation will be eradicated asap.	Negligible (negative) - 21
Extent	Limited (2)	An infestation will not be allowed to spread.	
Intensity x type of impact	Minor (-2)	Only limited areas will experience this for a short duration.	
Probability	Unlikely (3)	It is unlikely that alien vegetation will establish, if mitigation is adhered to.	
Nature	Negative		

Table 10.11: Summary of Impact Ratings for fauna and flora

	Listed Activity	Impact Description	Significance after mitigation
1	GN 983 (19) – depositing/infilling from a watercourse	Direct loss of floral species/vegetation types and biodiversity	Moderate (negative)
2	GN 983 (24)- Development of Road	Loss of species of special concern (protected species)	Minor (negative)
3	GN 983 (28) – Institutional Developments GN 983 (56) – Widening of a road GN 984 (9)- Development of Facilities GN 985 (4) – New Roads in sensitive area GN 985 (12) – Clearing vegetation in sensitive area	Alien vegetation establishment	Negligible

10.4.2. Avi-Fauna

The construction of various surface infrastructure components will mean the removal, partial or complete of vegetation/habitat types present. This will result in direct loss of habitat types and biodiversity and loss of avifaunal species of special concern (protected species), due to collision or electrocution.

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Table 10.12: Potential Impacts of Construction of the Normandie-Iphiva 400kV Line Infrastructure on Avi-fauna

Activity and Interaction: Construction of infrastructure require site clearing			
Dimension	Rating	Motivation	Significance
Impact Description: Direct loss of avifauna habitat and biodiversity			
<i>Prior to mitigation/ management</i>			
Duration	Permanent (7)	The risk to avifauna will be permanent.	Moderate (negative) – 105
Extent	Limited (3)	Risks are only associated with the pylon infrastructure and the transmission lines.	
Intensity x type of impact	Serious (5)	The footprint of powerlines cover dispersion and nesting areas of multiple bird species of special concern.	
Probability	Definite (7)	It is likely bird fatalities will occur.	
Nature	Negative		
<i>Mitigation/ Management actions</i>			
<ul style="list-style-type: none"> ▪ A walk through of the selected substation site as well as tower positions that feed into the substation, should be conducted by a suitable qualified Avifauna specialist in order to determine the presence of any threatened, protected, endemic bird species of special concern within or in close proximity to the construction areas (tower supports). Nesting sites of any protected bird species must also be determined during this walkthrough. ▪ The exact locations of the towers along the power line route alignment within the corridor should be determined in consultation with an appointed Avifauna Specialist; ▪ An Avifauna Specialist should be advised regarding the proximity of the power line route alignment to habituated feeding sites (i.e. Vulture Restaurants); ▪ Factors taken into account when selecting the tower design must include the risk of electrocution of birds posed by each tower design; ▪ It is recommended that reflectors with LED lights should also be used particularly near nest sites and in areas in relatively close proximity to water or wetlands; ▪ Appoint an avifauna specialist to provide recommendations regarding the placement of Bird diverters; and ▪ Pylons should preferably be positioned so as to alternate with those of the existing power line (i.e. out- of-step) and not be placed opposite one another (in-step). This mitigation will increase the visibility of both sets of power lines to flying large raptors and the birds may then be in a better position to take timely collision avoidance action; ▪ Where the possibility or risk of a 'flash-over' might occur it is essential that additional mitigation measures that would increase the visibility of the powerline be instituted should towers be placed. 			

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Activity and Interaction: Construction of infrastructure require site clearing			
Dimension	Rating	Motivation	Significance
<ul style="list-style-type: none"> ▪ Ensure tower design and type is best for preventing the electrocution of birds and discourages the roosting of birds on the structures; ▪ It must be ensured that suitable bird repelling structures, such as bird guards are considered in the design; and ▪ Ensure that the cross arms of the tower structures in areas of heavy bird activity (such as wetlands and vulture nesting grounds and vulture restaurants) are all fitted with anti-roosting spikes. 			
Post- mitigation			
Duration	Permanent (5)	Infrastructure will be present for the life of the project.	Moderate (negative) – 77
Extent	Limited (3)	Mitigation measures could limit bird and powerline interaction.	
Intensity x type of impact	Moderate (-3)	Dependent on sensitivity of the specific site.	
Probability	Definite (7)	This impact will occur	
Nature	Negative		

Activity and Interaction: Construction of infrastructure require vegetation clearing)			
Dimension	Rating	Motivation	Significance
Impact Description: Loss of species of special concern (protected species)			
Prior to mitigation/ management			
Duration	Permanent (7)	The risk to avifauna will be permanent.	Moderate (negative) – 105
Extent	Limited (3)	Risks are only associated with the pylon infrastructure and the transmission lines.	
Intensity x type of impact	Serious (5)	The footprint of distribution lines covers dispersion and nesting areas of multiple bird species of special concern.	
Probability	Definite (7)	It is likely bird fatalities will occur.	
Nature	Permanent (7)	The risk to avifauna will be permanent.	
Mitigation/ Management actions			
<ul style="list-style-type: none"> ▪ A walk through of the selected substation site as well as tower positions that feed into the substation, should be conducted by a suitable qualified Avifauna specialist in order to determine the presence of any threatened, protected, endemic bird species of special 			

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Activity and Interaction: Construction of infrastructure require vegetation clearing)

Dimension	Rating	Motivation	Significance
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<p>concern within or in close proximity to the construction areas (tower supports). Nesting sites of any protected bird species must also be determined during this walkthrough.</p> <ul style="list-style-type: none"> ▪ The exact locations of the towers along the power line route alignment within the corridor should be determined in consultation with an appointed Avifauna Specialist; ▪ An Avifauna Specialist should be advised regarding the proximity of the power line route alignment to habituated feeding sites (i.e. Vulture Restaurants); ▪ Factors taken into account when selecting the tower design must include the risk of electrocution of birds posed by each tower design; ▪ It is recommended that reflectors with LED lights should also be used particularly near nest sites and in areas in relatively close proximity to water or wetlands; ▪ Appoint an avifauna specialist to provide recommendations regarding the placement of Bird diverters; and ▪ Pylons should preferably be positioned so as to alternate with those of the existing power line (i.e. out- of-step) and not be placed opposite one another (in-step). This mitigation will increase the visibility of both sets of power lines to flying large raptors and the birds may then be in a better position to take timely collision avoidance action; ▪ Where the possibility or risk of a 'flash-over' might occur it is essential that additional mitigation measures that would increase the visibility of the powerline be instituted should towers be placed. ▪ Ensure tower design and type is best for preventing the electrocution of birds and discourages the roosting of birds on the structures; ▪ It must be ensured that suitable bird repelling structures, such as bird guards are considered in the design; and ▪ Ensure that the cross arms of the tower structures in areas of heavy bird activity (such as wetlands and vulture nesting grounds and vulture restaurants) are all fitted with anti-roosting spikes. 			
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Post management

Duration	Permanent (5)	Infrastructure will be present for the life of the project.	Moderate (negative) - 77
Extent	Limited (3)	Mitigation measures could limit bird and powerline interaction.	
Intensity x type of impact	Moderate (-3)	Dependent on sensitivity of the specific site.	
Probability	Definite (7)	This impact will occur	
Nature	Negative		

Table 10.13: Summary of Impact Ratings for Avi-fauna

	Listed Activities	Impact Description	Significance after mitigation
1	GN 983 (19) – depositing/infilling from a watercourse	Direct loss of avifauna habitat and biodiversity	Moderate (negative)
2	GN 983 (24)- Development of Road	Loss of species of special concern (protected species)	Moderate (negative)
3	GN 983 (28) – Institutional Developments GN 983 (56) – Widening of a road GN 984 (9)- Development of Facilities GN 985 (4) – New Roads in sensitive area GN 985 (12) – Clearing vegetation in sensitive area		

10.4.3. Wetlands

Table 10.14: Potential Impacts on Wetlands during the Construction Phase

Dimension	Rating	Motivation	Significance
Activity and Interactions: Site access and disturbance			
<i>Prior to Mitigation/Management</i>			
Duration	Long term (4)	6-15 years and impact can be reversed with management.	Minor (negative) – 36
Extent	Local (3)	Limited to the immediate development site and its immediate surroundings.	
Intensity x type of impact	Minor loss and/or effects to biological or physical resources (2)	Due to the sensitive nature of the systems present, should no management or mitigation measures be employed, activities could result in some loss and/or damage to physical or biological resources or highly sensitive environments, resulting in a limited loss of ecosystem function.	
Probability	Probable (4)	Should no precautionary measures be implemented, further impacts to the wetlands and flora present are considered probable.	
Nature	Negative		
<i>Post-Mitigation</i>			
Duration	Medium term (3)	1-5 years and impact can be reversed with minimal management.	Negligible (negative) - 18

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Dimension	Rating	Motivation	Significance
Extent	Limited (2)	Impacts will be limited only to the project footprint area and will be rehabilitated accordingly on completion of the construction phase.	
Intensity x type of impact	Minimal to no loss and/or effect to biological or physical resources (1)	Should the appropriate management and mitigation measures be employed, impacts are expected to be minimal in the operational phase of the proposed project.	
Probability	Unlikely (3)	Should the proposed project proceed, impacts to the ecological integrity of the systems present are considered unlikely.	
Nature	Negative		
Dimension	Rating	Motivation	Significance
Activity and Interactions: Site clearing activities for construction of substations, towers and access roads			
<i>Prior to Mitigation/Management</i>			
Duration	Long term (4)	6-15 years and impact can be reversed with management.	Minor (negative) – 78
Extent	Municipal area (4)	Will affect the whole municipal area.	
Intensity x type of impact	Serious medium term environmental effects (5)	Due to the sensitive nature of the systems present, should no management or mitigation measures be employed, activities could result in a serious loss and/or damage to physical or biological resources or highly sensitive environments, limiting ecosystem function.	
Probability	Highly probable (6)	Should no precautionary measures be implemented, <80% probability impacts to the wetlands and flora present will occur.	
Nature	Negative		
<i>Post-Mitigation</i>			
Duration	Medium term (3)	1-5 years and impact can be reversed with minimal management.	Negligible (negative) - 30
Extent	Limited (2)	Impacts will be limited only to the project footprint area and will be rehabilitated accordingly on completion of the construction phase.	

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Dimension	Rating	Motivation	Significance
Intensity x type of impact	Serious medium term environmental effects (5)	Due to the sensitive nature of the systems present, should no management or mitigation measures be employed, activities could result in a serious loss and/or damage to physical or biological resources or highly sensitive environments, limiting ecosystem function.	
Probability	Unlikely (3)	Should the proposed project proceed, impacts to the ecological integrity of the systems present are considered unlikely.	
Nature	Negative		
Dimension	Rating	Motivation	Significance
Activity and Interactions: Construction of substations, towers and access roads			
<i>Prior to Mitigation/Management</i>			
Duration	Long term (4)	6-15 years and impact can be reversed with management.	Minor (negative) – 78
Extent	Municipal area (4)	Will affect the whole municipal area.	
Intensity x type of impact	Serious medium term environmental effects (5)	Due to the sensitive nature of the systems present, should no management or mitigation measures be employed, activities could result in a serious loss and/or damage to physical or biological resources or highly sensitive environments, limiting ecosystem function.	
Probability	Highly probable (6)	Should no precautionary measures be implemented, <80% probability impacts to the wetlands and flora present will occur.	
Nature	Negative		
<i>Post-Mitigation</i>			
Duration	Medium term (3)	1-5 years and impact can be reversed with minimal management.	Minor (negative) – 40
Extent	Limited (2)	Impacts will be limited only to the project footprint area and will be rehabilitated accordingly on completion of the construction phase.	

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Dimension	Rating	Motivation	Significance
Intensity x type of impact	Serious medium term environmental effects (5)	Due to the sensitive nature of the systems present, should no management or mitigation measures be employed, activities could result in a serious loss and/or damage to physical or biological resources or highly sensitive environments, limiting ecosystem function.	
Probability	Probable (4)	Should the proposed project proceed, impacts to the ecological integrity of the systems present are considered unlikely.	
Nature	Negative		

Table 10.15: Potential Impacts on Wetlands during the Operational Phase

Dimension	Rating	Motivation	Significance
Activity and Interactions: Site access and roads for maintenance			
<i>Prior to Mitigation/Management</i>			
Duration	Project life (4)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Minor (negative) – 52
Extent	Local (3)	Limited to the immediate development site and its immediate surroundings.	
Intensity x type of impact	Serious medium term environmental effects (5)	Due to the sensitive nature of the systems present, should no management or mitigation measures be employed, activities could result in a serious loss and/or damage to physical or biological resources or highly sensitive environments, limiting ecosystem function.	
Probability	Unlikely (3)	Has not happened yet but could happen once in the lifetime of the project, therefore there is a possibility that the impact will occur. <25% probability.	
Nature	Negative		
<i>Post-Mitigation</i>			
Duration	Project life (5)	The impact will cease after the operational life span of the project and can be reversed with sufficient management.	Negligible (negative) – 8
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Dimension	Rating	Motivation	Significance
Extent	Limited (2)	Impacts will be limited only to the project footprint area and will be rehabilitated accordingly on completion of the decommissioning phase.	
Intensity x type of impact	Minimal to no loss and/or effect to biological or physical resources (1)	Should the appropriate management and mitigation measures be employed, impacts are expected to be minimal in the operational phase of the proposed project.	
Probability	Highly unlikely (1)	Expected never to happen. <1% probability.	
Nature	Negative		

Table 10.16: Summary of Impact Ratings for Wetlands

	Listed Activities	Impact Description	Significance after mitigation
		Potential impacts of the construction phase	
1	GN 983 (19) – depositing/infilling from a watercourse	Site access and disturbance	Negligible-(negative)
2	GN 983 (24)- Development of Road GN 983 (28) – Institutional Developments	Site clearing activities for construction of substations, pylons and access roads	Negligible-(negative)
3	GN 983 (56) – Widening of a road	Construction of substations, pylons and access roads	Minor-(negative)
	GN 984 (9)- Development of Facilities	Potential impacts of the operational phase	
4	GN 985 (4) – New Roads in sensitive area GN 985 (12) – Clearing vegetation in sensitive area	Site access and roads for maintenance	Negligible-(negative)

10.4.4. Heritage

Taking into consideration the results of the data collection, various resource types are anticipated to occur within the proposed site-specific study areas. These include but are not limited to:

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

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Table 10.17: Assessment summary for archaeological resources with a medium Cultural Significance

IMPACT DESCRIPTION: Direct impact to archaeological resources with medium CS				
Dimension	Rating	Motivation		
PRE-MITIGATION				
Duration	Permanent (7)	Unmitigated changes to archaeological sites will result in permanent loss of information and destruction of the sites	Consequence: Highly detrimental (-16)	Significance: Minor - negative (-48)
Extent	Province/ Region (5)	The manifested impacts will result in changes to the archaeological record of the region which is presently, relatively unknown or under researched		
Intensity x type of impact	Moderately high - negative (-4)	Given the CS of the heritage resource type, this is considered a major change to heritage resources with a medium CS classified as a moderately high impact		
Probability	Unlikely (3)	Based on the nature of the Project and known distribution of heritage resources, it is unlikely that this impact will manifest.		
MITIGATION:				
<p>It is recommended:</p> <ul style="list-style-type: none"> - A detailed Heritage Walk-down and Impact Assessment of the authorised proposed infrastructures development footprint be undertaken prior to any construction activities; - Final infrastructure designs must be amended to avoid direct impacts to identified heritage resources; and - A project specific Chance Finds Protocol be developed and included in the EMP as a condition of authorisation. 				
POST-MITIGATION				

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IMPACT DESCRIPTION: Direct impact to archaeological resources with medium CS				
Dimension	Rating	Motivation		
Duration	Immediate (1)	Project related mitigation through avoidance of the potential impacts to heritage resources will be immediate	Consequence: Negligible (3)	Significance: Negligible - positive (21)
Extent	Very limited (1)	Avoidance will remove the impact to the heritage resources.		
Intensity x type of impact	Very low - positive (1)	The project related mitigations will result in no change to the heritage resource which, in this instance, is considered a very low positive in respect of intensity.		
Probability	Certain (7)	Where the recommended project related mitigation measures are implemented, it is certain that the potential impacts to the heritage resources will be avoided.		

Table 10.18: Assessment summary for archaeological resources with a high Cultural Significance

IMPACT DESCRIPTION: Direct impact to archaeological resources with high CS				
Dimension	Rating	Motivation		
PRE-MITIGATION				
Duration	Permanent (7)	Unmitigated changes to archaeological sites will result in permanent loss of information and destruction of the sites	Consequence: Extremely detrimental (-20)	Significance: Minor - negative (-60)

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IMPACT DESCRIPTION: Direct impact to archaeological resources with high CS				
Dimension	Rating	Motivation		
Extent	National (6)	The manifested impacts will result in changes to the archaeological record which is presently, relatively unknown or under researched. These sites may contribute to the understanding of the national pre-history.		
Intensity x type of impact	Extremely high - negative (-7)	Given the CS of the heritage resource type, this is considered a major change to heritage resources with a high CS classified as an extremely high impact		
Probability	Unlikely (3)	Based on the nature of the Project and known distribution of heritage resources, it is unlikely that this impact will manifest.		
MITIGATION:				
<p>It is recommended:</p> <ul style="list-style-type: none"> - A detailed Heritage Walk-down and Impact Assessment of the authorised proposed infrastructures development footprint be undertaken prior to any construction activities; - Final infrastructure designs must be amended to avoid direct impacts to identified heritage resources; and - A project specific Chance Finds Protocol be developed and included in the EMP as a condition of authorisation. 				
POST-MITIGATION				
Duration	Immediate (1)	Project related mitigation through avoidance of the potential impacts to heritage resources will be immediate	Consequence: Negligible (3)	Significance: Negligible - positive (21)

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IMPACT DESCRIPTION: Direct impact to archaeological resources with high CS				
Dimension	Rating	Motivation		
Extent	Very limited (1)	Avoidance will remove the impact to the heritage resources.		
Intensity x type of impact	Very low - positive (1)	The project related mitigations will result in no change to the heritage resource which, in this instance, is considered a very low positive in respect of intensity.		
Probability	Certain (7)	Where the recommended project related mitigation measures are implemented, it is certain that the potential impacts to the heritage resources will be avoided.		

Table 10.19: Assessment summary for burials, monuments and memorials with a high Cultural Significance

IMPACT DESCRIPTION: Direct impact to burials, monuments and memorials with high CS				
Dimension	Rating	Motivation		
PRE-MITIGATION				
Duration	Permanent (7)	Unmitigated changes to archaeological sites will result in permanent loss of information and destruction of the sites		
Extent	International (7)	The manifested impacts may result in changes to the heritage resources that may: - Be associated with Next-of-Kin across international borders; and - Have international reputational risks and repercussions.	Consequence: Extremely detrimental (-21)	Significance: Minor - negative (-63)

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IMPACT DESCRIPTION: Direct impact to burials, monuments and memorials with high CS

Dimension	Rating	Motivation
Intensity x type of impact	Extremely high - negative (-7)	Given the CS of the heritage resource type, this is considered a major change to heritage resources with a high CS classified as an extremely high impact
Probability	Unlikely (3)	Based on the nature of the Project and known distribution of heritage resources, it is unlikely that this impact will manifest.

MITIGATION:

It is recommended:

- A detailed Heritage Walk-down and Impact Assessment of the authorised proposed infrastructures development footprint be undertaken prior to any construction activities;
- Final infrastructure designs must be amended to avoid direct impacts to identified heritage resources; and
- A project specific Chance Finds Protocol be developed and included in the EMP as a condition of authorisation.

POST-MITIGATION

Duration	Immediate (1)	Project related mitigation through avoidance of the potential impacts to heritage resources will be immediate	Consequence: Negligible (3)	Significance: Negligible - positive (21)
Extent	Very limited (1)	Avoidance will remove the impact to the heritage resources.		
Intensity x type of impact	Very low - positive (1)	The project related mitigations will result in no change to the heritage resource which, in this instance, is considered a very low positive in respect of intensity.		
Probability	Certain (7)	Where the recommended project related mitigation measures are implemented, it		

IMPACT DESCRIPTION: Direct impact to burials, monuments and memorials with high CS			
Dimension	Rating	Motivation	
		is certain that the potential impacts to the heritage resources will be avoided.	

Table 10.20: Summary of Impact Ratings for Heritage

	Listed Activities	Impact Description	Significance after mitigation
1	GN 983 (19) – depositing/infilling from a watercourse	Direct impact to archaeological resources with medium CS	Significance: Negligible – (positive)
2	GN 983 (24)- Development of Road	Direct impact to archaeological resources with high CS	Significance: Negligible – (positive)
3	GN 983 (28) – Institutional Developments GN 983 (56) – Widening of a road GN 984 (9)- Development of Facilities GN 985 (4) – New Roads in sensitive area GN 985 (12) – Clearing vegetation in sensitive area	Direct impact to burials, monuments and memorials with high CS	Significance: Negligible – (positive)

10.4.5. Agricultural Potential

Table 10.21: Impacts on Agricultural Resources in the Planning and Construction Phase Normandie-Iphiva 400kV Powerline

Impact Description:	Mitigation
Disturbance of topsoil with construction of roads and footprint of towers	Avoid:
	Minimise: Generation of dust
	Restore/Rehabilitation: Revegetate disturbed areas with natural vegetation. Install surface water drainage structures to minimise erosion
	Compensate/Offset:

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	Nature	Extent	Duration	Intensity	Potential for irreplaceable loss	Probability	Confidence	Consequence	Significance
Normandie-Iphiva 2 (ABFGD)									
Without Mitigation	1	1	1	2	3	4	3	7	28
With Mitigation	1	1	1	2	3	3	3	7	21
Normandie-Iphiva 3 (AEFGD)									
Without Mitigation	1	1	1	2	3	4	3	7	28
With Mitigation	1	1	1	2	3	3	3	7	21

Table 10.22: Operational Phase Normandie-Iphiva 400kV Powerline

Impact Description: Disturbance of topsoil with construction of roads and footprint of towers	Mitigation								
	Avoid:								
	Minimise:								
	Restore/Rehabilitation: Revegetate disturbed areas with natural vegetation. Install surface water drainage structures to minimise erosion. Maintain roads								
	Compensate/Offset:								
	Nature	Extent	Duration	Intensity	Potential for irreplaceable loss	Probability	Confidence	Consequence	Significance
Normandie-Iphiva 2 (ABFGD)									
Without Mitigation	1	1	1	1	1	2	3	4	8
With Mitigation	1	1	1	1	1	2	3	4	8
Normandie-Iphiva 3 (AEFGD)									

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Without Mitigation	1	1	1	1	1	2	3	4	8
With Mitigation	1	1	1	1	1	2	3	4	8

Table 10.23: Summary of Impact Ratings for Agricultural potential

	Listed Activities	Impact Description	Significance after mitigation
1	GN 983 (19) – depositing/infilling from a watercourse GN 983 (24)- Development of Road GN 983 (28) – Institutional Developments	Planning and Construction Phase: Disturbance of topsoil with construction of roads and footprint of towers	Normandie-Iphiva 2 and 3 with mitigation (21) - Low
2	GN 983 (56) – Widening of a road GN 984 (9)- Development of Facilities GN 985 (4) – New Roads in sensitive area GN 985 (12) – Clearing vegetation in sensitive area	Operational Phase: Disturbance of topsoil with construction of roads and footprint of towers	Normandie-Iphiva 2 and 3 with mitigation (8) – Very Low

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10.4.6. Social

Table 10.24: Qualitative discussion of social impacts in the Planning, Design and Pre-Construction Phase

Impact	Stakeholder group	Description
Uncertainty	All	<p>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.</p> <p>Eskom should attempt to finalise the route selection as soon as possible and swiftly enter into negotiations with the relevant land owners. Once the land negotiations have been finalised, it is important that the project should started and completed as soon as possible. Before construction has started there is always the possibility of a change in plans or priorities, which would result in prolonging uncertainty. Eskom should have a communication strategy in place to keep stakeholders up to date with the process.</p>
Expectations	Traditional community groups	<p>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.</p> <p>Communities along the N-I 2 option have expressed the expectation that Eskom would assist the communities through their Corporate Social Responsibility Programme. In one of the areas, for example, there is a special needs school, the Siphosethu Special School, that looks after the needs of children with learning disabilities and physical challenges and serves the whole Pongola area. The school has virtually no infrastructure and is subsidised by the community. The community has expressed the hope that Eskom could assist them.</p> <p>Communities along the N-I 3 option have similar expectations, but there are less communities along this route.</p> <p>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</p>

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		<p>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.</p> <p>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.</p>
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Table 10.25: Quantitative assessment of social impacts in the Planning, Design and Pre-Construction Phase

Impact Description			Mitigation					
Uncertainty			Avoid					
			Minimise	Attempt to finalise route selection and start project as soon as possible.				
			Restore/Rehabilitate					
			Compensate/Offset					
Nature	Extent	Duration	Intensity	Potential for Irreplaceable loss	Probability	Confidence	Consequence	Significance
<i>N-1 2</i>								
Without Mitigation	3	1	2	1	4	2	7	28

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With Mitigation	3	1	2	1	3	2	7	21
<i>N-13</i>								
Without Mitigation	3	1	2	1	4	2	7	28
With Mitigation	3	1	2	1	3	2	7	21

Impact Description			Mitigation					
Expectations			Avoid					
			Minimise	Manage expectations in terms of 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.				
			Restore/Rehabilitate					
			Compensate/Offset					
Nature	Extent	Duration	Intensity	Potential for Irreplaceable loss	Probability	Confidence	Consequence	Significance
<i>N-12</i>								
Without Mitigation	3	2	3	1	4	2	9	36
With Mitigation	3	2	2	1	3	2	8	24
<i>N-13</i>								
Without Mitigation	3	2	2	1	4	2	8	32
With Mitigation	3	2	2	1	3	2	8	24

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Table 10.26: Qualitative discussion of social impacts in the Construction Phase

Impact	Stakeholder group	Description
Traffic impacts	All	<p>During construction there will be an increase in the use of local roads and transport systems.</p> <p>The roads along the N-I 2 option mainly consist of the N2 and some gravel roads. The N2 between Piet Retief and Pongola is mostly single lane and the area is hilly. Slow vehicles on the road carrying infrastructure and equipment can lead to frustration and impatience with other road users. Eskom should attempt to transport equipment during off-peak times to have as little impact on traffic as possible. An increase in heavy vehicles on the road can lead to an increase in accidents.</p> <p>The roads along the N-I 3 option is mostly tarred, mostly single line and the area is hilly. Similar impacts than on the N-I 2 option can be expected.</p> <p>Vehicles will need to use gravel roads to get to areas adjacent to the tarred roads. The area is populated and there are many pedestrians. Employees of Eskom and Eskom’s contractors must ensure that they drive safely and comply with the speed restrictions on these roads. Eskom should have an enforceable road use policy in place that includes fines for transgressors.</p>
Impacts on livelihoods	Traditional Communities	<p>A livelihood refers to the way of life of a person or household and how they make a living, in particular, how they secure the basic necessities of life, e.g. their food, water, shelter and clothing, and live in the community (Vanclay et al., 2015).</p> <p>The N-I 2 option is densely populated and many of the community members practise subsistence farming, such as farming with chickens, goats, cattle, maize and beans. Their livelihoods can be impacted on in two ways. The family can be relocated to another area, which means they need to move their farming activities to another area as well. Alternatively, it may not be necessary for the family to be relocated, but the area where they farm may be impacted on.</p>

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		Families in traditional communities in general are poor on many levels and not resilient to impacts on their livelihoods. Any impacts on their livelihoods should be treated with extreme caution to ensure that they are not worse off.
	Commercial Farmers	<p>Any aspect that impacts on the ability of a farmer to make a living from his/her land can be seen as an impact on his/her livelihood. The N-I 2 option passes sugar cane fields outside Pongola. Sugar cane is mostly burned before being harvested. When powerlines run over the fields, it can be problematic, as the smoke can conduct the electricity from the lines to the ground, creating a hazard for the farmers and their workers. Green harvesting is possible, but is much more expensive. If the farmers lose productive land, it cannot simply be replaced, as there are permitting implications and limited availability of additional land. Besides the commercial farmers in the area, there are a group of emerging sugar cane farmers in the area that are much more vulnerable than the commercial farmers due to their lower socio-economic status.</p> <p>Both the N-I 2 and N-I 3 options pass through forestry areas. Forestry areas are subject to permitting requirements (water license, impact assessment) and cannot just be replaced. Fire is one of the biggest risks for forestry and a powerline traversing a property can result in higher insurance premiums. Fighting fires in forestry areas is not an easy task and planes are usually used for this. Pilots generally do not want to fly low in areas with powerlines as they fear that they will fly into the powerlines. When lines trip because of fires and fall to the ground, it puts the firefighting teams at risk. Plantations are required to maintain compulsory fire breaks and there are concerns that Eskom may not keep this up in the way that they should. Loss of trees as a result of fire has a long term impact on the livelihoods of the farmers and their employees.</p>
Relocation of people	Traditional communities	The N-I 2 option is densely populated in the area between the border of KZN and Pongola. It may not be possible to position the transmission lines in such a way that no-one needs to be relocated. Relocating families will result in a disruption of social networks. Often a family has lived in an area for many years and they are in close proximity to their family and friends. If they have to move to somewhere further away, they have to establish new social networks. In addition, relocation of people can have an impact on their ability to make a livelihood.

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		<p>The N-1 3 option is not as densely populated, and it should be possible to position the transmission lines in a way that no-one needs to be relocated.</p> <p>If relocation cannot be avoided, Eskom should follow the correct procedures for engaging with the community through their leadership structures. The leadership will decide whether the families can be moved and the individual families would not have much of a say in the decision. An important aspect to take into consideration is the moving of graves. In some areas graves can be found at the homesteads and in other areas graves are limited to a graveyard. Moving graves is a very sensitive issue in these communities, and whether permission will be given to move the graves should be part of the negotiation process when considering the placement of the transmission lines. Sacred sites such as initiation sites should be identified early in the process, as it is unlikely that these sites could be moved. The communities have indicated that compensation will play an important role when deciding whether families can be moved. It is expected that the families will be in the same situation or better off. Families should be able to continue their livelihood activities in the same way than currently.</p>
Negative community relations	All	<p>Negative community relations can develop when Eskom's employees or contractors behave in a way that cause harm, or could potentially cause harm to the members of the community. If Eskom does not diligently maintain their servitudes, it could for example create a fire hazard that is very dangerous for especially people living in the forestry areas. Contractors leaving gates open or drive off road or litter could result in harm to livestock or crops. The same applies to areas where game are kept. The presence of contractors could increase the risk of poaching.</p> <p>Eskom needs to ensure that there are rules and consequences in place for their employees and contractors with reference to these issues. Their employees and contractors should be easily identifiable and have identification with them. Where possible, Eskom should inform landowners in advance when they are going to be in the area.</p>
Impact relating to construction workers and newcomers	Traditional communities	<p>Although the communities did not highlight this as a great concern, there are a number of social impacts that are associated with the presence of construction workers which should be taken into consideration. Construction workers usually travel from site to site and their</p>

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		<p>culture are likely to be different from that of the host community. This could result in conflict if their values clash with that of the host community. In areas with high levels of poverty, young females are often attracted to construction workers as they can provide them with a lifestyle that the local young men usually can't. The presence of construction workers can result in an increase in the incidence of sexually transmitted diseases, HIV and AIDS, and unwanted pregnancies.</p>
	Commercial farmers	<p>The presence of construction workers and construction camps in the area lead to an increase of strangers in the area. Opportunistic criminals can make use of the opportunity to steal livestock and commit crimes in the area.</p> <p>In the forestry areas the presence of strangers increases the risk of forest fires. They can start a fire to cook food or for heat in Winter, and if the fire is not extinguished properly it can result in a forest fire.</p>
	Urban communities	<p>A temporary increase in economically active people in the area can have a positive impact on trade and businesses that offer accommodation. Construction workers often just spend the most necessary amounts and send the rest of the money home to their families.</p>
	Tourism establishments	<p>Tourism establishments face impacts similar to those of the commercial farmers. More strangers in the area can lead to an increase in crime. As most of the establishments keep game, there could be an increase in poaching incidents and damage to infrastructure.</p>
Creation of jobs	Local communities	<p>Local communities have expectations that some of their members will be employed during the construction phase. Although they realise that the project will require specialised skills that they don't have, they are of the opinion that there should be a few jobs that require unskilled or semi-skilled labour that members from the community could perform.</p> <p>Where possible, Eskom should recruit local labour for unskilled or semi-skilled positions on the project. Preference should be given to locals that are currently unemployed. The recruitment process should be agreed with local leadership structures. Potential jobs should be advertised in an accessible way and no false expectations should be created.</p> <p>Indirect employment/entrepreneurship opportunities must be enhanced. Eskom and the contractor must support local entrepreneurs as far as possible. Eskom should consider a local</p>

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		economic development programme that can stretch across the entire project. An example would be to buy a mobile kitchen, and train women along the construction route to cater for the construction forces. This kitchen can move with the labour force and women in different areas will be given the opportunity to get trained and earn an income.
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Table 10.27: Quantitative assessment of social impacts in the Construction Phase

Impact Description			Mitigation					
Traffic impacts			Avoid					
			Minimise	Attempt to transport equipment during off-peak times. Put rules and consequences in place for employees and contractors in terms of road use.				
			Restore/Rehabilitate					
			Compensate/Offset					
Nature	Extent	Duration	Intensity	Potential for Irreplaceable loss	Probability	Confidence	Consequence	Significance
<i>N-1 2</i>								
Without Mitigation	3	1	1	1	3	2	6	18
With Mitigation	3	1	1	1	2	2	6	12
<i>N-1 3</i>								
Without Mitigation	3	1	1	1	3	2	6	18
With Mitigation	3	1	1	1	2	2	6	12

Impact Description	Mitigation	
Impacts on livelihoods	Avoid	

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			Minimise	Minimise impacts on livelihoods by selecting the route with the lowest impact on livelihoods.				
			Restore/Rehabilitate					
			Compensate/Offset					
Nature	Extent	Duration	Intensity	Potential for Irreplaceable loss	Probability	Confidence	Consequence	Significance
<i>N-1 2</i>								
Without Mitigation	2	5	5	5	5	3	17	85
With Mitigation	2	5	3	3	4	2	13	52
<i>N-1 3</i>								
Without Mitigation	2	5	5	5	5	3	17	85
With Mitigation	2	5	3	3	4	2	13	52

Impact Description Relocation of people			Mitigation						
			Avoid	Avoid relocation of people as far as possible by careful design of the placement of infrastructure.					
			Minimise						
			Restore/Rehabilitate	If relocation is unavoidable, restore living conditions and livelihoods to the same or better than previously.					
			Compensate/Offset	Compensate stakeholders for loss of productive land as well as the associated loss of livelihood if it is not possible to restore the livelihood.					
Nature	Extent	Duration	Intensity	Potential for Irreplaceable loss	Probability	Confidence	Consequence	Significance	
<i>N-1 2</i>									
Without Mitigation	1	5	5	5	5	3	16	80	
With Mitigation	1	5	3	3	4	2	13	48	

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<i>N-1 3</i>								
Without Mitigation	1	5	5	5	5	3	16	80
With Mitigation	1	5	3	3	4	2	12	48

Impact Description			Mitigation					
Negative community relations			Avoid					
			Minimise	Eskom needs to ensure that there are rules and consequences in place for their employees and contractors with reference to these issues. Their employees and contractors should be easily identifiable and have identification with them. Where possible, Eskom should inform landowners in advance when they are going to be in the area.				
			Restore/Rehabilitate					
			Compensate/Offset					
Nature	Extent	Duration	Intensity	Potential for Irreplaceable loss	Probability	Confidence	Consequence	Significance
<i>N-1 2</i>								
Without Mitigation	3	2	3	3	3	2	11	33
With Mitigation	3	2	2	1	2	2	8	16
<i>N-1 3</i>								
Without Mitigation	3	2	3	3	3	2	11	33
With Mitigation	3	2	2	1	2	2	8	16

Impact Description	Mitigation	
	Avoid	

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Impacts relating to construction camps and newcomers			Minimise						Construction camps should be set up in line with International best practice. There should be rules and consequences in place for their employees and contractors with reference to these issues. Employees and contractors should be briefed in advance to inform them of what is expected of them.					
			Restore/Rehabilitate											
			Compensate/Offset											
Nature		Extent	Duration	Intensity	Potential for Irreplaceable loss		Probability	Confidence	Consequence		Significance			
<i>N-1 2</i>														
Without Mitigation		3	5	4	3		4	2	15		60			
With Mitigation		3	5	2	3		3	2	13		39			
<i>N-1 3</i>														
Without Mitigation		3	5	4	3		4	2	15		60			
With Mitigation		3	5	2	3		3	2	13		39			

Impact Description		Mitigation	
Creation of jobs		Avoid	
		Minimise	
		Restore/Rehabilitate	
		Where possible, Eskom should recruit local labour for unskilled or semi-skilled positions on the project. Preference should be given to locals that are currently unemployed. The recruitment process should be agreed with local leadership structures. Potential jobs should be advertised in an accessible way and no false expectations should be created. Indirect employment/entrepreneurship opportunities must be enhanced. Eskom and the contractor must support local entrepreneurs as far as possible. Eskom should consider a local economic development programme that can stretch across the entire project. An example would be to buy a mobile kitchen, and train women along the construction route to cater for the construction forces. This kitchen can move with the labour force and women in different areas will be given the opportunity to get trained and earn an income.	

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			Compensate/Offset					
Nature	Extent	Duration	Intensity	Potential for Irreplaceable loss	Probability	Confidence	Consequence	Significance
<i>N-1 2</i>								
Without Mitigation	3	1	2	1	3	2	7	21
With Mitigation	3	1	1	1	2	2	6	12
<i>N-1 3</i>								
Without Mitigation	3	1	2	1	3	2	7	21
With Mitigation	3	1	1	1	2	2	6	12

Table 10.28: Qualitative discussion of social impacts in the Operational Phase

Impacts	Stakeholder group	Description
Negative community relations	All	<p>Negative community relations can develop when Eskom's employees or contractors behave in a way that cause harm, or could potentially cause harm to the members of the community. If Eskom does not diligently maintain their servitudes, it could for example create a fire hazard, that is very dangerous for especially people living in the forestry areas. Contractors leaving gates open or drive off road or litter could result in harm to livestock or crops. The same applies to areas where game are kept.</p> <p>Eskom needs to ensure that there are rules and consequences in place for their employees and contractors with reference to these issues. Their employees and contractors should be easily identifiable and have identification with them. Where possible, Eskom should inform landowners in advance when they are going to be in the area.</p>

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Table 10.29: Quantitative Assessment of social impacts in the Operational Phase

Impact Description			Mitigation						
Negative community relations			Avoid						
			Minimise	Eskom needs to ensure that there are rules and consequences in place for their employees and contractors with reference to these issues. Their employees and contractors should be easily identifiable and have identification with them. Where possible, Eskom should inform landowners in advance when they are going to be in the area.					
			Restore/Rehabilitate						
			Compensate/Offset						
Nature	Extent	Duration	Intensity	Potential for Irreplaceable loss	Probability	Confidence	Consequence	Significance	
<i>N-1 2</i>									
Without Mitigation	3	3	3	3	3	2	12	36	
With Mitigation	3	3	2	1	2	2	9	18	
<i>N-1 3</i>									
Without Mitigation	3	3	3	3	3	2	12	36	
With Mitigation	3	3	2	1	2	2	9	18	

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Table 10.30: Summary of Impact Ratings for Social impacts and risks

	Listed Activities	Impacts Description	Significance after mitigation
1	GN 983 (19) – depositing/infilling from a	Planning and Pre-construction Phases: Uncertainty	Normandie-Iphiva 1 and 2: with mitigation (21) - Low
2	watercourse GN 983 (24)- Development of	Planning and Pre-construction Phases: Expectations	Normandie-Iphiva 1 and 2: with mitigations (24) - Low
3	Road GN 983 (28) – Institutional Developments GN 983 (56) – Widening of a road	Construction Phase: Traffic impacts	Normandie-Iphiva 1 and 2: with mitigations (12) Very Low
4	GN 984 (9)- Development of Facilities GN 985 (4) – New Roads in sensitive area GN 985 (12) –	Construction Phase: Impacts on livelihood-	Normandie-Iphiva 1 and 2: with mitigation (52) Medium-High
5	Clearing vegetation in sensitive area	Construction Phase: Relocation of people	Normandie-Iphiva 1 and 2: with mitigation (48) Medium High
6		Construction Phase: Negative community relations	Normandie-Iphiva 1 and 2: with mitigation (16) Low
7		Construction Phase: Impacts relating to construction workers and newcomers	Normandie-Iphiva 1 and 2: with mitigation (39) Medium Low
8		Construction Phase: Creation of jobs	Normandie-Iphiva 1 and 2: with mitigation (12) Very Low

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10.4.7. Visual

Table 10.31: Impact ratings for Visual Impacts

No:	Impact Description				Mitigation						
V-NIT-1	Visual impact as a result of the Normandie-Iphiva 400 kV line on: > National / provincial road users (N2 / R33 / R69 / R66) > Formal settlements (such as Pongola / Mkhuze / Ulundi)				Avoid						
					Minimise						
					Restore/ Rehabilitate						
					Compensate/ Offset						
	Nature	Extent	Duration	Intensity	Potential for Irreplceable loss	Probability	Confidence	Consequence	Significance		
	N-I 2 (ABFGD)										
	Without Mitigation	3	5	3	3	3	3	14	41.75		
	With Mitigation	2	4	3	2	2	3	11	22		
N-I 3 (AEFGD)											
Without Mitigation	3	5	4	3	3	3	15	44			
With Mitigation	2	4	3	2	2	3	11	22			
V-NIT-2	Visual impact as a result of the Normandie-Iphiva 400 kV line on: > Rural (commercial farming) homesteads				Avoid						
					Minimise						
					Restore/ Rehabilitate						
					Compensate/ Offset						
	Nature	Extent	Duration	Intensity	Potential for Irreplceable loss	Probability	Confidence	Consequence	Significance		
	N-I 2 (ABFGD)										
	Without Mitigation	3	5	3	4	5	3	15	75		
	With Mitigation	2	4	3	3	3	3	12	36		
N-I 3 (AEFGD)											
Without Mitigation	3	5	4	4	4	3	16	65			
With Mitigation	2	4	3	3	3	3	12	36			
V-NIT-3	Visual impact as a result of the Normandie-Iphiva 400 kV line on: > Protected areas: Existing lodge locations in Rhino Reserve Complex (including Zululand Rhino, Thanda, Somkhanda and proposed Zimanga				Avoid						
					Minimise						
					Restore/ Rehabilitate						
					Compensate/ Offset						
	Nature	Extent	Duration	Intensity	Potential for Irreplceable loss	Probability	Confidence	Consequence	Significance		
	N-I 2 (ABFGD)										
	Without Mitigation	3	5	4	4	5	3	16	81		
	With Mitigation	2	4	4	4	4	3	14	56		
N-I 3 (AEFGD)											
Without Mitigation	3	5	4	4	5	3	16	81			
With Mitigation	2	4	4	4	4	3	14	56			
V-NIT-4	Visual impact as a result of the Normandie-Iphiva 400 kV line on: > Protected areas: Private: Existing lodge locations in Ithala Reserve and Private Nature Reserves (such as Bendor, Welkom and Witbad Private Nature Reserves)				Avoid						
					Minimise						
					Restore/ Rehabilitate						
					Compensate/ Offset						
	Nature	Extent	Duration	Intensity	Potential for Irreplceable loss	Probability	Confidence	Consequence	Significance		
	N-I 2 (ABFGD)										
	Without Mitigation	2	5	3	1	1	1	10.5	10.5		
	With Mitigation	2	4	3	1	1	1	10	10		
N-I 3 (AEFGD)											
Without Mitigation	3	5	4	3	4	3	15	61			
With Mitigation	3	4	3	3	3	3	13	39			

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Table 10.32: Summary of Impact Ratings for Visual impacts

	Listed Activities	Impact Description	Significance after mitigation
1	GN 983 (19) – depositing/infilling from a watercourse GN 983 (24)- Development of Road	National / Provincial road users. Formal settlement (such as Pongola/ Mkhuze/ Ulundi)	N-I 2 and 3 with mitigation (22) Low
2	GN 983 (28) – Institutional Developments	Rural (commercial farming) homestead	N-I 2 and 3 with mitigation (36) Medium-Low
3	GN 983 (56) – Widening of a road GN 984 (9)- Development of Facilities GN 985 (4) – New Roads in sensitive area	Protected areas existing lodge locations in Rhino Reserve Complex (including Zululand Rhino, Thanda, Somkhanda and proposed Zimanga)	N-I 2 and 3 with mitigation (56) Medium-High
	GN 985 (12) – Clearing vegetation in sensitive area	Protected areas private: existing lodge locations in Ithala Reserve and Private Nature Reserve (such as Bendor, Welkom and Witband Private Nature Reserves)	N-I 2 with mitigation (10) Very Low N-I 3 with mitigation (39) – Medium Low

10.4.8. Economic

Table 10.33: Assessment of the reduction in property value

Impact Description: Construction & operational phase impact - A reduction in property value for the affected property.				Mitigation					
				Avoid	The powerline should not be constructed on property used for tourism activity.				
				Minimise	Place the powerline and pylons in such a manner that it is not visible from tourism areas. The powerline should be constructed on the boundary of farms. Powerlines across the middle of conservation areas will lead to a decrease in aesthetic appeal of the area.				
				Restore/Rehabilitate					
				Compensate/Offset	Market related compensation for the affected property should be provided where the powerline is developed. Additionally discussions with landowners to their preferred configuration if their property is affected.				
Nature	Extent	Duration	Intensity	Potential for Irreplaceable loss	Probability	Confidence	Consequence	Significance	
<i>Normandie-Iphiva 2</i>									
Negative, direct without mitigation	1	5	4	5	5	3	15	75	
Negative, direct with mitigation	1	4	3	5	4	3	13	52	
<i>Normandie-Iphiva 3</i>									
Negative, direct & indirect without mitigation	1	5	4	5	5	3	15	75	
Negative, direct & indirect with mitigation	1	4	3	5	4	3	13	52	

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Table 10.34: Assessment of the reduction in property value for adjacent properties

Impact Description: Construction & operational phase impact - A reduction in property value for the adjacent properties if the powerlines is visible from areas that are often visited by tourist (hides, look-out areas hiking trails, game drive routes)			Mitigation						
			Avoid			The powerlines should not be constructed on property used for tourism activity.			
			Minimise			Place the powerlines and pylons in such a manner that it is not visible from tourism areas. The powerlines should be constructed on the boundary of farms. Powerlines across the middle of conservation areas will lead to a decrease in aesthetic appeal of the area.			
			Restore/Rehabilitate						
Compensate/Offset			Market related compensation for the affected property should be provided where the powerline is developed. Additionally discussions with landowners to their preferred configuration if their property is affected.						
Nature	Extent	Duration	Intensity	Potential for Irreplaceable loss	Probability	Confidence	Consequence	Significance	
<i>Normandie-Iphiva 2</i>									
Negative, direct without mitigation	2	5	4	5	5	3	16	80	
Negative, direct with mitigation	1	4	3	5	3	3	13	39	
<i>Normandie-Iphiva 3</i>									
Negative, direct & indirect without mitigation	2	5	4	5	5	3	16	80	
Negative, direct & indirect with mitigation	1	4	3	5	3	3	13	39	

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Table 10.35: Assessment of the Reduction in Economic Value

Impact Description: Construction & operational impact - reduction in economic value for the economy. Due to the establishment of powerline the affected area will not be utilised for tourism, thus reducing the productivity. Additionally, future expansion/investment in tourism activity is lost due to the loss in productive land.			Mitigation						
			Avoid	The powerline should not be constructed on property used for tourism activity.					
			Minimise	Place the powerlines and pylons in such a manner that it is not visible from tourism areas. The powerlines should be constructed on the boundary of farms. Powerlines across the middle of conservation areas will lead to a decrease in aesthetic appeal of the area.					
			Restore/Rehabilitate						
			Compensate/Offset	Market related compensation for the affected property should be provided where the powerline is developed. Additionally discussions with landowners to their preferred configuration if their property is affected.					
Nature	Extent	Duration	Intensity	Potential for Irreplaceable loss	Probability	Confidence	Consequence	Significance	
<i>Normandie-Iphiva 2</i>									
Negative, direct & indirect without mitigation	4	5	4	5	4	3	18	72	
Negative, direct & indirect with mitigation	2	4	2	5	3	3	13	39	
<i>Normandie-Iphiva 3</i>									
Negative, direct & indirect without mitigation	4	5	4	5	4	3	18	72	
Negative, direct & indirect with mitigation	2	4	2	5	3	3	13	39	

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Table 10.36: Assessment of a Loss in Tourism Employment

Impact Description: Construction & operational phase - a loss in tourism employment is associated with the loss in productive land.			Mitigation						
			Avoid	The substation should not be constructed on property used for tourism activity					
			Minimise	Place the substation in an area that is not visible from the tourism areas					
			Restore/Rehabilitate						
			Compensate/Offset						
Nature	Extent	Duration	Intensity	Potential for Irreplaceable loss	Probability	Confidence	Consequence	Significance	
<i>Normandie-Iphiva 2</i>									
Negative, direct without mitigation	4	5	4	5	4	3	18	72	
Negative, direct with mitigation	2	4	2	5	3	3	13	39	
<i>Normandie-Iphiva 3</i>									
Negative, direct without mitigation	4	5	4	5	4	3	18	72	
Negative, direct with mitigation	2	4	2	5	3	3	13	39	

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Table 10.37: Summary of Impact Ratings for Economic impacts

	Listed Activities	Impact Description	Significance after mitigation
1	GN 983 (19) – depositing/infilling from a watercourse GN 983 (24)- Development of Road GN 983 (28) – Institutional Developments	Construction & operational phase impact - A reduction in property value for the affected property.	Normandie-Iphiva 2: Negative, direct with mitigation (52) Medium-High Normandie-Iphiva 3: Negative, direct & indirect with mitigation (52) Medium High
2	GN 983 (56) – Widening of a road GN 984 (9)- Development of Facilities GN 985 (4) – New Roads in sensitive area GN 985 (12) – Clearing vegetation in sensitive area	Construction & operational phase impact - A reduction in property value for the adjacent properties if the Transmission powerlines is visible from areas that are often visited by tourist (hides, look-out areas hiking trails, game drive routes)	Normandie-Iphiva 2: Negative, direct with mitigation (39) Medium-Low Normandie-Iphiva 3: Negative, direct & indirect with mitigation (39) Medium-Low
3		Construction & operational impact - reduction in economic value for the economy. Due to the establishment of Transmission powerline the affected area will not be utilised for tourism, thus reducing the productivity. Additionally, future expansion/investment in tourism activity is lost due to the loss in productive land.	Normandie-Iphiva 2 & 3: Negative, direct & indirect with mitigation (39) Medium-Low
4		Construction & operational phase - a loss in tourism employment is associated with the loss in productive land.	Normandie-Iphiva 2 & 3: Negative, direct with mitigation (39) Medium-Low

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11 SUMMARY OF SPECIALIST STUDIES

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3(1) (k) where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;

11.1. SOCIAL SPECIALIST STUDY

This Social Specialist Study was compiled by San-Marié Aucamp and Ilse Aucamp.

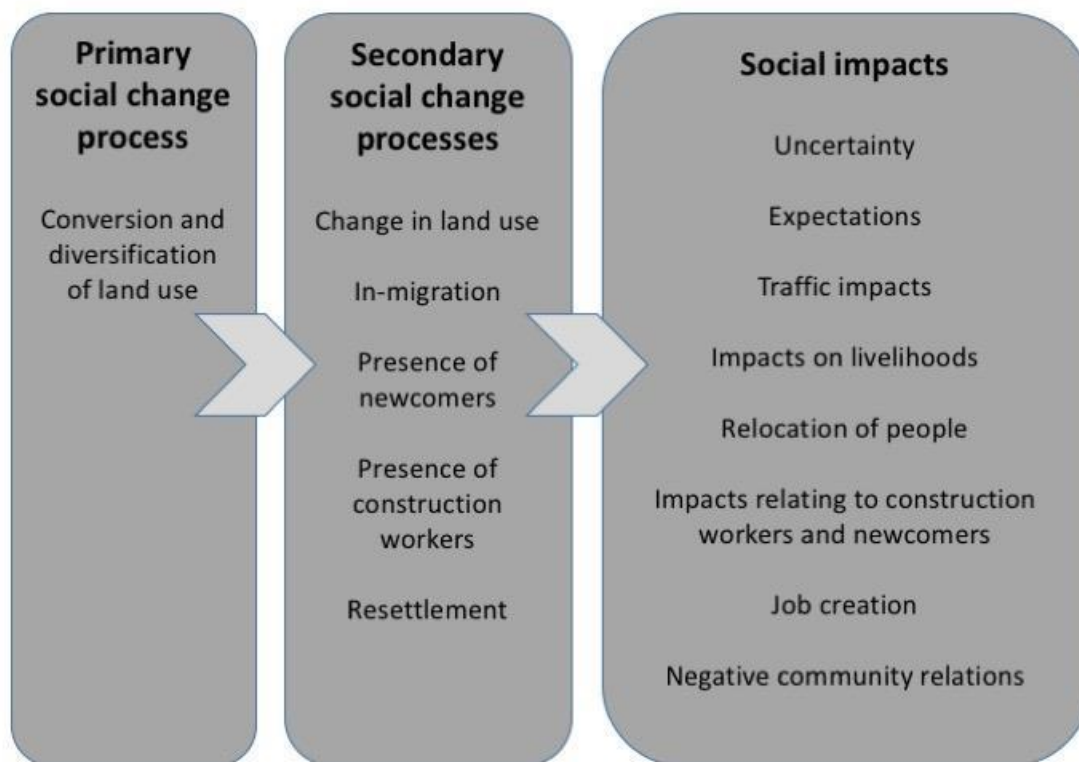
The Social Specialist identified the following key stakeholder groups potentially impacted by the project:

- 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 and may be experienced differently by different groups in the area. It must further be considered that the social environment is very dynamic and is constantly changing.

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

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The following mitigation and management measures are suggested:

- Appoint a Community Liaison Officer;
- Compile and implement a community relations strategy;
- Compile and implement a communication strategy;
- Compile and implement a grievance mechanism;
- Compile and implement an employment policy;
- Compile and implement a CSI strategy;
- Compile and implement a road use policy;
- Construction camps should be established in accordance with international best practice;
- Compile and implement a policy for conduct of employees and contractors;
- Compile and implement an access control policy specifically for protected and game reserve areas;
- Join local fire protection agencies and have and implement a fire fighting strategy;
- Have and implement a strategy for community safety and security,
- Have and implement a HIV and life skills strategy;
- Compile and implement a relocation and compensation policy in accordance with international best practice;
- Appoint a relocation specialist should relocation be required.

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The following alternatives are preferred from a social perspective:

- Normandie-Iphiva 400 kV Powerline – N-I 2 option (indifferent to deviation)

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. 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.

The social specialist recommends that Normandie-Iphiva 2 be authorised and is indifferent to the deviation.

11.2. AGRICULTURAL POTENTIAL SPECIALIST STUDY

The Soil and Agricultural Potential Specialist Study was undertaken by Francois Botha and Astrid Magdalena Hattingh.

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.

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

No areas with a high potential agricultural value were identified in the proposed corridors. Approximately 52 % of the Normandie-Iphiva Corridors have soils not suitable for arable agriculture, but suitable for forestry or grazing covers. The Normandie-Iphiva (2) 400kV corridor with the Deviation is the preferred alternative since it has less impact on forestry and agricultural cultivated land and erosion potential is less.

The specialist has no objections to the project from the agricultural and soil potential standpoint and expressed no preference for any particular corridor.

Recommendations include that all land disturbed by Eskom should be vegetated and left in the condition it was before the construction of the powerlines and that no disturbed areas should be left uncovered to prevent erosion. The powerlines should be constructed on farm boundaries as far as possible, specifically in areas where land is used for forestry.

The number of roads and road crossings should be kept to a minimum.

11.3. HERITAGE SPECIALIST STUDY

The Heritage Specialist Study was undertaken by Justin du Piesanie from Digby Wells. The Terms of Reference (ToR) of the specialist heritage study was to complete a Heritage Screening Assessment to comply in part with the KZN Heritage Act, 2008 (Act No. 4 of 2008) (KZNHA) and National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) to predict preliminary heritage impacts and outline activities to be undertaken in the subsequent phases of the Project as a condition of authorisation.

Through the review of available information, Digby Wells demonstrated the greater cultural landscape to contain heritage resources spanning from palaeontological through to contemporary living heritage resources. A Summary of the Cultural Significance of each heritage resource type is presented in **Table 11.1**.

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Table 11.1: Summary of Cultural Significance of heritage resource types in the local study area

Very High

Palaeontological resources associated with the Karoo Supergroup lithology's
Burial grounds and graves

High

Archaeological LFC sites with good integrity
Historic battlefields
Monuments and memorials
Natural

Medium High

Archaeological MSA sites with good integrity
Historical built environment associated with living groups with good integrity
Intangible / living heritage sites

Medium

Historical built environment not associated with living groups with good integrity

Negligible

Archaeological MSA sites with poor integrity
Archaeological LFC sites with poor integrity
Historical built environment associated with living groups with poor integrity
Historical built environment not associated with living groups with poor integrity

The Heritage Resources identified during the field survey are presented in **Table 11.2** and **Figure 11.1**. Detailed Impact Assessment tables for each of these is presented in **Appendix F**.

Table 11.2: Identified heritage resources from the field survey

Site Name	Latitude	Longitude	Heritage Resource Type
ILI3864/001	-27.634005	32.016514	Archaeological - Kraal
ILI3864/002	-27.649434	31.93692	Burial Grounds & Graves
ILI3864/003	-27.64916	31.93713	Historical Built Environment
ILI3864/004	-27.648168	31.787028	Burial Grounds & Graves
ILI3864/005	-27.650433	31.791483	Burial Grounds & Graves

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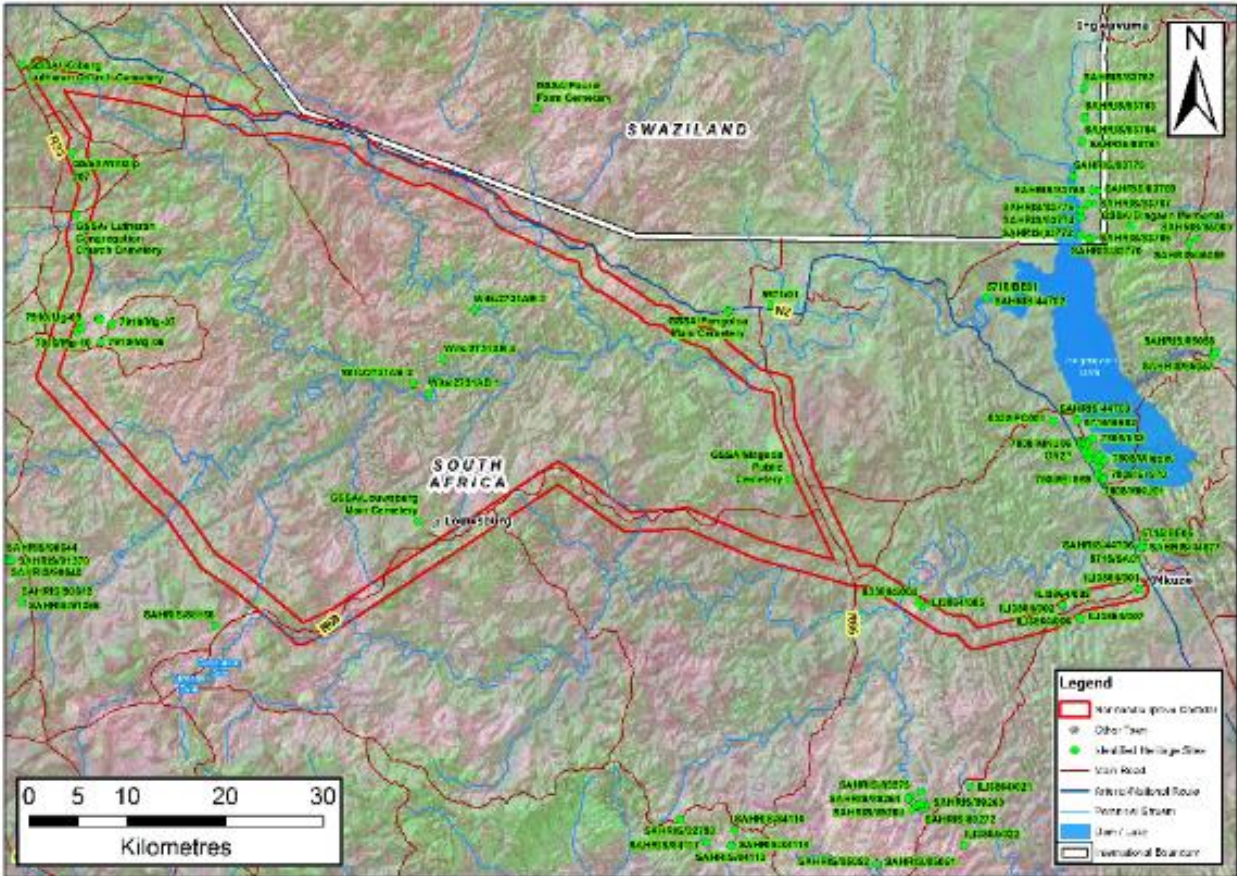


Figure 11.1: Normandie-Iphiva 400 kV site-specific study areas with identified heritage resources

The assessor determined the cultural significance of the landscape to be medium based on criteria defined in Section 3 of the NHRA.

The following project related activities are expected to have the greatest likelihood of direct impacts on heritage resources:

- 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.

A summary of the assessment is presented in **Table 11.3**.

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Table 11.3: Summary of potential impacts to heritage resource types by project related activities

Impact	Pre-mitigation:						Post-mitigation:					
	Duration	Extent	Intensity	Consequence	Probability	Significance	Duration	Extent	Intensity	Consequence	Probability	Significance
Archaeological resources with medium significance	Permanent	Province/Region	Moderately high - negative	Highly detrimental	Unlikely	Minor - negative	Immediate	Very limited	Very low - positive	Negligible	Certain	Negligible - positive
Archaeological resources with high significance	Permanent	National	Extremely high - negative	Extremely detrimental	Unlikely	Minor - negative	Immediate	Very limited	Very low - positive	Negligible	Certain	Negligible - positive
Battlefields with high significance	Project Life	Limited	High - negative	Moderately detrimental	Unlikely	Minor - negative	Immediate	Very limited	Very low - positive	Negligible	Certain	Negligible - positive
Burials, monuments and memorials with high significance	Permanent	International	Extremely high - negative	Extremely detrimental	Unlikely	Minor - negative	Immediate	Very limited	Very low - positive	Negligible	Certain	Negligible - positive
Living heritage sites with high significance	Permanent	Province/Region	Extremely high - negative	Extremely detrimental	Unlikely	Minor - negative	Immediate	Very limited	Very low - positive	Negligible	Certain	Negligible - positive

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The assessment also considered the suitability of the proposed alternative 2 km wide corridors within which a servitude can be negotiated within which the powerline will be constructed with a multi-criteria decision analysis utilising a simple linear additive evaluation model. Defined criteria included:

- Criteria 1: The level of existing anthropogenic disturbance of the various site-specific study areas that will reduce the likelihood of identifying *in situ* heritage resources;
- Criteria 2: Potential for occurrence of unidentified heritage resources, both on the surface and at sub-surface levels, in the development footprint that may be impacted upon;
- Criteria 3: If heritage resources occur within or in proximity to the development footprint and may be impacted upon; and
- Criteria 4: The potential that permitting requirements may be applicable if EA of the development footprint is approved.

These criteria were rated on a scale from 1 (unsuitable) to 5 (most suitable) to quantifiably compare the suitability of the various infrastructure sittings and/or routing options. Once the ratings were determined against the criteria above, these were calculated to determine the overall suitability ranking of the proposed infrastructures.

The consideration of alternatives assessed the three Normandie-Iphiva 400 kV powerline site-specific study areas against the aforementioned criteria. **Table 11.4** presents the designated ratings and consequent results.

Table 11.4: Comparative rating of alternative corridors

Alternative s	Criteria 1	Criteria 2	Criteria 3	Criteria 4	Total %	Rating
N-I 2	5	4	4	3	80%	4 Suitable
N-I 3	2	3	2	3	60%	3 Negligible / insignificant

Varying levels of anthropogenic disturbances were noted in the site-specific study areas. These were noted as rural settlements, subsistence and commercial agricultural fields, and municipal infrastructures. Of the options, N-I 3 was deemed to have less anthropogenic disturbances when compared to N-I 2. In comparison, this suggests there is a greater potential to identify *in situ* heritage resources within N-I 3.

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Based on criteria 3, N-I 2 is more suitable as few heritage resources have been recorded within the site-specific study area. This does not however, preclude the potential permitting requirements in the event of accidental exposure of *in situ* subsurface heritage resources as per criteria 4. While permitting requirements may be applicable for N-I 3 in the event that heritage resources are impacted upon, because they are known the potential impacts can be easily avoided through project related mitigation thus making it more suitable in respect of criteria 4.

This assessment therefore demonstrated that **N-I 2** is the more suitable alternative from a heritage perspective based on the available information.

Fossil Chance Find Procedure

- Surface excavations should be monitored by a geologist in areas defined as having a high palaeontological sensitivity and any fossil material disturbed should be put aside and the palaeontologist called to inspect the material within a reasonable timeframe to minimise delays to the project. The geologist should also review visual references and descriptions of relevant palaeontological material.
- If it is not feasible for the palaeontologist to visit the site timeously then digital photographs of good quality and resolution should be sent to the palaeontologist to assess and make recommendations.
- From visits or photographs supplied the palaeontologist must make the following recommendations:
 - Material is of no value so development can proceed, or
 - Fossil material is of some interest where a representative sample should be carefully collected with the necessary permits as regulated by Chapter IV of GN R 548 before the development may proceed. The collected samples must be incorporated into a recognised repository (e.g. Ditsong Museum, Council for Geosciences, Pretoria; Evolutionary Studies Institute, University of the Witwatersrand, Johannesburg) to comply with the requirements of the Regulations to the Act; or
 - Fossils are scientifically important and the palaeontologist must obtain the necessary permits as regulated by Chapter IV of GN R 548 to study the fossiliferous material *in situ*, where necessary excavate incorporate into a recognised repository. The development may not proceed in the identified area.

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11.4. FAUNA AND FLORA SPECIALIST STUDY

The Fauna and Flora Specialist Study was undertaken by Rudi Greffrath from Digby Wells. The Terms of Reference of the fauna and flora screening and comparative specialist study was to evaluate the presence of sensitive species and landscapes/habitat present that could be affected by the various options available for the project infrastructure. Thereafter to determine the preliminary impacts on these natural resources and recommend mitigation measures to alleviate negative impacts. The consideration of alternative for the project infrastructure, from a biodiversity perspective, centered on the ecological sensitivity present in each alternative.

In terms of ecological sensitivity, the following features were assessed to determine how sensitive the habitats identified within the alternatives are:

- Presence or absence of Red Data or protected plant and animal species;
- Presence or absence of exceptional species diversity;
- Extent of intact habitat in good ecological condition in the absence of disturbance; and
- Presence or absence of important ecosystems such as Protected Areas, areas demarcated for future protected area status (NPAES) and wetlands.

The construction of various surface infrastructure components will mean the removal, partial or complete of vegetation/habitat types present.

With the clearing of vegetation, open areas will occur, here indigenous vegetation will be replaced by fast growing alien and weed vegetation. This impact can be greatly reduced with the correct implementation of alien vegetation management plan.

Management objectives will be to prevent the loss of important/protected landscapes, species of plants and animals (such as those with Red Data Status, National and Provincial). This is achieved by avoiding destruction of areas where these species are located. In the case of plants, if this is not possible relocation permits are required.

The destruction of the vegetative cover must be limited, this can be achieved by restricting the removal and disturbance of vegetation to those areas absolutely essential for the infrastructure placements.

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The ecosystem present must be preserved, this includes areas not directly affected by project activities, and can be achieved by limiting project activities to areas where they are essential. Rehabilitation plans must be initiated during construction to minimise disturbed areas. Habitat/vegetation degradation must be prevented through the implementation of an alien invasive plant management strategy.

Red Data Status plants located in areas of development should be marked prior to construction of any infrastructure and the necessary permits for relocations of these protected species must be obtained from the relevant government department. The relocation strategy must be approved by relevant provincial authorities prior to relocation to a safe place to avoid destruction and stipulations made by the authorities must be followed. A nursery should be developed on site for this purpose. No protected plant species can be disturbed without authorisation.

Three basic rules of conservation apply to populations of Red List Plant Species, as set out hereunder, according to Red List Plant Guidelines (2012):

- All populations of Near Threatened and Threatened plant taxa must be conserved *in situ*;
- All populations of Near Threatened and Threatened plant taxa must be protected with a buffer zone in accordance with guidelines; and
- An Ecological Management Plan must be compiled in respect of all actions that affect populations of Red List Plant Species, and such Ecological Management Plans must conform with the Guidelines set out for buffer zone widths.

Illegal waste dumping, including building waste and rubble, should be prohibited. Such illegal dumping sites are prone to alien vegetation recruitment. The environmental manager must ensure that after the building site is rehabilitated, there are no rubble piles remaining.

Training should be given to onsite staff on which plants and animals have red data status and how they may be identified. Thereafter the Environmental Officer must initiate the red data management plan. The incidence of plant or animal red data removal or death must be quantified and records kept, this will ensure that management actions are adapted if they are not successful.

Destruction of vegetation should be limited to the areas essential for the development if construction is finalised the environmental officer must ensure the construction areas are

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rehabilitated. Areas of erosion must be marked and attended to before the following wet season starts.

Detailed Impact Rating tables are presented in **Appendix G**.

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

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

The Normandie-Iphiva 3 powerline was recommended for implementation.

11.5. AVI-FAUNA SPECIALIST STUDY

Avi-Fauna Specialist Study was undertaken by Phil Patton.

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

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

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

The avi-fauna specialist accepts the economic need of the Eskom expansion and is in support of this strategy. The proposed powerline is could have very high impacts on the Avifauna Species of Special Concern in the area. A walkdown of the servitude once the tower positions

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have been determined, prior to any construction activities, must be undertaken by suitably qualified bird specialist. The specialist should recommend feasible design changes (i.e. moving tower positions within the approved corridor, preferably within the servitude if already negotiated) to further reduce impacts and identify the sections of the powerlines that require bird diverters and towers that require bird guards. These findings must be documented on powerline profiles and incorporated into the EMPr. With the historic success that the mitigation measure has had on previous projects, the main issues can be mitigated to an acceptable level. In this case the project can go ahead. The avi-fauna specialist recommended that Normandie-Iphiva 3 with deviation be implemented.

11.6. WETLAND SPECIALIST STUDY

The Wetland Specialist Study was undertaken by Crystal Rowe and Kieren Bremmer.

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

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

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

Eskom avoids placing towers in wetlands for technical reasons. Most of the wetlands are narrow enough for the conductors to be strung over them. Direct loss of wetlands, increased sedimentation, compaction of wetland soils, altered wetland hydrology, onset of erosion, and the establishment of alien invasive plant species is expected to result from the clearing of vegetation for the construction of access roads and towers foundations, as well as the increased vehicular activity associated with the stringing of the powerlines.

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

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

The wetlands specialist recommended implementation of the Normandie-Iphiva 2 corridor with the Deviation.

11.7. VISUAL SPECIALIST STUDY

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 and Mkuze) and informal settlements / villages (likely considers Transmission powerlines as a sign of progress) a Low viewer sensitivity.

The greatest factor that influenced visual impact for this project was the presence of conservation areas, due to their dependence upon the landscape as visual resource as income generator for tourism-related activities. The avoidance and minimisation of the visual impact was mostly focused around reducing impact on these areas.

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

The visual specialist recommended that Normandie-Iphiva 2 (along the N2) should be authorised. The Deviation (i.e. widening of the corridor to the north (close to the start)) is

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preferred, as it allows for the avoidance of visual impact on Mr de Waals farm. This is related to its lower visual sensitivity and impact when compared to Normandie-Iphiva 3, when considering the most sensitive viewer group, namely protected / conservation areas, followed by rural commercial farming homesteads. The remaining impact after mitigation is considered acceptable.

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

11.8. ECONOMICS SPECIALIST STUDY

The economic assessment will be undertaken by Davis Dyason from TRADE which is part of the North West University.

Tourism is not an economic sector in its own right but is a complex and composite sector comprising mainly of accommodation, transportation, food and beverages, cultural and recreational activities. The activities undertaken by the tourist relate with the travel, destination, and entertainment activities and expenditure that tourists make. The tourism sector contributes approximately 6 % to the value of economic activity for all goods and services produced within the area. This is slightly higher than the national average. The total number of people employed in tourism amounts to approximately 4.6 % of all employment within the regional economy. The tourism value of the region is estimated at R 1.9 billion for the geographical area for 2016, and employment amounts to approximately 9 831 for the corresponding year.

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

The economic specialist found that the agglomeration of eco- and nature-based tourism is high within this region and a large share of these establishments cater for the international

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tourism market and even state their tariffs in Euro and Dollar instead of South African Rand. The intensity of the economic impact for tourism activity will be different for each property/activity and depends on inter alia the:

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

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

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

Impacts (table below) are measured in terms of:

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

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Summary of economy wide economic impact

Alternative	Total hectare within reserve/ lodge/ game farm	Economy-Wide Economic Value	Employment	Household Income
Normandie-Iphiva 2 with deviation	2 510	R 29.7 million	116 jobs	R 14 million
Normandie-Iphiva 3 with deviation	5 284	R 62 million	243 jobs	R 29 million

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

The economic specialist recommends that Normandie-Iphiva 2 for implementation as its impact on existing tourism is lower than Iphiva-Duma 3.

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12 ENVIRONMENTAL IMPACT STATEMENT

GNR 982 Appendix 3:

- (1) (l) an environmental impact statement which contains—
- (i) a summary of the key findings of the EIA;
 - (ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred development footprint on the approved site as contemplated in the accepted scoping report indicating any areas that should be avoided, including buffers; and
 - (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;
- (n) the final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment;
- (p) a description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed:

This application refers to the Normandie-Iphiva 400 kV powerline in Northern KZN and Mpumalanga.

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

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

This EIA Report uses input from specialists to assess the key impacts, determine their significance, and recommend appropriate measures to mitigate negative impacts and enhance benefits. The specialist studies that have been undertaken are summarized in **Chapter 11**. A summary of the positive and negative impacts identified is included in **Chapter 10**. Aspects recommended to be included as conditions of the authorisation are listed

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in **Chapter 13** and mitigation measures recommended have been included in the Draft EMP. An extensive PPP that complies with the requirements of GN 982 has been undertaken and is documented in **Chapter 7** with substantiation in **Appendix C**.

For the **no-project** alternative, i.e. without the Normandie-Iphiva 400 kV powerline, Eskom will have to implement localised rotational load shedding in order to avert a 132 kV system voltage collapse from as early as 2019. This will impact 40 000 customers.

Commercial farmers that includes forestry is practised in the north-western section of the study area. Normandie-Iphiva 3 has the greatest impact on these farmers, and particularly forestry. Farmers from this area have voiced their concerns in a series of focus group meetings detailed in **Chapter 7** and **Appendix C** that include late identification and involvement in the EIA process, Impacts on homesteads, loss of forestry, grazing and cultivated lands, noise pollution and health hazards, visual impacts, long terms financial losses, using a local wood fuelled power station as an alternative to Transmission Powerlines from the coal fires power stations, impacts on cell phone communication, safety for small planes and helicopters used for firefighting and crop spraying, risk of fire, maintenance of fire breaks, and impacts on farm workers. The Normandie-Iphiva 2 Deviation was introduced to avoid impacting on the homestead of Mr De Waal who's farm is close to the Normandie Substation and will be impacted by either Normandie-Iphiva 2 or 3. Normandie-Iphiva 2 was found to have the least impact on commercial farmers, and forestry in particular.

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, reduced budgets for conservation of animals. Interaction with the landowners highlighted that the project could be opposed should this aspect not be adequately addressed. The design alternative of burying cables for sections of the 400 kV powerlines in areas where the visual impact is of concern, which is along the P 234 road (the Bangonomo Road) between the Manyoni Private Game Reserve and proposed Zimanga Private Game Reserve was therefore assessed. The inclusion of a more detailed economic assessment of the impacts on tourism was also commissioned. No sections of the Normandie-Iphiva corridors impact on the P234 corridor, as this powerline leaves the Iphiva substation in a north eastern direction in the direction of Piet Retief.

Authorisation of Normandie-Iphiva 2 with Deviation 400 kV powerline is recommended.

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13 CONDITIONS TO BE INCLUDED IN THE ENVIRONMENTAL AUTHORISATION

GN 982 Appendix 3:

(m) based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as **conditions** of authorisation;

(o) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;

(q) a reasoned **opinion as to whether the proposed activity should or should not be authorised**, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;

The following aspects are recommended conditions of the Environmental Authorisation:

Iphiva-Duma West 1 with Deviation (**Figure 13.1**) was found by specialists to have the least significant environmental impacts and is recommended for authorisation.

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

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

A walk-down of the servitude once the tower positions have been determined, prior to any construction activities, must be undertaken by suitably qualified heritage, ecology and bird specialists. The specialist should recommend feasible design changes (i.e. moving tower

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positions within the approved corridor, preferably within the servitude if already negotiated) to further reduce impacts and identify any heritage resources that may be impacted upon, plants or animals that require rescue and sections of the powerlines that require bird diverters and towers that require bird guards. Areas with a high ecological sensitivity, wetlands and watercourses should be designated as “No-Go” areas and be off limits to all unauthorised vehicles and personnel. These findings must be documented on powerline profiles and incorporated into the EMPr.

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

The footprint area of towers must be limited to what is essential in order to minimise impacts as a result of vegetation clearing and compaction of soils. Removal of plants should be restricted to only those trees that pose a risk to the power line. Protected trees within the servitude will necessitate that appropriate permits are applied for before these trees are damaged or removed. Physical damage to natural vegetation on the periphery of the servitude, in all riparian areas and areas with steep slopes must be avoided. No hunting is permitted by Eskom employees or contractors. No incision and canalisation of the wetland features should take place. No material may be dumped or stockpiled in any “No-Go” areas. All vehicles must remain on demarcated roads and within the project area footprint. All land disturbed by Eskom should be vegetated and left in the condition it was before the construction of the powerlines and no disturbed areas should be left uncovered during construction to prevent erosion.

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

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

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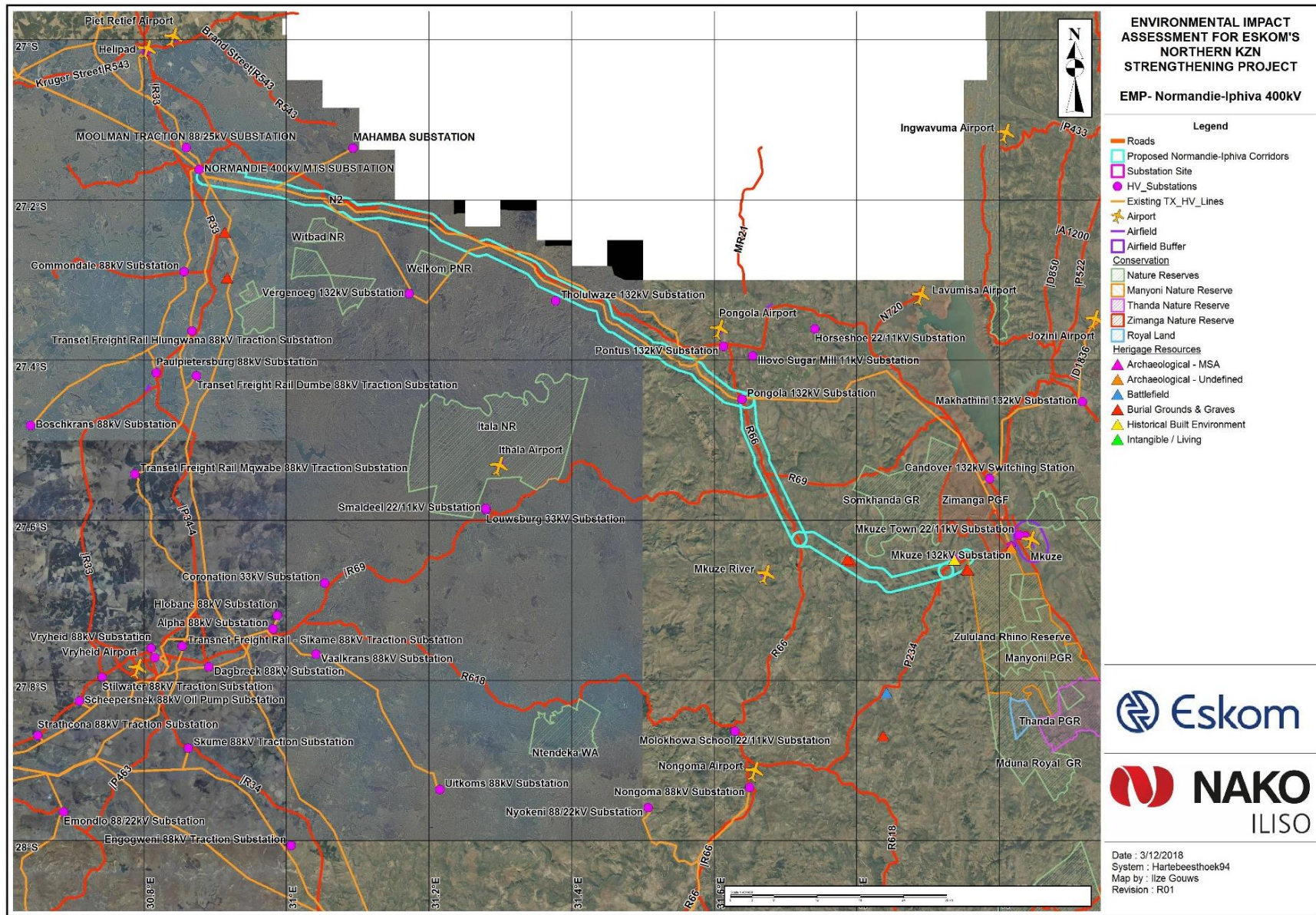


Figure 13.1: Normandie-Iphiva Corridor recommended for authorisation

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14 ASSUMPTIONS, LIMITATIONS AND GAPS

GN 982 Appendix 3:

(p) a description of **any assumptions, uncertainties and gaps** in knowledge which relate to the assessment and mitigation measures proposed;

The objective of this assessment was to obtain authorisation for a corridor within which Eskom can negotiate a servitude within which they can design and construction a 400 kV powerline to link the proposed new Iphiva Substation near Mkuze to the existing Normandie Substation. The corridors for the 400 kV powerline is 2 km wide. This gives Eskom the freedom to accommodate some property specific requests from landowners to avoid local impacts.

This approach to the impact assessment and its role and stage in the project implementation process results in the exact servitude or tower positions not being known at this stage. This causes some difficulties with a strict interpretation of the EIA Regulations.

Each specialist lists their assumptions, uncertainties and gaps in knowledge in their specialist study reports (**Appendix D to K**) as detailed below.

The following assumptions and limitations were relevant for the **Social Specialist Study**:

1. Not every individual in the community could be interviewed therefore only key people in the community were approached for discussion. Due to the size of the study area and limitations in terms of budget, not all key people could be interviewed, but rather a representative sample of key people. These key people include directly affected landowners and traditional authorities. Additional information was obtained using existing data.
2. The social environment constantly changes and adapts to change, and external factors outside the scope of the project can offset social changes, for example changes in local political leadership, droughts or economic conditions. It is therefore difficult to predict all impacts to a high level of accuracy, although care has been taken to identify and address the most likely impacts in the most appropriate way for the current local context within the limitations. In addition, it is also important to manage social impacts for the life of the project, especially in the light of the changing social environment.
3. Social impacts can be felt on an actual or perceptual level, and therefore it is not always straightforward to measure the impacts in a quantitative manner.

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4. Social impacts commence when the project enters the public domain. Some of these impacts will occur irrespective of whether the project continues or not, and other impacts have already started. These impacts are difficult to mitigate and some would require immediate action to minimise the risk.
5. There are different groups with different interests in the community, and what one group may experience as a positive social impact, another group may experience as a negative impact. This duality will be pointed out in the impact assessment phase of the report.
6. Social impacts are not site-specific, but take place in the communities surrounding the proposed development.
7. Given that the routes are placed within a two kilometre corridor, it is not possible to identify affected individuals more specifically, especially in terms of possible relocation. These aspects can only be finalised once there is a specific route. As such the recommendations are generalised, but would need to be revisited.
8. It is assumed that Eskom would appoint a relocation specialist, or has an in-house relocation specialist that will manage this process if required.
9. The impact tables and ratings are designed for the natural environmental sciences and it must be noted that it is not always possible to compartmentalise the social impacts. For the sake of consistency this has been attempted, but it is not innate to social sciences. Allowance for the changing and adaptive nature of social impacts should be made when interpreting the impact tables. Another consideration is that the management and mitigation of some social impacts require input from a number of agencies, as these can only be addressed within the greater societal context. Proper mitigation and management would also take a number of years – this period would go far beyond the construction phase of the project. The focus of this report will therefore be on project-specific mitigation.
10. Due to changes to routes at a late stage and resulting time constraints, it was not possible to consult with stakeholders again. These areas were assessed on a desk top level as well as using input from other specialist reports.

The following assumptions, uncertainties and gaps were experienced during the **Soil and Agricultural Potential Specialist Study**:

- It should be taken in mind that the scale of this survey is very broad due to the large areas to be covered during this survey and therefore relative small patches of deep, highly productive soils may be present in some restricted areas, which might have been missed

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during this broad scale survey. With additional irrigation, these areas may be highly productive for some crops, especially for high value vegetable crop production when good quality irrigation water is used.

- External factors like climate, topography, erosion factors, surface rock and water quality for irrigation need to be considered to determine the actual agricultural potential of each field, but is not possible on such large scale investigations.
- The soil classification of the land types was done on a 1:250 000 scale.
- Visiting all the farm owners, as well as communities have a time and cost implication. It is not always possible to establish the present agricultural activities of the farmers from desktop information, since it is not possible to distinguish between actual and derelict fields and/or kind of crop on the Google Earth images or by any other remote sensing way. Farmers also do double cropping or crop rotation which cannot be distinguished on images. It is also always not possible to establish whether communal settlements are accompanied with agricultural activities.
- All areas and farms were not accessible due to road restrictions, terrain obstacles and farmers' permission.

The following constraints and limitations were experienced during the compilation of the **Heritage Specialist Study**:

- The assessment constitutes a high-level screening to identify the potential impacts to heritage resources that may occur within the approved corridors and development footprints. Therefore, this report does not present an exhaustive list of tangible heritage resources that may be impacted upon;
- The development footprint of the various infrastructures will be finalised upon selection and authorisation of the preferred options. To this effect, a detailed impact assessment could not be completed in this report, and will be required as a condition of authorisation;
- Considering the nature of the Project, the extent of the routing options, and scope of work, the field survey was predominantly undertaken as a vehicular survey;
- While every effort was made to cover the extent of the various routing options, access to portions of various routing options was restricted by topography and/or landowners;
- Whilst every attempt to obtain the latest available information was made, the reviewed literature does not represent an exhaustive list of information sources for the various study areas;
- Results from the previously completed heritage studies were not subject to an assessment of Cultural Significance or verified during the field survey; and

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- Palaeontological and archaeological resources commonly occur at subsurface levels. These types of resources may not be adequately recorded or documented by assessors without intrusive and destructive methodologies. Therefore, the reviewed literature and previously completed assessments are in themselves limited to surface observations.

The **Fauna and Flora Specialist Study** was completed during the rainy season of KZN, and as such during 3 of the 7 days on site field work was hampered by rain, flooded river crossings and low visibility.

- The assessment constitutes a high-level screening to identify the potential impacts to the natural biological resources (plants, flora, mammals, amphibians, reptiles and invertebrates) that may occur within the approved corridors and development footprints. This report is not a reflection of the fauna and flora currently present in the development footprints as can be reported upon thorough detailed infield investigations;
- The development footprint of the various infrastructures will be finalised upon selection and authorisation of the preferred options. To this effect, a detailed impact assessment could not be completed in this report, and will be required as a condition of authorisation;
- Considering the nature of the Project, the extent of the routing options, and scope of work, the field survey was predominantly undertaken as a vehicular survey, except with regards to the substations and distribution line alternatives;
- While every effort was made to cover the extent of the various routing options, access to portions of various routing options was restricted by topography and landowners; and
- Whilst every attempt to obtain the latest available information was made, the reviewed literature does not represent an exhaustive list of information sources for the various study areas.

The **avifaunal specialist study** was completed during the rainy season (November) of KZN, and as such during 3 of the 7 days on site field work was hampered by rain, flooded river crossings and low visibility.

- The assessment constitutes a high-level screening to identify the potential impacts to avifauna that may be present within the approved corridors and development footprints. This report is not a reflection of the avifauna currently present in the development footprints as can be reported upon thorough detailed infield investigations;

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- The development footprint of the various infrastructures will be finalised upon selection and authorisation of the preferred options. To this effect, a detailed impact assessment could not be completed in this report, and will be required as a condition of authorisation;
- Considering the nature of the project, the extent of the routing options, and scope of work, the field survey was predominantly undertaken as a vehicular survey, except with regards to the substations and distribution line alternatives;
- While every effort was made to cover the extent of the various routing options, access to portions of various routing options was restricted by topography and landowners; and
- Whilst every attempt to obtain the latest available information was made, the reviewed literature does not represent an exhaustive list of information sources for the various study areas.

The following assumptions and limitations were experienced during the compilation of the **Wetland Specialist Study**.

- Desktop delineations are based on the available contour and topographic data, as well as detailed aerial imagery to provide an indication of the potential extent of the wetland areas likely to be present;
- Due to the extent of the corridor options under consideration, only limited in-field verification (a 4 day field assessment undertaken in 2017) of these systems could take place, thus, these desktop delineations must be considered only as a guideline towards the decision-making process in terms of selection of the preferred powerline corridor route;
- Optimal placement of the powerline within the selected proposed corridor routes will require careful planning and consideration so as to minimise impacts;
- With ecology being dynamic and complex, as well as a result of restricted access to portions of the Project area and extremely limited time for field verification, certain aspects, some of which may be important, may have been overlooked. However, as far as possible, it is expected that the Project area has been accurately assessed and considered, based on the limited field observations undertaken and the consideration of historical and existing studies and the desktop data available.

The following limitations and assumptions are applicable to the **Visual Specialist Study**:

- Determining a visual resource in absolute terms is not achievable. It is a complex procedure since it is determined through a combination of quantitative (visibility) and qualitative (aesthetic value) criteria. Therefore, a VIA cannot be entirely objective in this

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sense. Individuals will evaluate a landscape differently, based on experience, culture and social background.

- Various factors can enhance or reduce the visual impact of the proposed project, for instance, vegetation near a receptor's view of the proposed project. Other factors include weather, climatic conditions and seasonal change. It is therefore difficult to determine the visual impact of the proposed project from the viewpoint of each individual receptor.
- The layouts and technical designs provided are conceptual. Therefore, the possibility of adaptation exists. Should there be any significant changes in the designs of the proposed infrastructure, these changes may have to be re-assessed.
- The exact position for construction camps and laydown areas are not available at this stage therefore related detailed viewpoints towards the proposed impact cannot be determined.
- Final design decisions on pylon structures has not yet been made, as the detail engineering stage of the project is not yet underway. The accuracy of visual impact of the powerlines is therefore limited in this regard.
- As the exact location of the powerlines within each corridor have not yet been fixed, where the proposed powerline crosses a series of ridges, they should be positioned in such a manner that it runs parallel with the lowest lying area therefore higher lying ridges on both sides will form a natural visual buffer.
- Tourism livelihood are in some instances attached to large undeveloped tracts of land with high visual resource value, such as nature reserves. An assessment of tourism value has been undertaken as part of **Appendix K: Economics Specialist Study**, and therefore not addressed here.
- Access to certain viewpoints on IAPs' properties could not be gained (due to unavailability of these persons). Photos could therefore not be taken, despite the project team's requests to the land-owner to gain such access.
- Visual assessment from the locations of tourism points of interest such as lodges can only be made from existing facilities, with proven dependence on the natural landscape as visual resource. Proposed locations of lodge sites was not assessed.
- Visual simulations was not undertaken in this study.

The following assumptions applied to the **economic specialist study**:

- The study area is considered as the final destination of the tourist (this implies that if the tourism activities is lost the tourist will have to consider another area outside of the study area – this results in a loss in economic value for the region) – direct impact.

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- Tourists have additional expenditure that is not within the region, however it is still a benefit for the national economy that should be considered – indirect impact.
- The value per hectare is an average for the area – differences in this value between low and high season can be expected. The value will also be different between private games reserves, national and provincial nature reserves and other forms of tourism activity.
- The employment level is based on the data received by Manyoni Private Game Reserve and Stats SA.

The EAP and specialists are confident that, despite the assumptions and limitations, sufficient information exists to make an informed and motivated recommendation on whether the project should be authorised or not, and on which if authorised, then which alternative presents the Best Practical Environmental Option and which Conditions should be included in the Authorisation.

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15 CONCLUSION AND RECOMMENDATIONS

The EAP recommends that the Normandie-Iphiva 2 with deviation corridor within which servitude for the construction and operation of the Normandie-Iphiva 400 kV powerline with the conditions listed in **Chapter 13**.

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