

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

132 KV DISTRIBUTION POWERLINES

SUMMARY DRAFT BASIC ASSESSMENT REPORT – APRIL 2018



ESKOM'S NORTHERN KWAZULU-NATAL STRENGTHENING PROJECT:

132 kV DISTRIBUTION POWERLINES

ENVIRONMENTAL IMPACT ASSESSMENT

SUMMARY OF THE DRAFT BASIC ASSESSMENT REPORT

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 Distribution Powerlines. 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 Makhatini Flats. The Normandie Substation is situated approximately 80 km north-west of Pongola and the Impala Substation is situated approximately 180 km south of Makhatini 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.

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.

The following 132 kV powerlines are included in this application:

- *Iphiva – Pongola (1) 132 kV powerline to tie in with the existing powerline, which may be double circuit with Iphiva / Hluhluwe;*
- *Iphiva – Pongola (2) 132 kV powerline;*
- *Iphiva / Makhathini 132 kV powerline which may be double circuit with Iphiva / Mbazwane;*
and
- *132 kV powerline loop-in to Candover Switching Station from the existing Impala / Normandie Line.*

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. 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 consist 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, 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 **no-project** alternative, ie. without these 132 kV powerlines, Eskom Distribution 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.

One of the 132 kV Distribution powerlines considered in this assessment, namely, the Iphiva-Makhathini / Iphiva-Mbazwane Distribution powerline has an **alternative route**.

A design alternative that has been assessed is **burying cables** for sections of the 132 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.

Public Participation in the Draft Basic Assessment 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 Public Participation Process (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. All comments made have been captured in a Comments and Responses Report.

This draft report is now available for a 30-day public comment period. All comments received will be considered and the 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 landuse, 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 Basic Assessment 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 west routing alternative for the Iphiva-Makhathini / Iphiva-Mbazwane powerline was recommended.

*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 results of the comparison of alternatives is that the west routing alternative for the Iphiva-Makhathini / Iphiva-Mbazwane Distribution line and that all below ground design options along the P234 corridor are recommended to avoid impacts on birds.

*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 KwaZulu-Natal 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.

Burying powerlines in wetlands will have the most significant impact, and above-ground powerlines are recommended.

*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.

The corridors of the Iphiva-Pongola (1) / Iphiva-Hluhluwe double circuit powerline, the loop to Candover switching station, the Iphiva-Mbazwane / Iphiva-Makhathini double circuit and the alternative route for Iphiva-Mbazwane and Iphiva-Makhithini double circuit powerline have a land capability with soils of intermediate suitability for arable agriculture. The majority of soils in the Iphiva-Pongola (2) 132 kV corridor are either not suitable for arable agriculture, but suitable for forestry or grazing (largest part), of intermediate suitability for arable agriculture (in the north and eastern parts of the corridor), or of poor suitability for arable agriculture (in the north western parts of the corridor).

The specialist has no objections to the project from the agricultural and soil potential standpoint.

The western corridor of the Iphiva/Makhatini – Iphiva/Mbazwane 132 kV powerline has less impact on agriculture. Above-ground powerlines are preferred to buried.

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

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

Iphiva 6 is presently the location of a rural settlement where anthropogenic disturbance through establishing of structures and agricultural fields may have disturbed or removed previous in situ subsurface heritage resources. Iphiva 3, in contrast, remains largely free from anthropogenic disturbance, reducing the suitability of the site. Iphiva 6 is known to contain burial grounds and graves. While these will have permitting requirements in the event that they are to be impacted upon, because they are known the potential impacts can be easily avoided therefore making it more suitable than Iphiva 3. The heritage specialist concludes that Iphiva 6 is the more suitable alternative from a heritage perspective based on the available information.

Direct impacts to archaeological resources with a high or medium Cultural Significance and direct impacts to burials, monuments and memorials with a high Cultural Significance have a negligible positive significance after mitigation.

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

Guest houses, game lodges and nature-based tourism in protected areas dependent upon a pristine visual resource for tourism value are considered to have a High viewer sensitivity. rural (commercial farming) homesteads a Moderate viewer sensitivity, and National / provincial road users where other infrastructure is present and transformation has already taken place, Formal settlements (such as Pongola / Mkuze / Ulundi) and informal settlements / villages (likely considers transmission lines 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 the following components of 132 kV powerlines be authorised:

- Iphiva-Pongola (2) (no alternative corridor);*
- Iphiva/Hluhluwe – Iphiva Pongola (1) double circuit powerline (no alternative);*
- Candover HV to existing 132 kV powerline (no alternative); and*
- The Western alternative of the Iphiva/Makhathini – Iphiva-Mbazwane which relates to the existing land use (mostly farming) and existing other infrastructure (rail and road), thereby consolidating visual impact along one corridor.*

The potential visual impacts associated with Distribution 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

With regards the possibility of burying powerlines along the P-234, although will reduce the visual impact, at the Integration meeting with the other specialists it was agreed that the overall

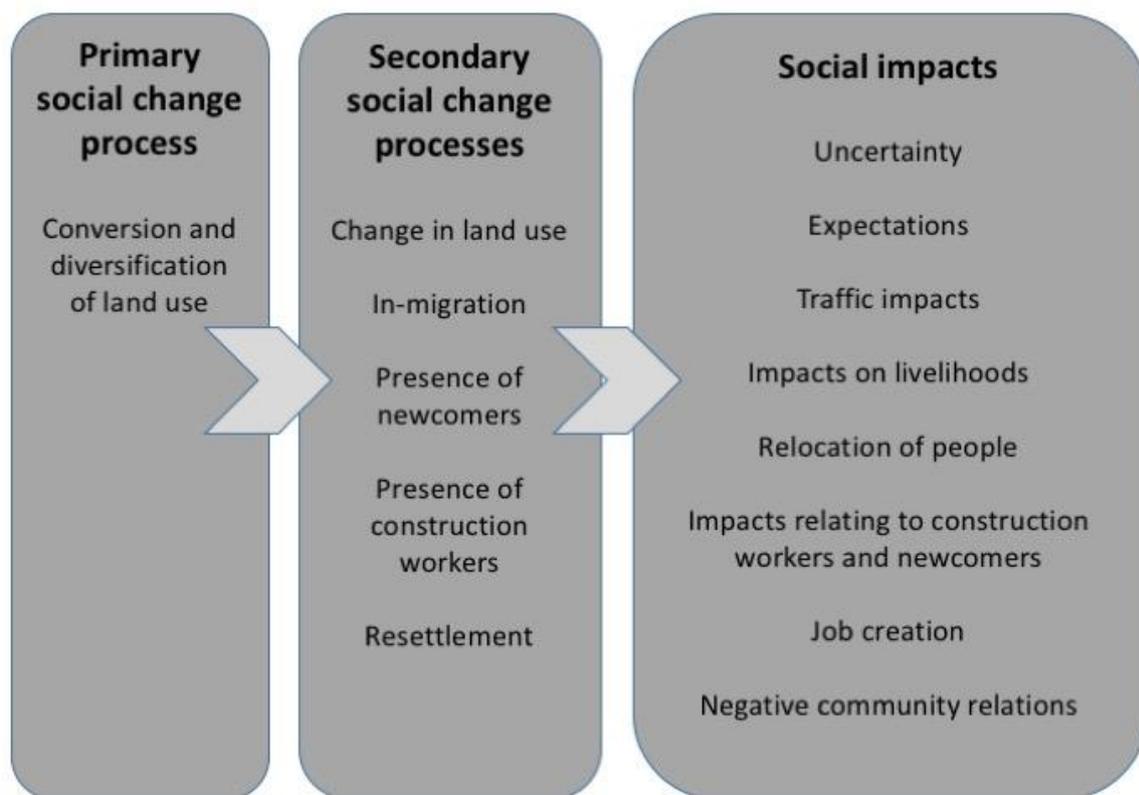
impacts of burying the powerline are greater than the overall impacts of above-ground powerline. The impact ratings have therefore been done for above-ground powerlines.

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

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

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

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



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

expenditure. The western route for the Iphiva-Makhathini/Iphiva-Mbazwane double circuit powerline is recommended as well as all above ground powerline along the P234.

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. The socio-economic specialist study only allowed for this to be assessed on a qualitative level. Interaction with the landowners has highlighted that the project could be opposed should this aspect not be adequately addressed. The inclusion of a more detailed **economic assessment** was therefore commissioned.

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

The development of the Distribution 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. Investment costs were estimated to be in the order of R 2 million per km for single circuit lines and R 4 million for double circuit lines above ground. The cost of burying the lines is understood to be higher but no value was provided.

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

- Land use type – property with tourism activity, such as game farming, lodges, protected areas and nature reserves should, as far possible, be eliminated from the preferred alignment.
- Powerline route – The route should be on the boundary of farms and not transcend properties diagonally or through the middle.
- Size of the property – A powerline that transcend properties diagonally or through the middle, for property smaller than 200 ha – tips an argument for expropriation
- Existing infrastructure – Do not place powerlines over or in close proximity to tourism infrastructure.

- *Visibility of the new structure - Place the powerlines / pylons and the substation in areas where it is not visible from tourism areas/hides/etc.*
- *Market related compensation for the affected property should be provided where the powerline is developed.*
- *Landowners should be consulted about their preferred configuration if their property is affected.*

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

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

Impacts (Table below) are measured in terms of:

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

Summary of economy wide economic impact

Project Component	Total hectare within reserve/ lodge/ game farm	Economy-Wide Economic Value	Employment	Household Income
<i>P234 Corridor</i>	<i>948 ha</i>	<i>R 11.2 million</i>	<i>44 jobs</i>	<i>R 5.3 million</i>
<i>Iphiva-Pongola (2) 132 Kv powerline</i>	<i>2 510 ha</i>	<i>R 29.7 million</i>	<i>116 jobs</i>	<i>R 14 million</i>
<i>132 kV Loop in to Candover</i>	<i>0 ha</i>			

The economic specialist found that the construction and operation of the Iphiva-Pongola (2) 132 kV powerline will have a medium-low significant impact after mitigation on:

- *Property value for the affected and adjacent properties;*
- *Loss in tourism employment; and*
- *Reduction in the economic value of the regional economy as a result of a reduction in tourism activities and future expansion/investment in tourism activity may also be impacted due to the loss in productive land.*

The alternatives along the P234 were assessed and the loss in property value, tourism employment and reduction in economic value were found to have impacts with significances varying from low to very high, depending on the specific circumstances.

The loop-in to the Candover Switching station has a Low significance impact for all of the economic impacts assessed as listed above.

The economic specialist found that burying the powerlines along the most sensitive stretch of the P 234 corridor will mitigate most of the negative economic impacts. The economic specialist recommended that the project be authorised on condition that a property valuer is appointed to quantify the value impact for directly affected properties with appropriate compensation, and that a cost comparison analysis between burying the powerline and overhead powerlines is undertaken. If the costs are similar, then the powerlines should be buried in high value tourism areas.

Conclusion and Recommendation

The EAP recommends that the corridors within which servitudes for the construction and operation of the Iphiva/Pongola (1) - Iphiva/Hluhluwe double circuit 132 kV powerlines to tie in with the existing powerline, the Iphiva – Pongola (2) 132 kV powerline, the western corridor of the Iphiva / Makhathini - Iphiva / Mbazwane double circuit 132 kV powerline; and the 132 kV powerline loop-in to Candover Switching Station from the existing Impala / Normandie powerline be authorised. All powerlines should be constructed above-ground.

The 132 kV powerline loop-in to Candover Switching Station from the existing Impala / Normandie Line is considered a temporary powerline and must be decommissioned as soon as the Iphiva Substation and associated 400 kV powerlines have been commissioned.

Should both the Normandie-Iphiva (2) 400 kV and Iphiva-Pongola (2) 132 kV be authorised and implemented, then Eskom Distribution and Eskom Transmission must co-ordinate implementation to ensure the best practical environmental option of both powerlines in the same corridor. This could include the option of multi-circuit towers.

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 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.

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.

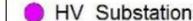
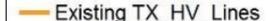
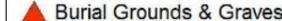
The social mitigation and management measures include appointing a Community Liaison Officer, compiling and implementing policies for employment, conduct of employees and contractors, road use, access control specifically for protected and game reserve areas, a relocation and compensation in accordance 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.

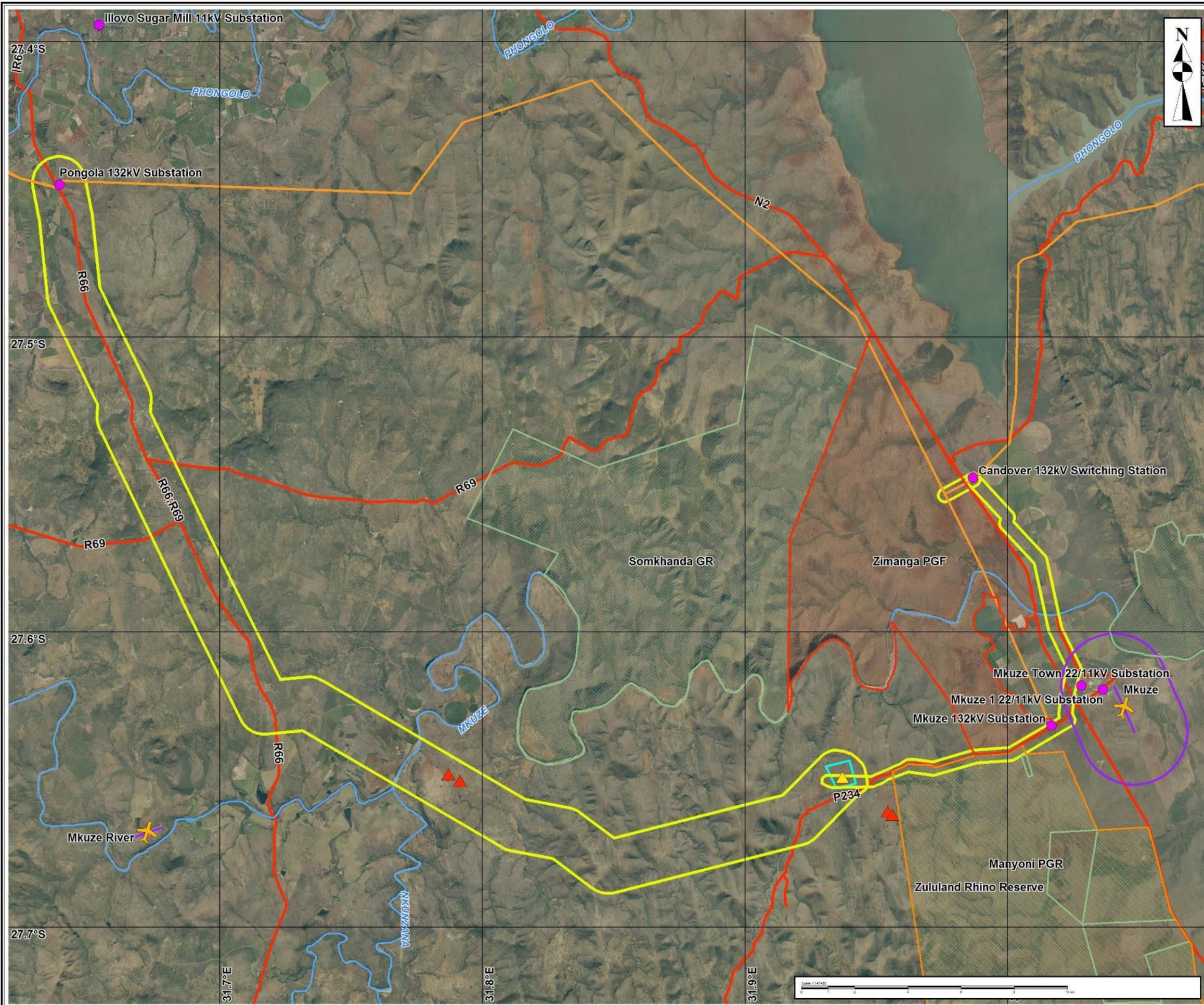
A property valuer must be appointed to quantify the value impact of the powerlines along the P234 corridor for the proposed Zimanga and Manyoni Private Game Reserves.

**ENVIRONMENTAL IMPACT
ASSESSMENT FOR ESKOM'S
NORTHERN KZN STRENGTHENING
PROJECT**

EMP-132 kV Distribuutuon Powerlines

Legend

-  Roads
-  Rivers
-  Substation Site
-  132 kV Powerline Corridors
-  Iphiva/Pongola 2 132kV Corridor
-  HV_Substations
-  Existing TX_HV_Lines
-  Airport
-  Airfield
-  Airfield Buffer
- Conservation**
-  Nature Reserves
-  Manyoni Nature Reserve
-  Zimanga Nature Reserve
- Heritage Resources**
-  Burial Grounds & Graves
-  Historical Built Environment



Date : 3/27/2018
System : Hartebeesthoek94
Map by : Ilze Gouws
Revision : R02