


# 2018

**FINAL ENVIRONMENTAL IMPACT REPORT FOR THE PROPOSED  
DEVELOPMENT OF APPROXIMATELY 170KM 1X400KV MAPHUTHA-  
WITKOP POWERLINE WITHIN THE JURISDICTION OF SEKHUKHUNE AND  
CAPRICORN DISTRICT MUNICIPALITIES IN THE LIMPOPO PROVINCE**

**OCTOBER 2018**

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## EXECUTIVE SUMMARY

Nsovo Environmental Consulting (hereafter referred as Nsovo) is appointed by Eskom Holdings SOC Limited (Eskom) to undertake an Environmental Impact Assessment (EIA) for the proposed 170km Maphutha-Witkop 400kV powerline and associated infrastructure.

The proposed project triggers activities that may have a detrimental impact on the environment and they are listed in the in Chapter 4 of GN R. 982 of the Environmental Impact Assessment (EIA) Regulations of December 2014 as amended in April 2017 (hereafter referred to as Regulations as amended) As such, an Environmental Authorisation (EA) must be obtained from the relevant authority (i.e. Department of Environmental Affairs (DEA)) prior to commencement of construction activities. The primary listed activity under GNR 984 is Activity 9 (i.e. *the development of facilities or infrastructure for the transmission and distribution of electricity with a capacity of 275 kilovolts or more, outside an urban area or industrial complex*) and other associated listed activities are included herein. The Environmental Impact Assessment process was undertaken in accordance with the requirements of GN R 982, 983, 984 and 985 of December 2014 as prescribed in the National Environmental Management Act, 1998 (Act 107 of 1998) and the Environmental Impact Assessment Report has been prepared in accordance with the requirements of Appendix 3 of the Regulations as amended.

The draft Scoping Report was made available to the Interested and Affected Parties (I&APs) as well as Organs of State for a period of thirty (30) days to afford them an opportunity to review and comment. All comments received on the draft Scoping Report were included in the Comments and Response Report (CRR) and incorporated in the final Scoping Report which was submitted together with the Plan of Study for the EIA to the DEA. Accordingly, the Scoping Phase of the project is complete and was approved by the DEA on the 20<sup>th</sup> June 2018.

The Scoping phase entailed a detailed description of the baseline environment which would form the backdrop of the impact assessment phase. Further it allowed for the identification of key issues and concerns based on input from the relevant stakeholders, I&APs and the EAP's professional judgment based on experience and expertise in the field. Three alternative sites for the proposed 170km Maphutha-Witkop 400kV powerline and associated infrastructure were identified and assessed. Based on the

outcomes of the scoping phase, Route Alternative 3 has been eliminated and will not be assessed any further.

This final EIA report includes specialist studies that were commissioned to respond and provide meaningful input in addressing the issues and concerns raised during the Scoping and they include:

- Heritage Impact Assessment;
- Avifauna Study;
- Biodiversity (Fauna and Flora) Study;
- Visual Impact Assessment
- Agricultural Assessment; and
- Social Impact Assessment;

Further specialist studies that were recommended for the EIA phase include Visual Impact Assessment and Ecotourism and specialist input has been included herein.

Consideration of alternatives is a key requirement for any EIA process and included consideration of technical, structural, and locality. Various alternatives were identified during the Scoping wherein some were dismissed; therefore in this phase of the proposed project two alternative corridors as well as the no-go alternative were comprehensively assessed the alternatives and the preferred alternative was selected based on a synthesis of the technical and environmental factors as well as input from the specialist studies that were undertaken. The alternatives including the no-go alternatives are comprehensively discussed and highlighted in this final EIA report further; the advantages and disadvantages of each alternative are also included which culminates the selection of the preferred.





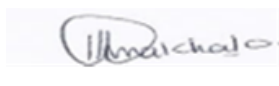
The EIA report has been prepared as prescribed in Appendix 3 of the Regulation as amended and will therefore entail the following:

- The details and expertise of the Environmental Assessment Practitioner;
- The location of the activity;
- A locality map;
- Description of the scope of the proposed development;

- Description of Policy and Legislative content within which the development is located and an explanation of how the development complies with and responds to the legislation and policy context;
- A motivation for the need and desirability of the proposed development;
- Motivation for the preferred development footprint within the approved site;
- A full description of the process followed to reach the proposed development footprint within the approved site;
- 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 location through the life of the activity;
- Assessment of each of each identified potentially significant impact and risk;
- A summary of the findings and recommendations of any specialist report complying with Appendix 6 of EIA December 2014 Regulations;
- Environmental Impact Statement;
- The recording of proposed impact management objectives, and the management outcomes for the development;
- Final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment;
- Aspects which were conditional to the findings of the assessment either by the Environmental Assessment Practitioner (EAP) or specialist which are to be included as conditions of authorisation;
- Description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed
- A reasoned opinion as to whether the proposed activity should or should not be authorised;
- 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;
- Undertaking under oath or affirmation by the EAP;
- Indication of any deviation from the approved scoping report, including the plan of study;
- Specific information that may be required by the competent authority; and
- Other matters required in terms of section 24(4) (a) and (b) of the Act.

This report includes a detailed impact assessment of aspects that were identified as key during the Scoping phase and includes issues raised by I&APs as well as those that the EAP deems to be significant in projects of this nature based on previous experience. Impacts were assessed and rated accordingly and none of the identified impacts were rated as high and unmanageable. Generally, the probability, extent, and magnitude of the negative impacts are relatively low in comparison to the scale of the entire project as well as the need and desirability of the project. However, the team proposed mitigation measures to manage and reduce the severity of the identified impacts. Further, the EAP has taken into consideration the issues raised and these have been discussed thoroughly in this report.

This draft EIA Report was submitted to I&APs and organs of State for a 30 days review and comment period. Comments received on the draft EIA Report are included in the Comments and Response Report which is incorporated into this final EIA Report for submission to DEA for decision making. Subsequent to consideration of the specialist recommendations, impacts on the environment, sensitivity of the area as well as comments as well as input and issues raised by the I&APs ; the overhead construction of Corridor Alternative 2 is the preferred and recommended option for construction of the 170km Maphutha-Witkop 400kV powerline

		
<p><i>"From the world we live to the world we seek "</i></p>		<p><b>DOCUMENT CONTROL</b></p>
<p><b>PROJECT TITLE:</b></p>		
<p>Final Environmental Impact Report for the proposed 400kV Maphutha-Witkop powerline within the jurisdiction of Sekhukhune and Capricorn District Municipalities, Limpopo Province.</p>		
<p><b>QUALITY CONTROL:</b></p>		
<p><b>Report:</b></p>	<p><b>Compiled By:</b></p>	<p><b>Peer Reviewed By:</b></p>
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## ACRONYMS AND ABBREVIATION

ARC	Agricultural Research Council
CBA	Critical Biodiversity Area
CLN	Customer Load Network
DEA	Department of Environmental Affairs
LEDET	Limpopo Department of Economic Development and Environmental Affairs
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EIS	Ecological Importance and Sensitivity
EMPr	Environmental Management Programme
HV	High Voltage
I&APs	Interested and Affected Parties
km	Kilometers
kV	Kilovolts
MTS	Main Transmission Substation
mm	Millimetre
NDP	National Development Plan
NEMA	National Environmental Management Act
PES	Present Ecological Status
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
Tx	Transmission
WULA	Water Use Licence Application



## 1. INTRODUCTION OF THE PROPOSED PROJECT

Eskom Holdings SOC Limited (Eskom) has identified the need to strengthen its transmission power network between the Witkop substation (located near Polokwane) and the Maphutha substation (located near Steelpoort) within the jurisdiction of Capricorn and Sekhukhune District Municipalities in the Limpopo Province.

The forecasted high growth rate between 2013 and 2030 is expected to exceed the maximum transfer capability of the Eskom transmission network supplying the Tubatse area due to recent developments as well as expansion of the platinum and ferrochrome mines. The existing network will be unable to cater for these recent and other proposed developments in the area. Consequently, Eskom proposes to construct a new Maphutha-Witkop 400kV transmission powerline in order to mitigate the short-term network reliability constraints and also to create additional capacity for the forecasted load in the Tubatse area.

The aim of the proposed development is to increase the transfer capacity of the network beyond the forecasted 2030 load under all N-1 contingencies in Limpopo Province and the country as a whole. The proposed development will directly and indirectly improve the standard of living for Limpopo communities as it will create employment opportunities, generate income and contribute to the local economy and to a larger extent the country as a whole.

Nsovo Environmental Consulting (Nsovo) has been appointed by Eskom, the applicant, to undertake the Environmental Impact Assessment (EIA) studies in terms of the National Environmental Management Act, 1998 Act No. 107 of 1998) (NEMA) and the Environmental Impact Assessment Regulations of 2014 as amended in April 2017 (hereafter referred as Regulations as amended) for the proposed construction of approximately 170km Maphutha-Witkop 400kV powerline and associated infrastructure (referred to as Maphutha-Witkop 400kV powerline) within the jurisdiction of Sekhukhune and Capricorn District Municipalities in the Limpopo Province.

## 2. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

Nsovo meets the general requirements as stipulated in regulations 13 (3) of the NEMA EIA 2014 Regulations as amended. Nsovo therefore:

- Is independent and objective;
- Has expertise in conducting EIA's;
- Takes into account all relevant factors relating to the application; and
- Provides full disclosure to the applicant and the relevant environmental authority.

Table 1 below provides details of the EAP and relevant experience. A detailed CV and Qualifications is attached as **Appendix E**.

**Table 1: Details of the Environmental Assessment Practitioner (EAP)**

<b>Name of Company</b>	Nsovo Environmental Consulting
<b>Person Responsible</b>	Masala Mahumela
<b>Professional Registration</b>	South African Council for Natural Scientific Professions (SACNASP)
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<b>Fax Number</b>	086 602 8821
<b>Email</b>	<a href="mailto:Masala.mahumela@nsovo.co.za">Masala.mahumela@nsovo.co.za</a>
<b>Qualifications &amp; Experience</b>	B.Sc. Honours Environmental Management <b>10 years of experience</b>
<b>Project Related Expertise</b>	In terms of project related expertise, the EAP has undertaken the following projects: <ul style="list-style-type: none"> <li>• EIA for the proposed Shongweni substation and Hector – Shongweni 400kV powerline in KwaZulu-Natal Province.</li> <li>• EIA for the proposed Inyaninga substation and Inyaninga – Mbewu 400kV powerline in KwaZulu-Natal Province.</li> <li>• EIA for the proposed Tubatse strengthening</li> </ul>

	<p>Phase 1 – Senakangwedi B integration within the jurisdiction of Greater Tubatse Local Municipality in Limpopo Province.</p> <ul style="list-style-type: none"> <li>• EMPr, WULA and EA amendment for the proposed Juno Gromis 400kV power line.</li> <li>• Basic Assessment for the proposed decommissioning of Verwoedberg substation and 275kV powerline.</li> <li>• Basic Assessment for Bloemendal substation and loop in and out lines.</li> </ul>
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### 3. DESCRIPTION OF LOCALITY AND THE PROPERTY ON WHICH THE ACTIVITY IS TO BE UNDERTAKEN AND LOCATION OF ACTIVITY ON THE PROPERTY

This section provides detailed information about the location of the Maphutha-Witkop 400kV powerline and associated infrastructure. The main aim is to provide the environmental aspects found within the location of the proposed development and to provide the baseline description of the surroundings.

#### 3.1 LOCALITY OF THE PROPOSED PROJECT

The proposed development entails establishment of  $\pm 170$ km 1 X 400kV Maphutha-Witkop powerline and associated infrastructure, within the jurisdiction of the Sekhukhune and Capricorn District Municipalities in Limpopo Province. The proposed powerline route alternatives are illustrated in Figure 1 below and an A3 copy of the locality map is attached as **Appendix A**.

During the Scoping phase of the project, three route alternatives were considered; however, one (Alternative 3) was eliminated for various reasons that deemed the site unsuitable for the proposed project development; therefore the EIR phase will consider Alternatives 1 and 2.

#### 3.2 FARM NAMES AND SURVEYOR GENERAL CODE OF EACH CADASTRAL LAND PARCEL

The farms affected by the proposed development as well as the 21 digit Surveyor General Code are listed in **Appendix F**.

**4. A PLAN WHICH LOCATES THE PROPOSED ACTIVITY OR ACTIVITIES APPLIED FOR AS WELL AS THE ASSOCIATED STRUCTURES AND INFRASTRUCTURE AT AN APPROPRIATE SCALE**

As indicated above the EIR phase will consider two powerline route alternatives, which are alternative Corridors 1 and 2 as depicted in the Figure 1 below

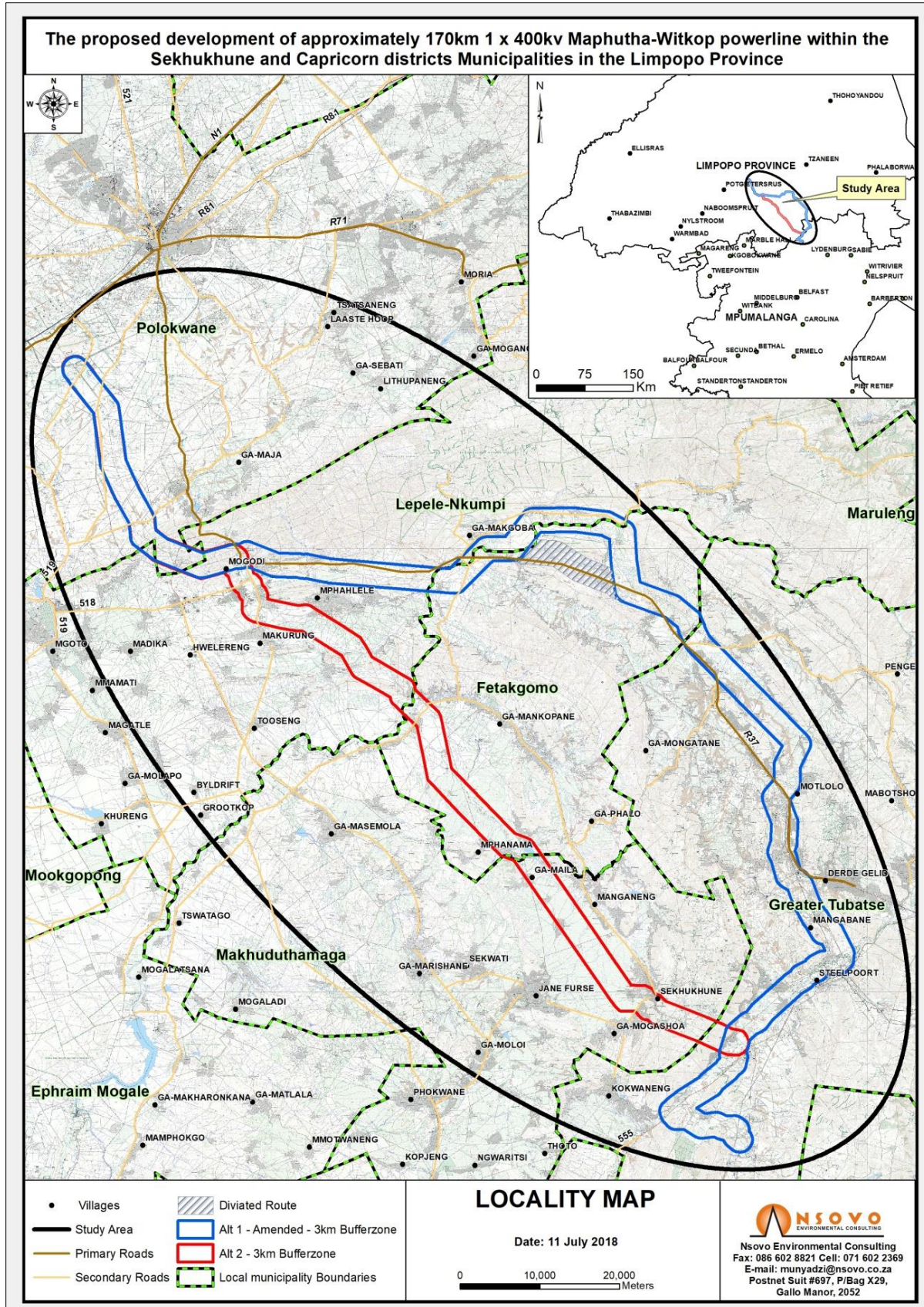


Figure 1: Locality map of the proposed Maphutha-Witkop route alternatives

**Table 2:** GPS coordinates of the start, middle and end coordinates of the two proposed corridors

Alternatives	Start	Middle	End
Corridor alternative 1	24°02'52.13"S	24°18'16.61"S	24°53'15.23"S
	29°21'24.71"E	29°59'57.28"E	30°01'53.68"E
Corridor alternative 2	24°02'52.13"S	24°24'30.30"S	24°53'15.23"S
	29°21'24.71"E	29°43'27.32"E	30°01'53.68"E

## 5. DESCRIPTION OF THE SCOPE OF THE PROPOSED ACTIVITIES

This section provides a description of the proposed activities which include the scope of the proposed project mainly focusing on the listed activities which triggers the EIA process.

The primary objective of the project is to develop a network strengthening solution for the Tubatse area, which will result in a Grid Code compliant network in response to the forecasted high growth rate between 2013 and 2030 which is expected to exceed the maximum transfer capability of the transmission network supplying the area. Consequently, Eskom proposes the development of Maphutha-Witkop 400kV powerline in order to mitigate the short-term network reliability constraints and to create additional capacity for forecasted load as well as to cater for future electricity demands.

The construction phase of the proposed project will take approximately 3 years and the activities included are discussed hereunder.

### 5.1 LISTED ACTIVITIES APPLICABLE TO THE PROJECT

The proposed development triggers listed activities in terms of 2014 EIA Regulation as amended and these are indicated in Table 3 below:

**Table 3: listed activities triggering EIA process applicable to the proposed project**

Listed activities	Activity/Project description
<p><b><u>GN R. 984 Item 9:</u></b></p> <p><i>"The development of facilities or infrastructure for the transmission and distribution with a capacity of 275 kilovolts or more, outside an urban area"</i></p>	<p>The proposed project entails the development of approximately 170km 400kV Maphutha-Witkop powerline outside an urban area.</p>

Listed activities	Activity/Project description
<p><b><u>GN R. 983 Item 12:</u></b>  <i>“The development of–</i></p> <p><i>(ii) infrastructure or structures with a physical footprint of 100 square metres or more;</i></p> <p><i>Where such development occurs –</i></p> <p><i>(a) Within a watercourse</i></p> <p><i>(c) If no development setback exists within 32 meters of a watercourse, measured from the edge of a watercourse”.</i></p>	<p>The proposed project entails the development of infrastructure or structures (pylons) with a physical footprint of 100 square meters or more within or in close proximity to watercourses.</p>
<p><b><u>GN R. 985 Item 4:</u></b>  <i>“The development of a road wider than 4 metres with a reserve less than 13, 5 metres.</i></p> <p><b>e. Limpopo</b></p> <p><i>i. Outside urban areas</i></p> <p><b>(aa)</b> <i>A protected area identified in terms of NEMPAA</i></p> <p><b>(ee)</b> <i>Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans”</i></p>	<p>The proposed project entails the development of additional construction access roads wider than 4 metres with reserve less than 13.5 meters within protected areas and CBA outside urban areas.</p>
<p><b><u>GN R. 985 Item 12:</u></b>  <i>“The clearance of an area of 300 square meters or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purpose undertaken in accordance with a maintenance management plan</i></p> <p><b>e. Limpopo</b></p> <p><i>ii. within critical biodiversity areas identified in bioregional plans”</i></p>	<p>The proposed corridors traverse Critical Biodiversity Areas (CBA) and the project will require clearance of an area of 300 square meters or more of indigenous vegetation within CBA.</p>
<p><b><u>GN R. 985 Item 14:</u></b>  <i>“The development of development –</i></p>	<p>The proposed project entails the development of a powerline with a footprint of more than 10 square meters within or in close proximity to</p>

Listed activities	Activity/Project description
<p><i>(xii) infrastructure or structures with a footprint of 10 square meters or more</i></p> <p><i>Where such development occurs-</i></p> <p><i>(a) Within a watercourse</i></p> <p><i>(c) If no development setback exists within 32 metres of a watercourse, measured from the edge of a watercourse”.</i></p> <p><b>e. Limpopo</b></p> <p><i>i. outside urban areas:</i></p> <p><i>(ff) critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.</i></p>	<p>watercourses.</p>

## 6. DESCRIPTION OF THE ASSOCIATED ACTIVITIES, STRUCTURES AND INFRASTRUCTURE RELATED TO THE DEVELOPMENT

This section provides details of the associated activities, the surrounding infrastructures and structures as well as the activities that are already taking place within the proposed study area

### 6.1 CORRIDOR WALK DOWN

This will be undertaken for the authorised corridor and the main aim of conducting the corridor walk-down will be to ensure that sensitive areas are identified, avoided where necessary and buffers are created for conservation purposes.

### 6.2 ACCESS ROADS

The primary access to the proposed alignments will be through the R37, R555 and R518 while secondary access will be other public roads as well as private farm roads negotiated with land owners/ tribal authorities. However, where there is no access, roads may need to be established which will be wider than 4 metres with a reserve less than 13,5 metres. The access roads will be compliant with a Type 6 gravel



road; which comprises of 6 meter wide raised gravel extended with meadow drainage in flat terrain, with additional meters to cater for the 'V' type drainage in rolling terrain. Where necessary, suitable erosion control measures such as the construction of gabions and culverts to control storm-water will be implemented.

### **6.3 VEGETATION CLEARANCE**

Fifty-five meter (55m) servitude is required for the proposed 400kV power line; only the immediate pylon footprint within the servitude will be cleared for construction. Further, clearance will be undertaken in accordance with the approved Environmental Management Programme (EMPr) as well as Eskom's policies and guidelines

### **6.4 CONSTRUCTION OF POWERLINE**

The civil works will include the establishment of foundations for the proposed 400kV pylons.

### **6.5 STEELWORKS STRUCTURES**

Various types of pylons are under consideration and final selection will depend on the terrain and the possible visual aspects of the selected pylon will be taken into consideration. The pylons will be transported in segments and assembled on site.

### **6.6 STRINGING**

Once the pylons have been erected, the conductors will be strung between the pylons and bird guards installed as recommended by the avifauna specialist.

### **6.7 COMPLETION OF CONSTRUCTION**

On completion of construction work, the site will be rehabilitated as per the specifications of the EMPr and approved Method Statements. The rehabilitation activities will include:

- Removal of excess building material and waste;
- Repairing any damage caused by construction activities;

- Rehabilitating the area affected by temporary access roads;
- Reinstating existing roads; and
- Replacing topsoil and planting indigenous vegetation.

## 7. DESCRIPTION OF THE POLICY AND LEGISLATIVE CONTEXT WITHIN WHICH THE DEVELOPMENT IS LOCATED AND AN EXPLANATION OF HOW THE DEVELOPMENT COMPLIES WITH AND RESPONDS TO THE LEGISLATION AND POLICY CONTEXT

Appendix 3 Section 3(e) of the amended EIA Regulations requires description of applicable legislations in the EIR. Therefore, this section lists and describes the Acts and legislations applicable to the proposed construction of the power-line and associated infrastructures. A list of the current South African environmental legislation, which is considered to be pertinent to the proposed development, is included in **Table 4** below.

Municipal policies, plans and by-laws as well as Eskom policies and best practices were considered during the EIA process. The list of legislations that are applicable to the project is not an exhaustive analysis; however, it provides a guideline to the relevant aspects of each act.

**Table 4: Legislation pertaining to the proposed project**

Aspect	Relevant Legislation	Brief Description
Environment	<ul style="list-style-type: none"> <li>• National Environmental Management: Act 1998, (Act No. 107 of 1998) as amended.</li> <li>• Environmental Impact Assessment</li> </ul>	<p>The overarching principles of sound environmental responsibility are reflected in the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) apply to all listed projects. Construction and operation of activities have to be conducted in line with the generally accepted principles of sustainable development, integrating social, economic and environmental factors.</p> <p>The Environmental Impact Assessment (EIA) process followed is in compliance with the NEMA and the Environmental Impact Assessment</p>

Aspect	Relevant Legislation	Brief Description
	Regulations, December 2014 as amended	Regulations of December 2014 as amended. The proposed development involves “listed activities”, as defined by NEMA. Listed activities are an activity which may potentially have detrimental impacts on the environment and therefore require Environmental Authorisation (EA) from the relevant Competent Authority, in this case DEA.
Biodiversity	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	The purpose of the National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) is to provide for the management and conservation of South Africa’s biodiversity within the framework of the NEMA and the protection of species and ecosystems that warrant national protection. As part of its implementation strategy, the National Spatial Biodiversity Assessment was developed.
Protected Areas	National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)	The purpose of this Act is to provide for the protection, conservation and management of ecologically viable areas representative of South Africa’s biological diversity and its natural landscapes.
Heritage Resources	National Heritage Resources Act, 1999 (Act No. 25 of 1999)	The National Heritage Resources Act, 1999 (Act No. 25 of 1999) legislates the necessity for cultural and heritage impact assessment in areas earmarked for development, which exceed 0.5 ha. The Act makes provision for the potential destruction to existing sites, pending the archaeologist’s recommendations through permitting procedures. Permits are administered by the South African Heritage

Aspect	Relevant Legislation	Brief Description
		Resources Agency (SAHRA).
Air quality management and control	National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004)	<p>The objective of the Act is to protect the environment by providing reasonable measures for the protection and enhancement of air quality and to prevent air pollution.</p> <p>The Act makes provision for measures to control dust, noise and offensive odours.</p> <p>Section 32 of The National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004) deals with dust control measures in respect of dust control. Whilst none are promulgated at present, it provides that the Minister or MEC may prescribe measures for the control of dust in specified places or areas, either in general or by specified machinery or in specified instances, the steps to be taken to prevent nuisance or other measures aimed at the control of dust.</p>
Noise Management and Control	Noise Control Regulations in terms of the Environmental Conservation, 1989 (Act 73 of 1989)	The assessment of impacts relating to noise pollution management and control, where appropriate, must form part of the EMP. Applicable laws regarding noise management and control refer to the National Noise Control Regulations issued in terms of the Environment Conservation, 1989 (Act 73 of 1989).
Water	National Water Act, 1998 (Act 36 of 1998)	This Act provides for fundamental reform of law relating to water resources and use. The preamble to the Act recognises that the ultimate aim of water resource management is to achieve sustainable use

Aspect	Relevant Legislation	Brief Description
		<p>of water for the benefit of all users and that the protection of the quality of water resources is necessary to ensure sustainability of the nation's water resources in the interests of all water users.</p> <p>There are watercourses located in proximity to the proposed Corridors. It is highly likely that proposed project will traverse or encroach on some of these water resources; therefore, the necessary licence will be obtained prior to construction commencement.</p>
Agricultural Resources	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	The Act aims to provide for control over the utilization of natural agricultural resources in order to promote the conservation of the soil, water resources and vegetation and to combat weeds and invader plants. Section 6 of the Act makes provision for control measures to be applied in order to achieve the objectives of the Act.
Human	The Constitution of South Africa, 1996 (Act No. 108 of 1996)	<p>The Constitution of South Africa, 1996 (Act No. 108 of 1996) provides for an environmental right (contained in the Bill of Rights, Chapter 2). The state is obliged "to respect, protect, promote and fulfil the social, economic and environmental rights of everyone..."</p> <p>The environmental right states that:</p> <p>"Everyone has the right -</p> <ol style="list-style-type: none"> <li>a) To an environment that is not harmful to their health or well-being; and</li> <li>b) To have the environment protected, for the benefit</li> </ol>

Aspect	Relevant Legislation	Brief Description
		<p>of present and future generations, through reasonable legislative and other measures that -</p> <ul style="list-style-type: none"> <li>• Prevent pollution and ecological degradation;</li> <li>• Promote conservation; and</li> <li>• Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”</li> </ul>
Waste	National Environmental Management: Waste Act 59 of 2008	<p>This act provides fundamental reform of the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development. This act also ensures the provision of national norms and standards for regulating the management of waste by all spheres of government. The National Environmental Management: Waste Act provides for specific waste management measures; licensing and control of waste management activities; remediation of contaminated land; compliance and enforcement; and for matters connected therewith.</p>

## 8. MOTIVATION FOR THE NEED AND DESIRABILITY OF THE PROPOSED DEVELOPMENT INCLUDING THE NEED AND DESIRABILITY OF THE ACTIVITY IN THE CONTEXT OF THE PREFERRED LOCATION

### 8.1 MOTIVATION FOR THE DEVELOPMENT

Eskom Transmission's ten year plan indicates that a reliable electricity supply of acceptable quality is essential for the economic development of South Africa. It is also a prerequisite for socio-economic development, as it paves the way to access to education, improved nutrition and health care, as well as

jobs, amongst others. The transmission system plays a vital role in the delivery of a reliable, high quality electricity supply throughout the region and the country at large, by delivering electricity in bulk to load centres wherein the distribution networks owned by Eskom and municipalities deliver electricity to end-users. The transmission system needs to be well-maintained to deliver a reliable supply of electricity, and it also needs to be strengthened to meet changing customer needs.

As indicated the forecasted high growth rate between 2013 and 2030 is expected to exceed the maximum transfer capability of the transmission network supplying the Tubatse area. Consequently, Eskom proposes this development in order to mitigate the short-term network reliability constraints and also to create additional capacity for the forecasted load as well as to cater for future electricity demands. This development forms part of the Tubatse Network Strengthening which is driven by residential, industries and mining. Further, it forms part of the new infrastructure that Eskom has planned, the objective being to ensure reliable electricity supply. The proposed project will ensure the following:

- the supply link between the existing Witkop substation via Merensky substation to the existing Maphutha substation is strengthened;
- Improvement in reliability of electricity supply which will benefit mining, tourism, residential and industries in the area; and
- Improvement of South Africa's socio-economic status.

## **8.2 BENEFITS OF THE DEVELOPMENT**

The proposed development is beneficial as it will allow for load growth in the region. It is envisaged that the proposed development will ensure reliable supply to industry, predominantly the agricultural, tourism, residential and manufacturing industries in the area. This will indirectly benefit communities as reliable electricity will result in uninterrupted production and therefore growth in industry, which could potentially yield additional jobs. The overarching impact will be positive economic spinoffs, which benefit the community, the region and country at large.

Electrification has significant positive benefits from a socio-economic and ecological perspective. The provision of electricity leads to a number of social benefits for organs of state, individuals, industries and communities including the following:

- Enables economic and human social development; and
- Encourages small and medium enterprise development, and as a result, contributes to a possible increase in disposable income.

At the local level, the benefits of the project would centre on ensuring improved reliability of supply as well as entrench the reach of electricity into communities. It is envisaged that the proposed project would ensure that marginal communities in the region are supplied with electricity. This will indirectly have an added benefit as it may reduce the community's reliance on firewood as their primary energy source, thus allow for sustainable livelihoods. For organs of state it allows for the following:

Electrification has significant positive benefits from the socio-economic and ecological perspective. The provision of electricity leads to a number of social benefits for organs of state, individuals, industries and communities such as:

- Electrification of educational and training facilities (schools and the like).
- Electrification of health facilities (clinics, hospitals and the like).
- Electrification of security facilities (police stations, court houses and the like).
- Electrification for the provision of essential services (water supply pumps and the like).
- Electrification of religious and cultural facilities.
- Enables rural development.
- Enables the provision of lighting, thereby vastly improving the safety and security of communities.

For individuals and communities:

- Electrification of homes (for cooking, heating and lighting of homes which improves the lives of the individuals within the home); and
- Encourages small and medium enterprise development, and as a result, contributes to a rise in disposable income.

From an ecological perspective, the availability of electricity can lead to a decrease in the harvesting of firewood with resultant biodiversity benefits. This also leads to a decrease in respiratory disease due to a reduction of biomass burning. The relative efficiency of using electricity will reduce overall air emissions and can lead to an improved quality of life.



### 8.2.1 SUPPORTING STRATEGIES

At the **regional level**, the development will contribute to reliable power supply. There would also be a less tangible but nonetheless important benefit of positioning the Municipalities ahead in terms of sustainable energy supply. At the **national level**, the project would contribute to implementing South Africa's new energy policy as embodied in the White Paper on Energy (Department of Minerals and Energy, 1998). The priorities to which this project would contribute are laying the groundwork for enhancing supply and electrification capacity.

### 8.3 NEED AND DESIRABILITY IN THE CONTEXT OF THE PREFERRED LOCATION

Load growth in the Northern grid is expected to accelerate between 2013 and 2030 due to further developments in ferrous chrome and platinum mining. Other developments in the rise include housing, commercial and other activities in the area which will also demand electricity supply. The transmission network capacity is therefore not sufficient to cater for forecasted future load growth. Consequently, the proposed 400kV powerline forms part of the bigger strengthening plans to meet future demand, strengthen and enhance network reliability.

The primary objective of the EIA process is to determine the least sensitive corridor within the identified location suitable for the proposed powerline.

## 9. MOTIVATION FOR THE PREFERRED DEVELOPMENT FOOTPRINT WITHIN THE APPROVED SITE

Based on findings of several specialist studies, and the EAPs coalition of information presented, Alternative 2 is the preferred alternative. This alternative is approximately 169km and will have the least impact on the communities in terms of relocation. The development footprint within the approved footprint is depicted on the map below:

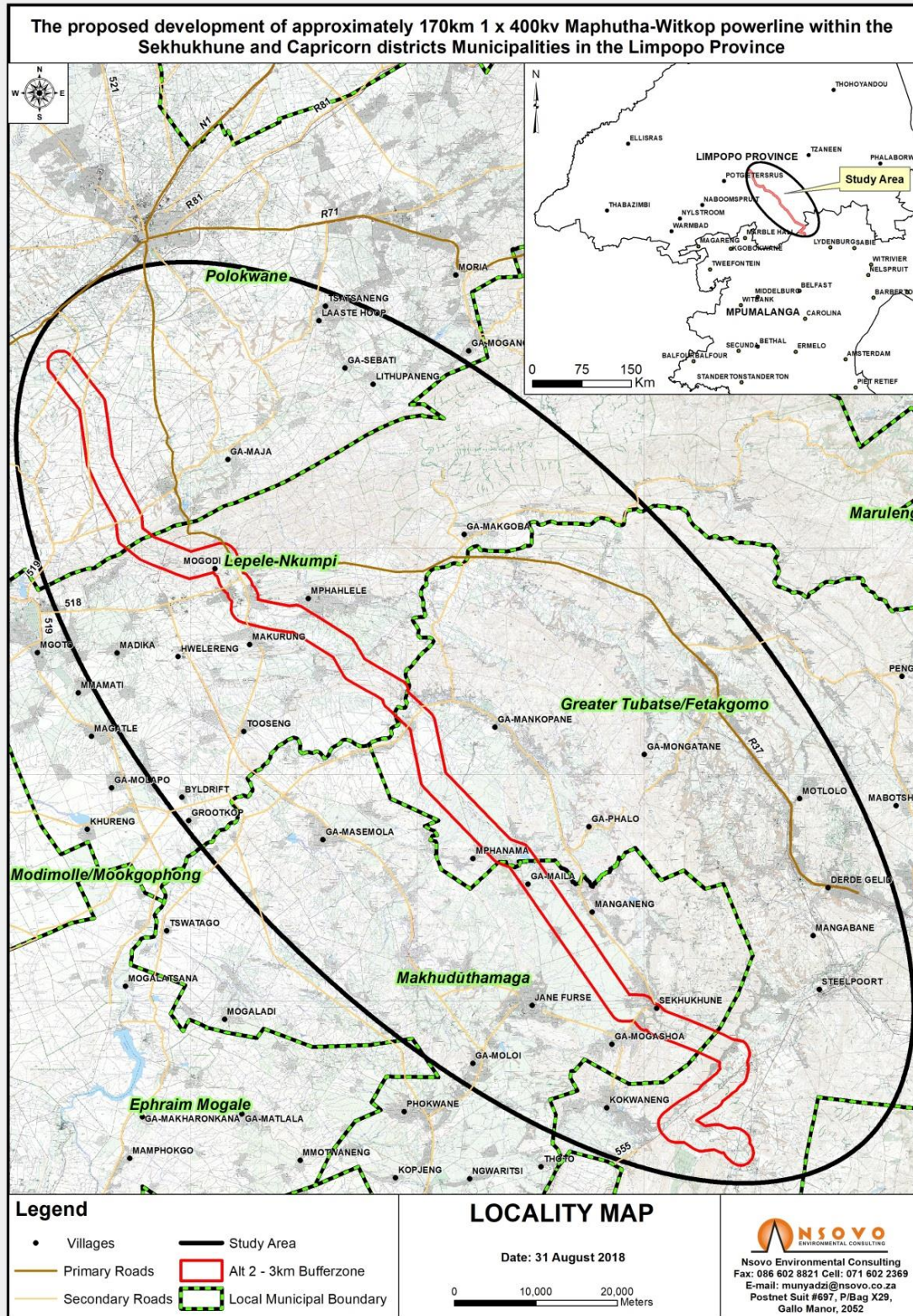


Figure 2: Location of the preferred and recommended Alternative Corridor 2

## 10. DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED ACTIVITY, SITE AND LOCATION WITHIN THE SITE

The identification of alternatives is an important component of the EIA process. The identified alternatives are assessed in terms of environmental acceptability, technical as well as economic feasibility during the EIA process wherein the preferred alternative is highlighted and presented to the Authorities.

Two Corridors and the no-go alternative are being considered for the proposed development. The powerline is planned to connect from the existing Witkop substation near Polokwane to the existing Maphutha substation near Steelpoort. The project has also considered technical alternatives (Refer to Section 8.1) of which were found to be economically and environmentally viable compared to the other options.

The selection of project alternatives was primarily based on Eskom's prefeasibility study that technically determined the broad location based on the need of the project. Subsequent site visits were undertaken by the environmental and specialist teams. Further, a detailed public consultation was undertaken to assess the viability of the selected corridor alternatives which may result in the identification of more corridors for consideration to assess the economic need and desirability of the project. Subsequent to public participation, route diversions were recommended; hence the requirements for the amended draft Scoping Report. The corridor selection process also focused on reviewing the municipalities Integrated Development Plans, Eskom's 10 Year Development Plan and associated documents that address current and future development in and around the area.

Consideration of specialist and technical input culminated into the selection of the preferred corridor alternative and not necessarily the exact footprint. Subsequent to approval by the department the EAP recommends that the exact footprint within the approved corridor alternative site be determined. Such will be achieved by undertaking a walk down with the specialist team, particularly the wetland, heritage, and avifauna. The profiling of the powerline will seek to avoid sensitive environments as far as practically possible.

## 10.1 DETAILS OF ALTERNATIVES CONSIDERED

This section describes the alternatives considered and includes the technical, structural, locality and no-go alternatives which are discussed as follows:

### 10.1.1 TECHNICAL ALTERNATIVES

#### 10.1.1.1 UNDERGROUND VS ABOVE GROUND

Two technical alternatives have been identified for the proposed project i.e. the overhead powerline and underground cabling. Instead of constructing the proposed powerline above ground, underground construction is considered to be an alternative. The advantages of the underground alternative would include a reduced impact on bird interaction and a distinct visual impact benefit.

However, for the proposed development, the underground powerline alternative would not be the most feasible owing to the undulating nature of the area. This could cause major technical problems and would have major environmental implications. Technically, underground cables need to be insulated against the surrounding soil. On low voltage reticulation networks (11kV & 22kV) the heat generated by the cable is low enough for standard insulation to be used; however, on larger power lines (i.e. 400kV as proposed) the method of electrical and heat insulation becomes more burdensome.

Control of electrical losses and heat control are critical for underground cables. As a result, cables are as much as 4 times the diameter and 10 times the weight of equivalent overhead lines. Heat control is also a factor in the laying of the cables. The three phases of low and medium voltage cables (up to 132kV) can be placed in the same trench, while the phases for high voltage cables must be spaced apart, typically in a flat formation.

Bush fires, lightning strikes and bird related faults make up 80% of faults on overhead transmission power lines in South Africa; however, such risks are not associated with underground cables. Further, faulting on underground cable is rare. When faults occur on overhead lines they are usually re-energised by automatically reclosing the circuit-breaker within a few seconds of the fault. More serious faults, such as a damaged line may be easily found and repaired within a few days at most. Underground cables have faults that are almost exclusively permanent, requiring inspection and correction on site. This usually requires

excavating a section of the powerline. As a result, finding the location of faults is not easy unless there is clear evidence of excavation damage. Therefore, the search and repair of underground cables can take several weeks. This may severely compromise the network of the operation.

Economically, costs vary and are dependent on terrain, land use and size of line. However, underground cabling is in orders of magnitude greater than overhead power lines. There is not much expertise for higher voltage underground cabling in the country; as a result, such expertise would have to be sourced from the international market. In terms of maintenance, underground cables are reported to be much more reliable, but outages are more difficult to fix as it is harder to find the faults, and therefore the outages last much longer. The lifespan for underground cables is reported to be much shorter, about half that of overhead power lines.

The underground option is not viable for this development, particularly given the length and undulating nature of the terrain as such; it will not be assessed further during this phase.

### **10.1.2 STRUCTURAL ALTERNATIVES**

Several design alternatives have been proposed, and they include one or more of the following single circuit pylons:

- Cross-Rope suspension type;
- Self-supporting type; and
- Guyed V towers.

These are illustrated in Figures 3 – 7 below. It is important to note that the topography will largely dictate the types of towers to be used. From this perspective, it should be noted that where the line crosses steep, undulating terrains and when it changes direction at an angle, there will be a need to use self-supporting towers.

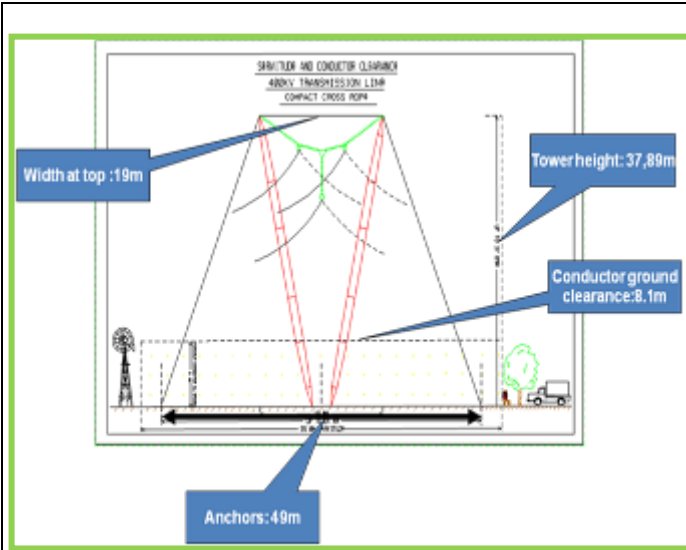


Figure 3: Guide V tower

Figure 4: Photographic Guide V tower

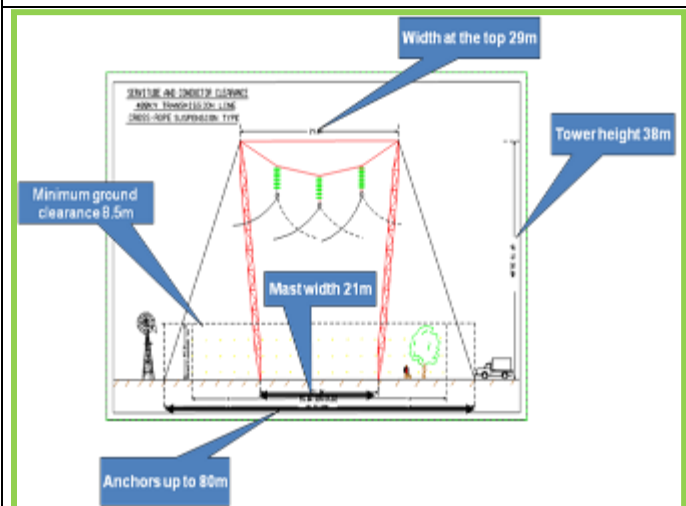
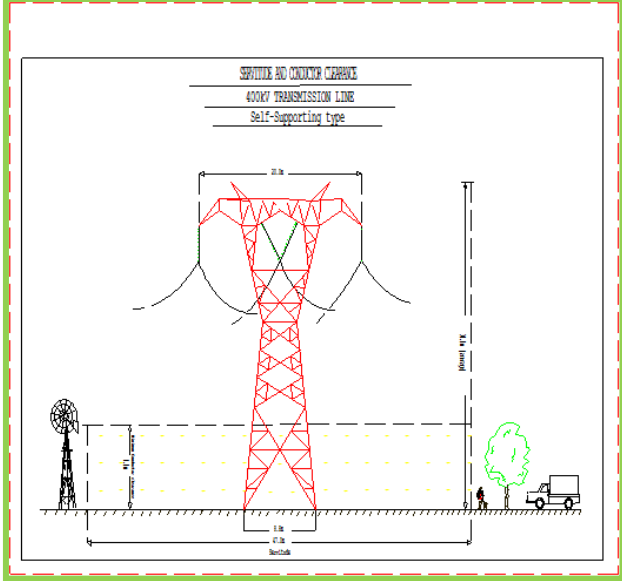



Figure 5: Cross rope suspension tower.

Figure 6: Photographic illustration of a Cross rope suspension tower.

	
<p><b>Figure 7: Self-supporting suspension tower.</b></p>	<p><b>Figure 8: Photographic Self-supporting suspension tower.</b></p>

None of the above options have been dismissed and remain alternatives depending on the terrain and topography. Taking into consideration aspects such as visual; the selection of the pylons to be used for the proposed powerline will take the potential impacts into consideration.

### 10.1.3 CORRIDOR ALTERNATIVES

This section provides detailed information of the corridor alternatives considered for the proposed powerline. This entails the description of two corridors and no-go alternatives which are discussed as follows:

Two corridors alternatives were identified as Corridors 1 and 2. However, only one Corridor will be considered based on recommendations by the specialists, public input during the public participation process and the assessment of the impacts by the EAP. Below is the baseline description of the Corridors.

### 10.1.4 PROPOSED CORRIDOR ALTERNATIVES, COORDINATES AND LENGTH

Table 2 below indicates the proposed corridor alternatives, coordinates and length.

Table 2: Corridor alternatives coordinates and length

Route alternatives	Latitude	Longitude	Length of route within corridor
<b>Corridor 1</b>			
Start	24°02'52.13"S	29°21'24.71"E	±195km
Middle	24°18'16.61"S	29°59'57.28"E	
End	24°54'595.613"S	30°06'23.23"E	
<b>Corridor 2</b>			
Start	24°02'52.13"S	29°21'24.71"E	±160km
Middle	24°24'30.30"S	29°43'27.32"E	
End	24°54'595.613"S	30°06'23.23"E	

#### 10.1.4.1 CORRIDOR ALTERNATIVE 1

Corridor 1 is 3km wide and stretches for approximately ±195km which is 24km longer than the deviated route to avoid the highly sensitive Potlake Nature Reserve as initially proposed. The corridor starts at the existing Witkop substation and spans in a south easterly direction to the existing Maphutha substation. It starts within the Polokwane Local Municipality close to Ga-Maja village, proceeds through Lepelle-Nkumpi Local Municipality near Ga-Makgoba village towards Fetakgomo Greater Tubatse Local Municipality via Steelpoort to Maphutha substation. The corridor has approximately 22 bends and it crosses NFEPA Rivers approximately 16 times including Doring, Chunies, Hlakaro, Morametsi Matadi, Moopetsi, Steelpoort and Tubatsane River. The following are the advantages and disadvantages of the proposed route Alternative 1:

Table 3: Advantages and disadvantages of route alternative one

<b>Route Alternative 1</b>	
<b>Advantages</b>	<b>Disadvantages</b>
It follows the existing 400kV powerline for the longest distance.	It is the longer alternative.
It runs closest the primary access road.	It crosses NFEPA rivers 16 times. It crosses Olifantsrivier 3 times and is adjacent to river for some distance.
Goes a relatively shorter distance (±46km) through Important Bird and Biodiversity Area (IBBA)	



The proposed deviation from Potlake Nature reserve increases the alignment by 24km; however, it avoids Potlake Nature Reserve.	
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#### 10.1.4.2 CORRIDOR ALTERNATIVE 2

Similar to Corridor 1, this corridor is also 3km wide and it starts at the existing Witkop substation in a southerly direction to the existing Maphutha substation. Corridor 2 follows Corridor 1 from Witkop substation until it turns near Mogodi village in a southerly direction where it crosses the R518 secondary road and continues towards Maphutha substation.

It starts at the Polokwane Local Municipality close to Ga-Maja village, proceeds through Lepelle-Nkumpi Local Municipality close to Ga Mphahlele village. It proceeds through Makhuduthamaga Local Municipality passing Mphanama, Ga-Maila and Sekhukhune villages to Fetakgomo Tubatse Local Municipality at Maphutha substation. The Corridor has approximately 13 bends and it crosses NFEPA Rivers approximately 8 times including Lepellane, Doring, Chunies, Morametsi Matadi and Moopetsi Rivers. The following are the advantages and disadvantages of the proposed route Alternative 2:

**Table 4:** Advantages and disadvantages of Corridor 2

Corridor 2	
Advantages	Disadvantages
It follows same alignment as Corridor 1	It has 13 bends.
It is relatively shorter	It runs within residential communities
It crosses IBBA minimally	Due to the several communities it transverses the prevalence of graves is higher.

**Table 5: Summary of specialist findings route alternatives**

Specialist	Corridor 1	Corridor 2
Biodiversity	<p>From the Witkop substation, Corridor 1 follows the same route as Corridor 2 and traverses about 20km of Polokwane Plateau Bushveld which is still largely intact and considered to be of moderate sensitivity. The Corridor then traverses a short extent of mountainous terrain consisting of Mamabolo Mountain Bushveld and Pong Dolomite Mountain Bushveld with a small extent of Ohrigstad Mountain Bushveld, considered to be of relatively high sensitivity. The route then deviates eastwards and is dominated by Sekhukhune Plains Bushveld with small sections of Sekhukhune Mountain Bushveld. The levels of transformation on the plains are relatively high and the majority of the route has been impacted by disturbance and transformation.</p> <p>Sensitive sections of the route include the mountainous section towards the R37 as well as the Olifants River.</p> <p>This is considered to be a relatively favorable route option and is only less preferred to Corridor 2 due to its longer length.</p>	<p>From the Witkop substation, Corridor 2 follows the same route as Corridor 1 and traverses about 20km of Polokwane Plateau Bushveld which is largely still intact and considered to be of moderate sensitivity. The Corridor then traverses a short extent of mountainous terrain consisting of Mamabolo Mountain Bushveld and Pong Dolomite Mountain Bushveld with a small extent of Ohrigstad Mountain Bushveld, considered to be of relatively high sensitivity.</p> <p>Sensitive areas along Corridor 2 include the mountainous terrain towards the R37 as well as the mountains towards the R555. However, both these sections run adjacent to existing power lines, which would reduce the overall impact on these sections.</p> <p>This is considered to be the <b>preferred route</b> as it is relatively shorter and the sensitive sections present are adjacent to existing power line routes.</p>

<p>Avifauna</p>	<p>Factors considered:</p> <ul style="list-style-type: none"> <li>• ±195km long – significantly longer than routes 2</li> <li>• 66km adjacent to 400kV line, 32km adjacent to 132kV line</li> <li>• 46km through IBBA</li> <li>• Crosses Olifantsrivier 3 times and is adjacent to river for some distance</li> </ul>	<p>Factors considered:</p> <ul style="list-style-type: none"> <li>• ±160km long</li> <li>• 38km adjacent to 400kV line, 16km adjacent to 132kV</li> <li>• 22km through IBBA</li> <li>• Crosses Olifantsrivier once</li> </ul>
<p>Heritage</p>	<p>Corridor 1 transverse active farmlands and is in proximity to an existing 400kV powerline. Although there are some villages in the vicinity of this Corridor, such are minimal and can be avoided. There only challenge along this corridor is that some of the section that it transverses are intact, and such land possesses a high possibility of archaeological finds, especially on mountainous areas. However, this can be avoided by remaining as close as possible to the existing. If the proposed powerline is moved away from the existing powerline it will pose potential threat to archaeological sites that are known to exist in the area.</p>	<p>This corridor also transverse over active farmlands and villages, especially towards Spencer Substation. Farmers and villagers in these areas are known to bury their loved ones at home. Making this an ideal place for finding either known or unknown burial. Although the general area around the proposed corridor is disturbed as a result of amongst others farming and residential activities, chances for finding graves in this Corridor is considered higher as evident in the several graves that were noted along this corridor. The prevalence was notably higher in this corridor than in any other proposed corridors. This area thus remains sensitive from an archaeological point of view.</p>
<p>Agriculture</p>	<p>Alternative 1 crosses soils of varying levels of agricultural potential.</p>	<p>Alternative 2 is also characterised by high potential soils.</p>

<p>Social Impact Assessment</p>	<p>Alternative 1 leaves the Witkop Substation in a south, south-easterly direction just north of the village of Mogodi where it crosses the R37 for the first time. The route continues in an easterly direction just south of the village of Ga-Makgoba crossing the R37 all-in-all on six occasions with the final crossing of the R37 at a point north west of the village of Motlolo. The route continues in a south south-easterly direction veering towards the southwest at a point north of Steelport and continues in that direction as it passes between two settlements and eventually joins the red route, Alternative 2. Apart from the various villages and settlements indicated above the route also traverses a number of farms. Alternative 1 seems to affect most people and is the socially less preferred route.</p>	<p>Alternative 2 leaves the Witkop Substation and initially travels along the same route as Alternative 1 only deviating from that route at a point just north east of the village of Mogodi. at this location Alternative 2 veers in a south south-easterly direction passing between two settlements before swinging in a south-easterly direction passing a number of settlements as well as pass east of the villages of Mphanama and Ga-Maila and west of the village of Sekhukhune until re-joining the blue route, Alternative 1, until connecting to the Maphutha Substation. Apart from the various settlements and villages mentioned above, this route also crosses a number of farms. It seems that Alternative 2, would be the <b>socially preferred</b> route but this can easily be overridden for either technical or environmental reasons or both.</p>
<p>Visual Impact Assessment</p>	<p>The Route 1 line is regarded as the <b>most preferred</b> alternative, as its alignment follows along an existing line and servitude and along a main transportation route.</p> <p>It is considered to cause the least impact on the landscape character due to the reduced sensitivity of the landscape along the roads and servitudes.</p> <p>The corridor follows partially along the existing route and partially along a portion of a main transportation route.</p>	<p>Corridor Alternative 2 has a moderate to high intrusion to residents, due to their proximity to the powerlines. These residents are within 5km and in some instances 1km from the proposed alignments. This is considered the zone of highest visibility and a degree of intrusion can be expected. The southern parts of the corridor are more densely populated and the presence of a transmission line may spoil their current views.</p>

	<p>Its great advantage lies in the fact that viewers are already exposed to a similar power line, so negative perception of a new power line following along an existing route has a less significant landscape and visual impact on tourists and residents as compared to Alternative 2.</p>	
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### 10.1.4.3 NO-GO ALTERNATIVE

In accordance with GN R.982, consideration must be given to the option not to act. This option is usually considered when the proposed development is envisaged to have significant negative environmental impacts that mitigation measures cannot ameliorate the identified impacts effectively. The no-go alternative would be the option of not undertaking the development of the proposed project. It would imply that the current electricity supply network is not strengthened, industrial development in the area will be hindered and the integration of potential renewable energy in the area will not be possible. Should the no-go alternative be adopted, the Limpopo grid will be deprived of a much needed essential service, particularly given the already existing energy supply challenge countrywide.

## 11. PUBLIC PARTICIPATION PROCESS

The EIA Regulations, require that during a Scoping and EIA process, the Organs of State together with Interested and Affected Parties (I&APs) and the general public be informed of the application for Environmental Authorisation (EA) and also be afforded an opportunity to comment on the application.

Public Participation Process (PPP) is any process that involves the public in problem solving and decision-making; it forms an integral part of the Scoping and EIA process. The PPP provides people who may be interested or affected by the proposed development, with an opportunity to provide comments and to raise issues or concern, or to make suggestions that may result in enhanced benefits for the project. The primary purpose of the PPP report is as follows:

- To outline the PPP that was undertaken;
- To synthesise the comments and issues raised by the key stakeholders, I&APs; and
- To ensure that the EIA process fully address the issues and concerns raised.

Chapter 6, Regulation 39 through 44, of the Regulations as amended stipulates the manner in which the PPP should be conducted as well as the minimum requirements for a compliant process. These requirements include but not limited to:

**(a) Fixing a notice board at or on the fence of-**

- (i) The site where the activity to which the application relates is or is to be undertaken; and
- (ii) A place conspicuous to the public at the boundary of the site.

**(b) Giving written notice to-**

- (i) The occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
- (ii) The owners or persons in control of that land occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;
- (iii) The municipal councillor of the ward in which the site and alternative site is situated and any organisation of rate payers that represent the community in the area;
- (iv) The municipality which has jurisdiction in the area;
- (v) Any organ of state having jurisdiction in respect of any aspect of the activity; and
- (vi) Any other party as required by the competent authority.

**(c) Placing an advertisement in-**

- (i) One of the local Newspapers within or around the proposed site.

**11.1 PUBLIC PARTICIPATION PRINCIPLES**

The principle of the Public Participation holds that those who are affected by a decision have the right to be involved in the decision-making process (i.e. the public's contribution will influence the decision). One of the primary objectives of conducting the PPP is to provide interested and affected parties with an opportunity to express their concerns and views on issues relating to the proposed project. The principles of public participation are to ensure that the PPP:

- Communicates the interests of and meet the process needs of all participants.
- Seek to facilitate the involvement of those potentially affected.
- Involves participants in defining how they participate.

Is as inclusive and transparent as possible, it must be conducted in line with the requirements of Regulation 39 - 44 of the Regulations as amended.

## 11.2 APPROACH AND METHODOLOGY

The Public Participation approach adopted in this process is in line with the processes contemplated in Regulation 39 - 44 of the Regulations as amended, in terms of NEMA, which provides that I&APs must be notified about the proposed project:

### 11.2.1 IDENTIFICATION OF INTERESTED AND AFFECTED PARTIES

Interested and Affected Parties (I&APs) identified include pre-identified stakeholders (government department), landowners and the general public. Notification and request for comments were submitted to the following key stakeholders:

- National Department of Environmental Affairs;
- Limpopo Department of Economic Development, Environment and Tourism;
- Limpopo Department of Transport and Public Works;
- Limpopo Department of Water and Sanitation;
- South African Heritage Resource Agency;
- Polokwane Local Municipality;
- Lepelle-Nkumpi Local Municipality;
- Makhuduthamaga Local Municipality;
- Fetakgomo Tubatse Local Municipality;

The notifications together with Background Information Documents were sent to stakeholders by registered mail; refer to **Appendices D3**.

### 11.2.2 PUBLIC PARTICIPATION DATABASE

In accordance with the requirements of the EIA Regulations under Section 24 (5) of NEMA, Regulation 42 of GN R. 982, a Register of I&APs must be kept by the public participation practitioner. In fulfilment of this requirement, such a register is compiled and details of I&APs including their comments will be updated throughout the project cycle. The database is attached as **Appendix D5**.



### 11.2.3 SITE NOTICES

A2 size notices were fixed at different conspicuous locations within and around the proposed project study area on the 17<sup>th</sup> – 19<sup>th</sup> October 2017, in the Polokwane, Lepelle-Nkumpi, Makhuduthamaga and Fetakgomo Tubatse Local Municipalities as well as at the existing Witkop and along Maphutha substations. Photographic evidence of the site notices is attached as **Appendix B**.

### 11.2.4 DISTRIBUTION OF NOTICES TO SURROUNDING LAND OWNERS/ OCCUPIERS

Notification letters were posted via registered mail to stakeholders on the 16<sup>th</sup> October 2017 (Refer to **Appendix D3** for proof of postage), whereas site notices in English and Sepedi were hand delivered to landowners/occupiers on the 17<sup>th</sup> – 19<sup>th</sup> October 2017. These notifications were informing stakeholders and the public of the project as well as affording them an opportunity to register as I&AP and also to comment or raise any issues pertaining to the proposed project.

### 11.2.5 PLACEMENT OF ADVERTISEMENT IN THE LOCAL NEWSPAPER

An advertisement was placed on The Star newspaper on the 23<sup>rd</sup> October 2017. The advertisement was aimed at further informing the I&APs of the proposed activity. A 30 day period was allowed for the public to submit their comments, issues and concerns. Proof of newspaper advertisement is attached as **Appendix D2**.

### 11.2.6 PLACEMENT OF DRAFT SCOPING REPORT FOR COMMENTS

The availability of the draft Scoping report for review and comment at public spaces was advertised accordingly and copies were made available on the Nsovo website. Further, copies of the draft Scoping report were submitted to various departments and other stakeholders as highlighted above.

### 11.2.7 PUBLIC MEETINGS

Public and focus group meetings were scheduled for 19 – 23 February 2018. It must be noted that subsequent to the meeting scheduled at Potlake Nature Reserve on Thursday 22<sup>nd</sup> February 2018, it emerged that the proposed corridor traversing the reserve was not feasible. This was followed by further assessment by the

project team to reassess and further ground truth that revealed the non-feasibility of the proposed corridor. Consequently, it was proposed that the line be diverted to avoid the Nature Reserve as depicted in the Maps below. This diversion resulted in additional affected communities that were not affected prior; therefore a need for further public participation arose.

Additional Public Meetings have been scheduled for the 17<sup>th</sup> to the 20<sup>th</sup> April 2018 to accommodate the affected communities and allow them a fair opportunity to participate in the process.

#### **11.2.8 PLACEMENT OF THE REVISED DRAFT SCOPING REPORT FOR COMMENTS**

The availability of the revised draft Scoping report for review and comment at public spaces was advertised on The Star and Steel burger newspapers on the 12 and 13 April 2018 respectively and copies were also made available on the Nsovo website. Further, copies of the draft Scoping report were submitted to various departments and other stakeholders as highlighted above.

#### **11.2.9 ADDITIONAL PUBLIC MEETINGS**

Additional Public Meetings were scheduled for the 17<sup>th</sup>- 20<sup>th</sup> April 2018 to accommodate the affected communities and allow them a fair opportunity to participate in the process.

#### **11.2.10 PLACEMENT OF THE DRAFT EIR FOR COMMENTS**

The availability of the draft EIR for review and comment at public spaces was advertised accordingly on The Star and Steelburger newspapers on the 05<sup>th</sup> and 06<sup>th</sup> September 2018 respectively and copies were also made available on the Nsovo website. Further, copies of the draft EIR were submitted to various organs of State and other stakeholders as highlighted above. Proof of newspaper advertisements and notices is attached as **Appendix D7**.

##### **11.2.10.1 PUBLIC MEETINGS**

Public and focus group meetings were scheduled for 10-14 and 18-20 September 2018. The meetings were held as scheduled, meeting agenda, minutes and attendance register are attached as **Appendix D8**.

It should be noted that during the scheduling of the public and focus group meetings the Ga-Mphahlele Tribal Authority indicated that Nsovo should communicate with Mr Khali Maposo in the Lepelle – Nkumpi Local Municipality who will be the mediator between Nsovo and Tribal Council. Nsovo communicated with Mr Maposo, to schedule the meeting for Friday the 14<sup>th</sup> September 2018; however, on Thursday 13<sup>th</sup> September 2018 he indicated that he has not been able to communicate with the Mphahlele Tribal Council due to several reasons. Subsequently, Nsovo sent an email to Mr Maposo with proposed new dates which were the 18<sup>th</sup> or 19<sup>th</sup> September 2018, however, no response has been received from Mr Maposo has never replied to the email or any form of communication, proof of communication is attached as **Appendix D8.4**. Therefore, Nsovo did not have an opportunity to meet with the Ga-Mphahlele Tribal Council during the draft EIR phase.

#### **11.2.11 DEVELOPING A STRATEGY AND RESOLVING KEY ISSUES**

A strategy for addressing and resolving key issues is to be developed and will include:

- Details on all assessments and investigations carried out;
- Use of the Public Participation Meetings to present the findings of the reports and test the acceptability of priority issues and mitigations
- Openly and honestly relating both positive and negative impacts of the proposed development during the Public Meetings; and
- Allowing the public to understand the consequences of the proposed development on the area.

#### **11.2.12 INTERACTION WITH DEA AND PROVINCIAL ENVIRONMENTAL DEPARTMENT**

Interaction with DEA and the other provincial environmental authorities was undertaken during the Scoping Phase continued during the EIA Phase of the project. Further interaction will occur in the following manner:

- Submission of the Final EIA Report to DEA.

### **11.3 A SUMMARY OF ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES**

Comments, issues and concerns raised together with the responses provided by the EAP are presented as **Appendix D4**.

## **12. DESCRIPTION OF THE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE ALTERNATIVES FOCUSING ON THE GEOGRAPHICAL, PHYSICAL, BIOLOGICAL, SOCIAL, HERITAGE AND CULTURAL ASPECTS**

This section outlines parts of the socio-economic and biophysical environment that could be affected by the proposed development. Using the project description in, and knowledge of the existing environment, potential interactions between the project and the environment are identified below. The potential effects of the project on the human environment, socio-economic conditions, physical and cultural resources are included.

### **12.1 SOCIO-ECONOMIC DESCRIPTION**

This section presents the socio-economic aspects focusing on the Province and Municipalities within the proposed study area.

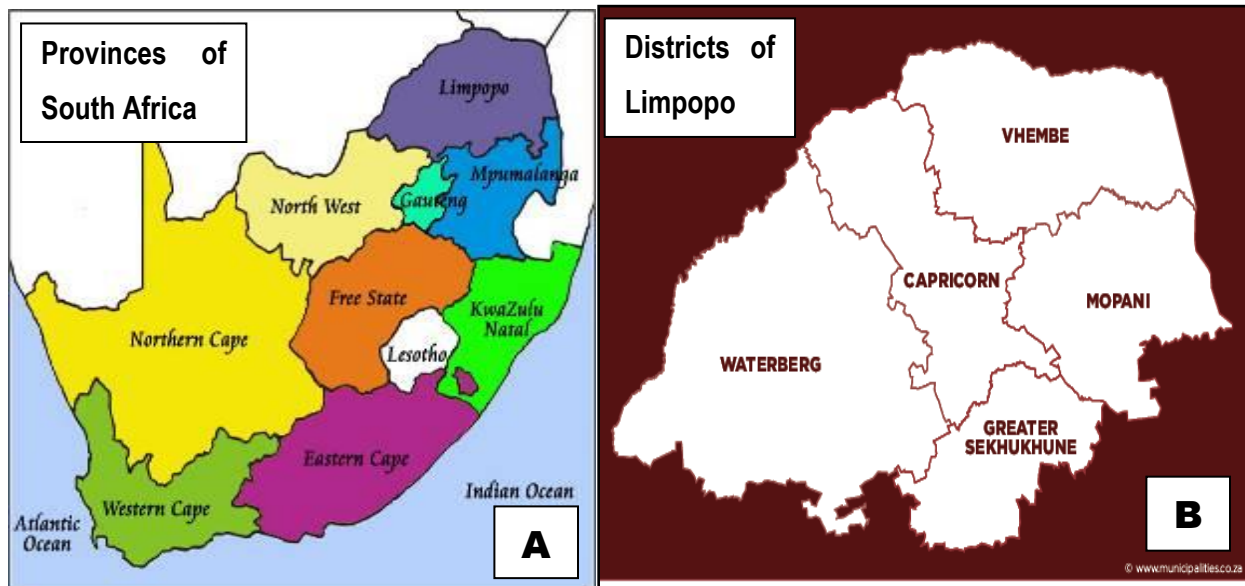
#### **12.1.1 PROVINCIAL DESCRIPTION OF THE PROPOSED PROJECT**

Limpopo is located in the northernmost part of South Africa and it borders Mpumalanga, Gauteng and North West provinces. Limpopo is characterised by bushveld, majestic mountains, primeval indigenous forests, unspoiled wilderness and patchworks of farmland. The province covers an area of 125 754km<sup>2</sup> which has population of approximately 5 779 090. The capital city of Limpopo is Polokwane formerly known as Pietersburg.

The province is divided into five district municipalities *viz.* Vhembe, Mopani, Waterberg Greater Sekhukhune and Capricorn. The proposed development will traverse two of these municipalities i.e. Greater Sekhukhune and Capricorn. The five districts are further subdivided into 22 local municipalities of which only Polokwane, Lepelle-Nkumpi, Fetakgomo Greater Tubatse and Makhuduthamaga municipalities will be impacted by the proposed development.

The Limpopo province is rich in mineral deposits including platinum-group metals, iron ore, chromium, high and middle-grade coking coal, diamonds, antimony, phosphate and copper, as well as mineral reserves such as gold, emeralds, scheelite, magnetite, vermiculite, silicon and mica. Similarly, mining is the primary driver of economic activity and some of the major players within the study area include Tubatse Ferrochrome and Dilokong mines.

The province is a typical developing area, exporting primary products and importing manufactured goods and services. This province is the largest producer of various crops in the agricultural market due to climatic conditions which allows for double harvesting seasons.



**Figure 9:** Photograph A shows the province of South Africa and photograph B shows Limpopo province with municipal district (Source: [www.odm.org.za](http://www.odm.org.za))

### 12.1.2 DISTRICTS MUNICIPALITIES WITHIN THE STUDY AREA

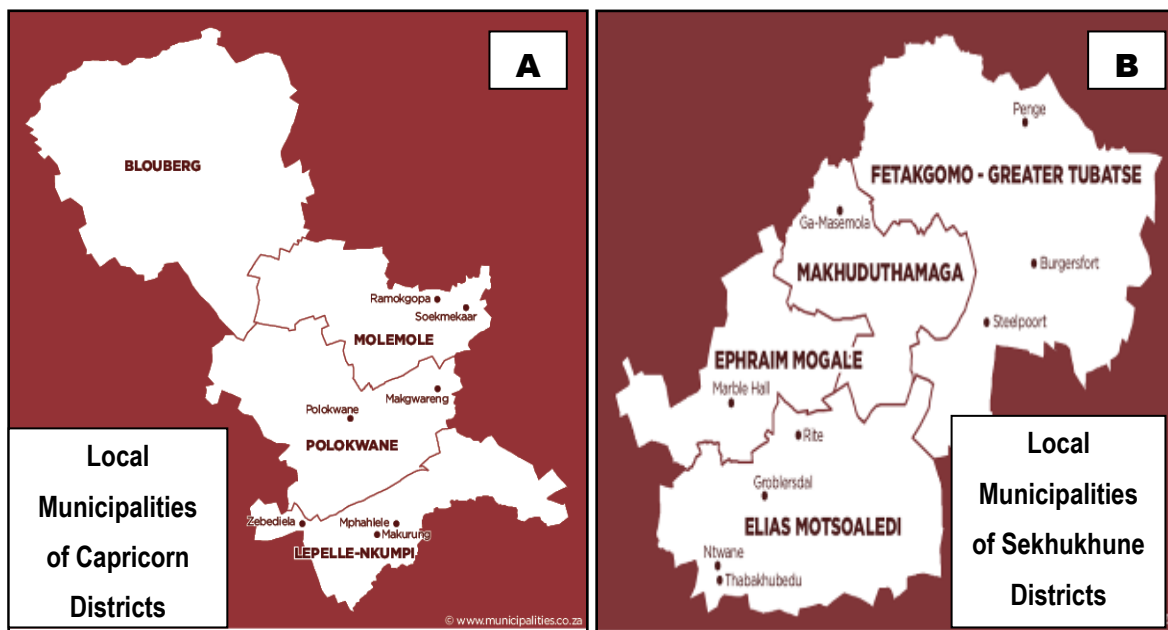
#### a) Sekhukhune Districts Municipality

The Sekhukhune and Capricorn District Municipalities are Category C municipalities. Sekhukhune District Municipality is located in the south-eastern part of the Limpopo province bordering on the Capricorn and Mopani Districts in the north, Mpumalanga in the south and east, and the Waterberg District in the west as shown in Figure 10 below. The Sekhukhune District Municipality covers an area of approximately 13 528km<sup>2</sup>.

The Sekhukhune District Municipality consists of four local municipalities namely: Elias Motsoaledi, Ephraim Mogale, Makhuduthamaga and Fetakgomo – Tubatse. From the above mentioned four municipalities, the proposed powerline will traverse Makhuduthamaga and Fetakgomo – Tubatse. The major towns in the Sekhukhune districts include the Burgersfort, Groblersdal, Marble Hall, Ohrigstad, Roosenekal and Steelpoort. The Main Economic Sectors in Sekhukhune are community services, mining (15-20%), trade (17%), financial and business services (10-12%), and agriculture (9.7%).

## b) Capricorn district municipality

The Capricorn District Municipality covers the area of approximately 21 705km<sup>2</sup>. Capricorn District Municipality consists of the four local municipalities namely: Blouberg, Lepelle-Nkumpi, Molemole and Polokwane whereby only two local municipalities i.e. Polokwane and Lepelle-Nkumpi are within the proposed study area. The major towns in Capricorn include Alldays, Dendron, Morebeng, Polokwane, and Zebediela. The main economic sectors within Capricorn entail the following: community services (30.9%), finance (27.6%), trade (14%), transport (13.2%), manufacturing (4.3%), construction (3.3%), agriculture (3.1%) and electricity (2.9%).



**Figure 10: Photograph A shows the map of Capricorn districts municipalities while photograph B shows Sekhukhune Districts Municipalities**

### 12.1.3 LOCAL MUNICIPALITIES WITHIN THE PROPOSED STUDY AREA

#### a. Polokwane Local Municipality

The Polokwane Local Municipality is a Category B municipality located within the Capricorn District and covers an area of approximately 3 766km<sup>2</sup>. This Municipality accounts for 3% of the total surface area of Limpopo, however, over 10% of the population of Limpopo resides within this Municipality. The municipality serves as the economic hub of Limpopo and has the highest population density in the Capricorn District. The Main Economic

Sectors include community services (32.1%), finance (21.5%), wholesale and retail trade (18.3%), transport (11.7%), manufacturing (4.8%) and mining (4.2%).

#### **b. Lepelle-Nkumpi Local Municipality**

The Lepelle-Nkumpi Local Municipality is a Category B municipality situated within the Capricorn District. This municipality covers an area of approximately 3 463km<sup>2</sup> and is located 55km south of the Capricorn district municipality as well as Polokwane City. The proposed development traverses Wards 7, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23, 24, 25, 26, 27 and 28 of the municipality. It is the smallest of four municipalities in the district, making up 16% of its geographical area. It is predominantly rural and is divided into 29 wards, four of them being a township called Lebowakgomo and one of the Capricorn District's growth points. The major town in this Municipality is Zebediela.

#### **c. Makhuduthamaga Local Municipality**

The Makhuduthamaga Local Municipality is a Category B Municipality situated within the Sekhukhune District Municipality. It is one of the four municipalities that make up the Sekhukhune district, accounting for 16% of its geographical area and covers an area of approximately 2 097km<sup>2</sup>. The proposed development will traverse the municipal wards 12, 13, 14, 16, 17, 19, 22 and 23. The main economic sectors are agriculture and farming.

#### **d. Fetakgomo-Tubatse Local Municipality**

The Fetakgomo- Tubatse Local Municipality is a Category B Municipality which covers an area of approximately 5 693km<sup>2</sup> and located within the Sekhukhune District. The proposed development traverses wards 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19, 21, 27, 28, 29 31, and 34 within the Municipality. It is the largest of the four municipalities making up the district, accounting for 42% of its geographical area.

The area is known as the Middelveld as it is located between the Highveld and Lowveld regions. The vast majority of the area is made up of villages that are scattered throughout, particularly, the northern part. The major towns include Burgersfort, Ohrigstad, and Steelpoort. The main economic sectors within the municipality are agriculture; mining and quarrying; trade; tourism; manufacturing; general government; community, social and personal services; catering and accommodation.

#### **12.1.4 CLIMATIC CONDITION OF THE PROPOSED AREA**

The area falls within the Limpopo Province's Lowveld Climatic Zone which experiences typical subtropical, summer rainfall climatic conditions with hot summers and relatively warm winters. The area can experience periods of high humidity, particularly in the first half of the year. The humidity averages between 80% and 85% from January to June and reduces to between 76% and 80% for the remainder of the year. Maximums of 97% have been recorded. The rainy season is from November to March with maximum rainfall in January. The area is characterised by relatively low rainfall and the mean annual rainfall is 513 mm. Rainfall varies from 250 mm – 700 mm per annum in low-lying areas and rapidly increases up to 2000 mm per annum as the altitude increases in the escarpment region of the Lowveld. The summer tend to be extremely hot and humid with temperatures often exceeding 35 degrees Celsius between the months of October and March, while the winters tend to be warm during the day and cool to cold at night and in the early mornings.

#### **12.1.5 GEOLOGY OF THE AREA**

The proposed study area is mainly dominated by the granite, dolerite and gabbro. The area around Maphutha substation is characterized by gabbro and minimal lava. Corridor 1 traverses dolomite, clinopyroxente, andesite and norite to the existing Maphutha substation which is dominated by gabbro. Corridor 2 traverses mainly gabbro and minimal anderite.



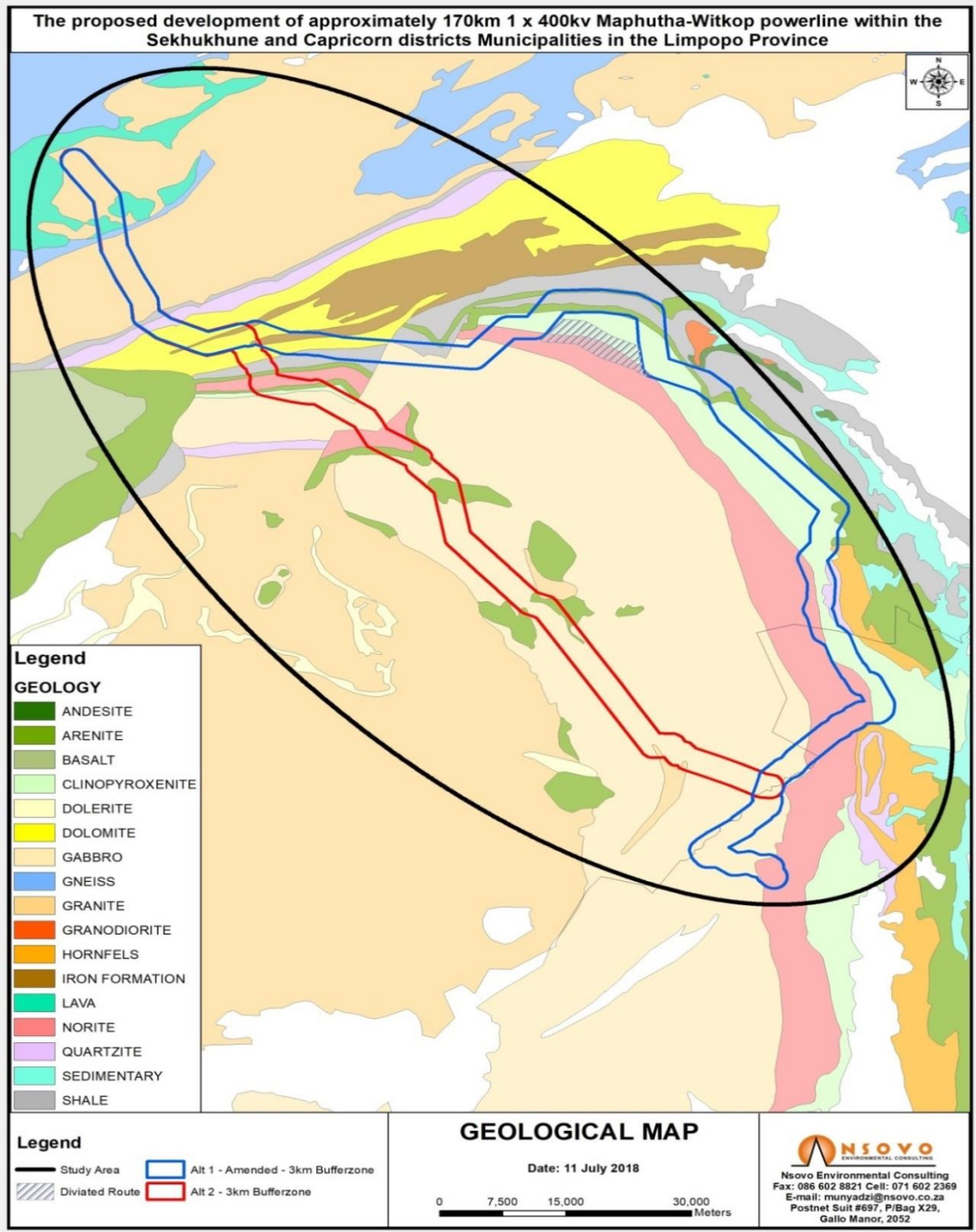


Figure 11: Geological map of the proposed location

### 12.1.6 TOPOGRAPHY OF THE STUDY AREA

The proposed study area is highly mountainous hence development occurs mostly in valleys. Settlements sizes are small and scattered due to extensive broken terrain. The ridges and the mountains form linear dividers

between the residential communities. In certain areas within the proposed study area the topography is very steep creating mountainous terrain which is barely inhabited. The terrain dictates that larger settlement development occurs mainly in flat, low lying areas in-between the mountain ranges.

### 12.1.7 SURFACE WATER WITHIN THE AREA

Majority of the study area lies within the North Olifants Quaternary Catchment while a shorter distance of the line, towards the Witkop substation, falls within the Limpopo Quaternary Catchment. There are several wetlands and NFEPA Rivers within the buffer zone of the three Corridors (Refer to Figure 12). The quaternary catchments within the study area are presented in Table 12 below as follows:

**Table 6:** Quaternary catchments within the study area

North Olifants Quaternary Catchments		
B41H	B51H	B51G
B42G	B52B	B71B
B42H	B52E	B52J
B42F	B71E	B51F
B41J	B52A	B52F
B41K	B51E	B52C
B71H	B52D	B71A
B41G	B51C	B52G and B52H
Limpopo Quaternary Catchments		
A71A	-	-

### 12.1.8 SITES OF ARCHAEOLOGICAL AND CULTURAL SIGNIFICANCE

According to the Phase 1 Archaeological Impact Assessment Specialist Study Report (refer to **Appendix C4**), there is indication that Iron Age people settled in some parts of the study area. According to Huffman (2007), Iron Age people preferred to settle in areas with rich alluvial soils close to rivers. Although no remains of Stone/Iron Age sites were noted during site visit, the area could still contain camps and some areas with suitable substrates that could have been used as quarries for material to produce tools.

Cultural heritage site identified within and around the study area are indicated in the sensitivity map below. It must be noted that none of the identified corridors are close enough to prompt a direct impact from the proposed development.

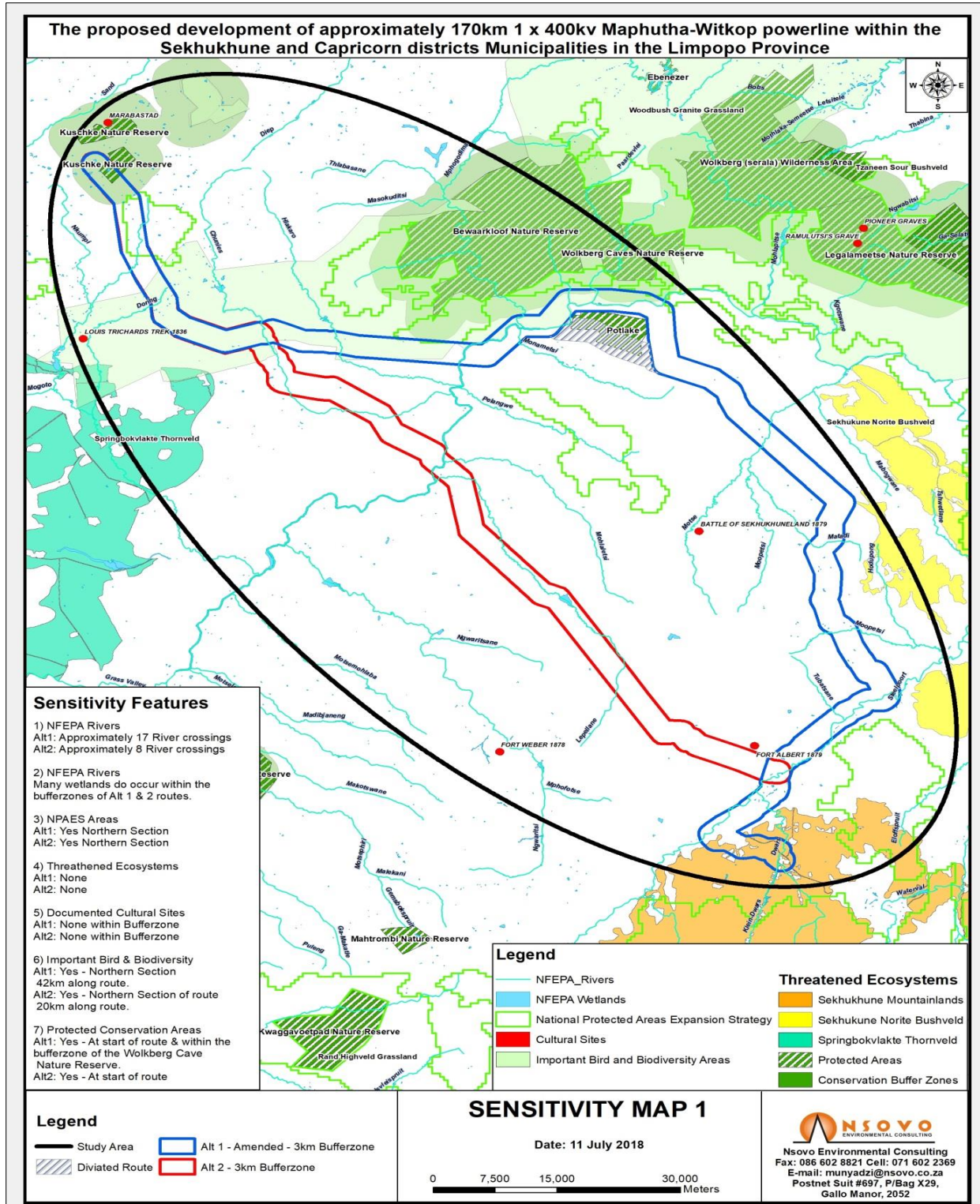


Figure 12: Sensitivity map highlighting cultural sites in the study area

Sensitive areas that were noted during survey include:

- Most of the households which are within the proposed corridors have family graves, the developers should therefore avoid the corridor with the high percentage of households;
- Iron Age people preferred to settle on the alluvial soils close to rivers. As such, all river banks are viewed to be sensitive and should be avoided in the best way possible.

#### **12.1.9 AIR QUALITY AND POLLUTION**

Air quality defined includes noise and odour as well as all sources of air pollution (i.e. point, area and mobile sources). The Limpopo Air Quality Management Plan has been developed to comply with the National Environmental Management: Air Quality Act, 39 of 2004 and more specifically, to provide guidance on Air Quality Management in the Sekhukhune and Capricorn Municipal Districts. The Plan identifies air pollution sources in the proposed locations as follows:

- Clay brick manufacturing;
- Agricultural activities
- Biomass burning (veld fires);
- Domestic fuel burning (wood and paraffin);
- Vehicle emissions;
- Waste treatment and disposal;
- Dust from infrastructural development;
- Dust from unpaved roads; and
- Other fugitive dust sources such as wind erosion of exposed areas.

There are few sources of air pollutants within the immediate proposed area. The ambient air quality is generally good; however, emissions from industrial boilers are likely to result in local areas of elevated concentrations of air pollutants. Ambient particulate concentrations are likely to be low in residential areas where wood is used as primary fuel source. The motor vehicle congestion in mining towns and along the N1, R37, 518 and 519 roads results in elevated ambient concentrations of particulates and Nitrogen Oxides (NO<sub>2</sub>) at times.

#### **12.1.10 VEGETATION STRUCTURE AND COMPOSITION**

The existing Witkop substation is located in an area characterised by the Petersburg Plateau Grassveld type of vegetation while the Maphutha substation is situated in an area characterised by mixed bushveld. The general

vegetation along the study area is Acocks vegetation which consists of mixed bushveld, north-eastern mountain sourveld, north-eastern sandy highveld, Pietersburg plateau grassveld, sourish mixed bushveld; springbok flats turf thornveld and north-eastern mountain grassland.

Corridor 1 is dominated by the mixed bushveld while Corridors 2 traverse areas dominated by the normal mixed bushveld and sourish mixed bushveld. The central section of the study area is dominated by large tracts of Sekhukhune Plains Bushveld and Sekhukhune Mountain Bushveld. Levels of transformation on the plains are relatively high, but the mountain bushveld areas are largely intact. The terminal section of the alignments towards Uchoba substation is considered more sensitive than the previous section of the alignments and is therefore considered a listed ecosystem while the Sekhukhune Mountain lands is considered to be endangered. However, the species of concern associated with the Sekhukhune Mountain lands ecosystem, are highly unlikely to occur within the affected area which is relatively low-lying and arid

#### **12.1.11 TOPOGRAPHY**

The terrain within the study area varies greatly. Parts of the area in the south-east and north consists of steep ridges, with slopes exceeding 100% (45°) in many places. However, most of the middle part of the corridor follows drainage valleys, which are relatively flat (Alternative 1), or the broad Sekhukhune plain (Alternatives 2), generally with slopes around 2-10%. Altitude above sea level is around 1 000-1 200 m for most of the corridors, rising to around 1 400 m on the top of the ridges and falling to around 850 m in the lowest parts.

#### **12.1.12 AGRICULTURE**

The climate of the study area shows that the rainfall is marginal for dry land (rain-fed) cultivation, especially in this area of warm to hot summer temperatures, exacerbated by the “bowl effect” of the surrounding steeper topography. The variable nature of the rainfall, both within seasons and across seasons, means that arable cultivation has significant risks, if no source of irrigation water is available to supplement the rainfall in times of shortfall. Figure 15 below depicts the study area’s agricultural potential. It is evident that the longer spans of the alignment are within soils which are highly suitable for arable agriculture while the areas around both Witkop and Maphutha substations are within soil of low to intermediate agricultural potential.

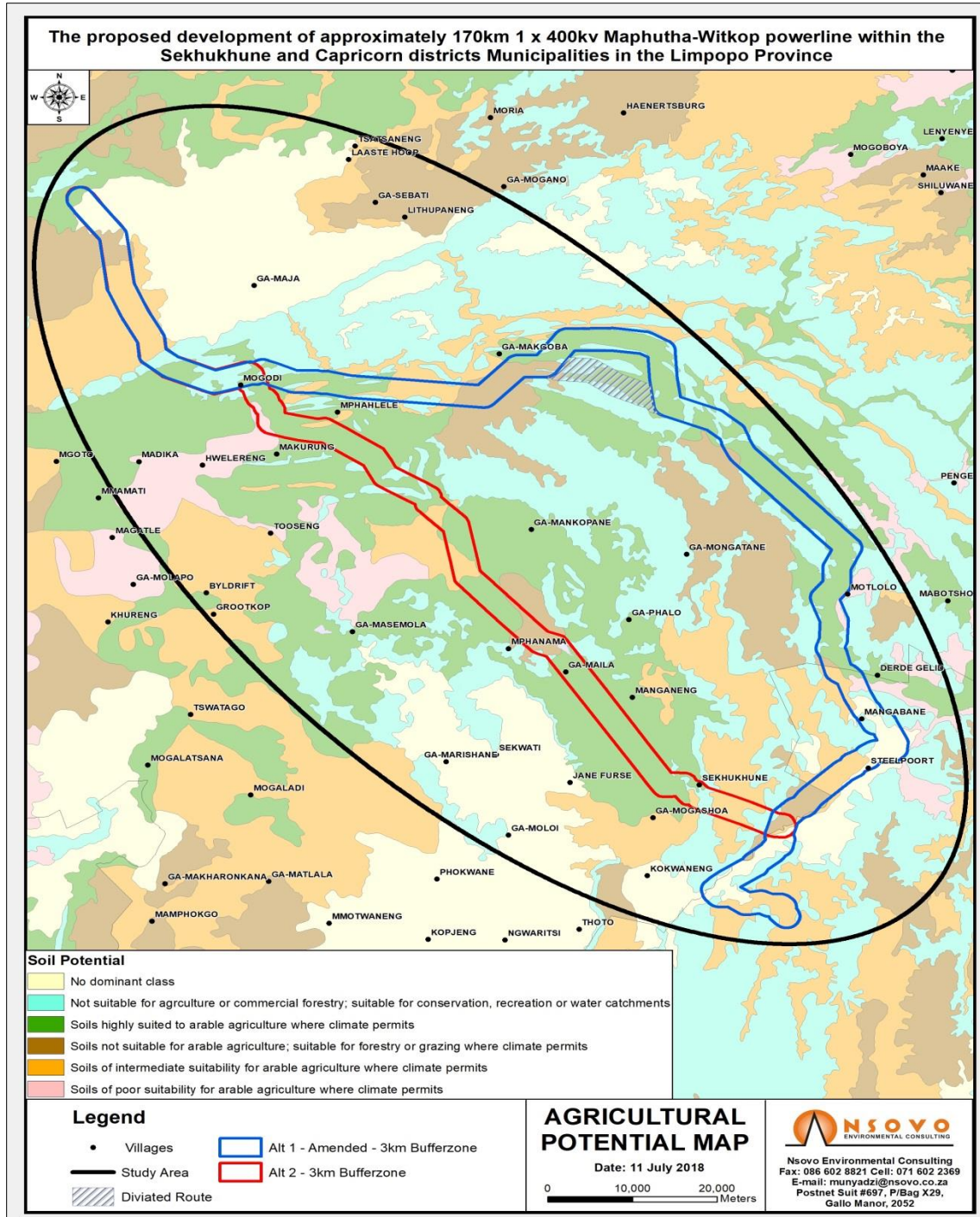


Figure 12: Agricultural potential along the alignment

### 12.1.12.1 SOIL TYPE

According to the Soil specialist there are many separate land types occurring within the study area which are summarized in the table and shown on the map below as follows:

**Table 7: soil types along the proposed corridors**

Soil Type	Description
Ae27, Ae115, Ae117, Ae118, Ae122, Ae123, Ae131, Ae225, Ae233, Ae339, Ae342, Ae343, Ae346, Ae347, Ae348, Ae352, Ae354, Ae355, Ae386	Red, lightly weathered, structure less soils
Bd39	Non-red, lightly weathered, structure less soils, often with plinthic subsoils
Db244	Non-red duplex soils, sandy topsoil over structured clay subsoil
Dc31	Duplex soils with some black and red clay soils
Ea88	Black, swelling clay soils
Fa279	Shallow soils, sometimes rocky, little lime
Fb171, Fb172, Fb534, Fb535	Shallow soils, sometimes rocky, occasionally some lime
Fc733	Shallow soils, sometimes rocky, much lime
la175, la176, la177	Alluvial soils, usually deep
lb30, lb31, lb155, lb190, lb191, lb192, lb197, lb239, lb293, lb454, lb456, lb457	Rocky areas [>60% rock], often steep with shallow soils
lc154	Very rocky areas [>80% rock], usually steep with shallow soils



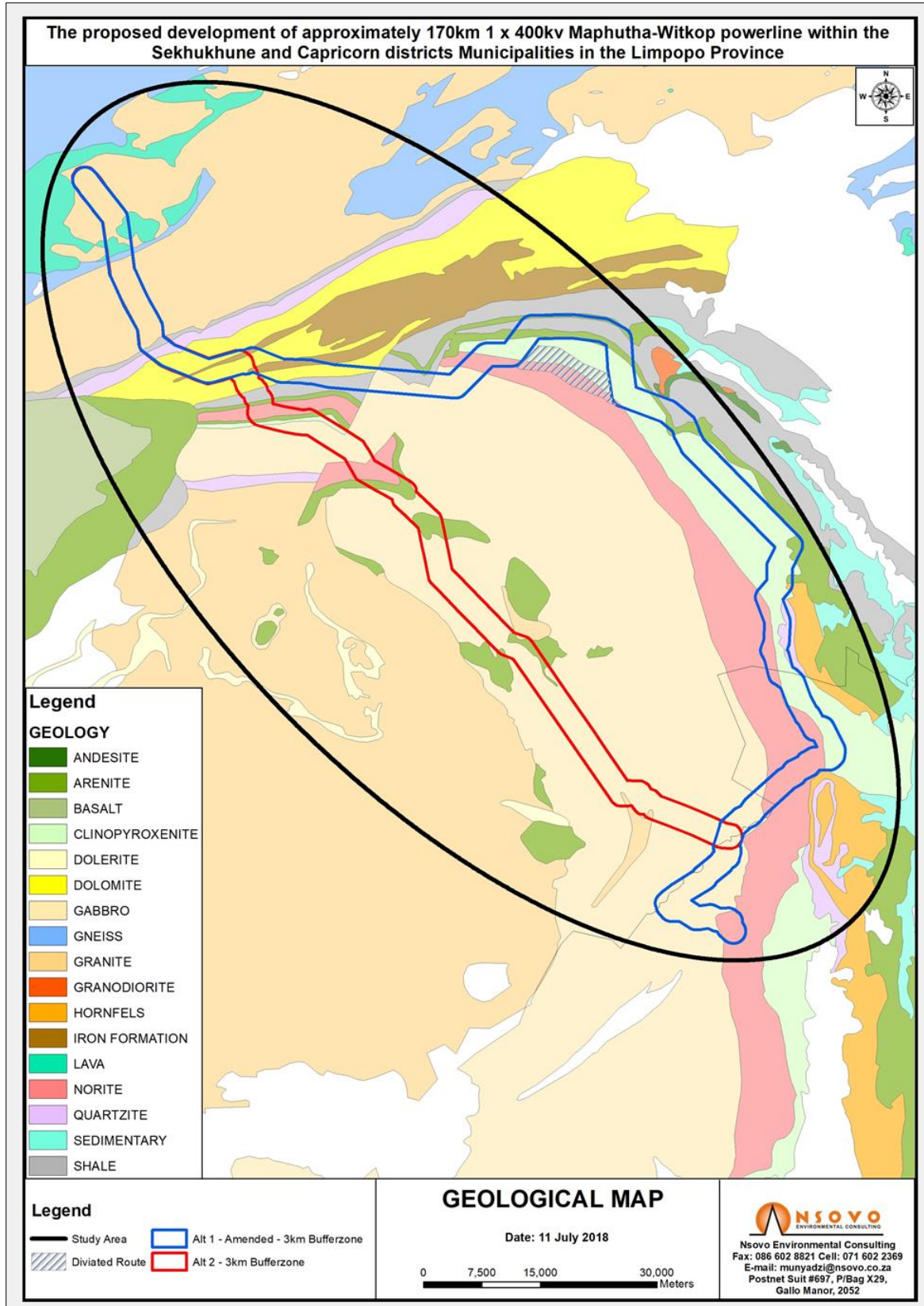


Figure 13: Broad soil patterns of the land types

### **12.1.12.2 SOIL ERODIBILITY**

According to the agricultural specialist report, most of the study area is not inherently susceptible to erosion. Most of the high potential soils are on relatively flat topography, and have stable clay mineralogy, while on the steeper slopes, the rock outcrops and continuous vegetation cover mean that these areas are also not highly erodible. However, incorrect management practices in many of the rural areas along the corridors (mainly overgrazing or cultivation of unsuitable soils), have led to the development of severe gully erosion which is more evident along corridor one.

However, if vegetation cover is disturbed or removed (such as during the construction phase of a transmission line) and especially on steeper slopes, then erosion will most likely occur. Therefore, clear mitigation measures should be implemented.

### **12.1.13 SENSORY ASPECTS**

#### **12.1.13.1 NOISE**

The ambient noise levels of the proposed project area are within acceptable limits.

#### **12.1.13.2 VISUAL ASPECTS**

Visual appreciation or dislike is subjective and thus what is aesthetically pleasing to some can be displeasing to others. The visual analysis of a landscape the impact of new developments and structures tends to be complicated and it is evident from previous experience that when dealing with reaction to landscape changes, a large diversity of opinion exists.

As such, it is imperative that the applicant be sensitive from a visual impact perspective, to the requirements of the local people, notably rural communities, and farmers. Many topographical features influence this environment and these features will need to be utilised when selecting an alignment so as to minimise visual impacts and intrusions.

## **13. METHODOLOGY FOR ASSESSING SIGNIFICANCE OF POTENTIAL IMPACTS**

The assessment of impacts is largely based on the Department of Environmental Affairs and Tourism's (1998) Guideline Document: Environmental Impact Assessment Regulations. The assessment will consider impacts

arising from the proposed activities of the project both before and after the implementation of appropriate mitigation measures.

The impacts are assessed according to the criteria outlined in this section. Each issue is ranked according to extent, duration, magnitude (intensity) and probability. From these criteria, a significance rating is obtained, the method and formula is described below. Where possible, mitigation recommendations have been made and are presented in tabular form.

The criteria given in the tables below will be used to conduct the evaluation. The nature of each impact will be assessed and described in relation to the extent, duration, intensity, significance and probability of occurrence attached to it.

**Table 8:** Methodology used in determining the significance of potential environmental impacts

#### **Status of Impact**

The impacts are assessed as either having a:  
negative effect (i.e. at a `cost' to the environment),  
positive effect (i.e. a `benefit' to the environment), or  
Neutral effect on the environment.

#### **Extent of the Impact**

- (1) Site (site only),
- (2) Local (site boundary and immediate surrounds ),
- (3) Regional (within the City of Johannesburg),
- (4) National, or
- (5) International.

#### **Duration of the Impact**

The length that the impact will last for is described as either:

- (1) immediate (<1 year)
- (2) short term (1-5 years),
- (3) medium term (5-15 years),
- (4) long term (ceases after the operational life span of the project),
- (5) Permanent.

#### **Magnitude of the Impact**

The intensity or severity of the impacts is indicated as either:

- (0) none,
- (2) Minor,
- (4) Low,

- (6) Moderate (environmental functions altered but continue),
- (8) High (environmental functions temporarily cease), or
- (10) Very high / Unsure (environmental functions permanently cease).

### Probability of Occurrence

The likelihood of the impact actually occurring is indicated as either:

- (0) None (the impact will not occur),
- (1) improbable (probability very low due to design or experience)
- (2) low probability (unlikely to occur),
- (3) medium probability (distinct probability that the impact will occur),
- (4) high probability (most likely to occur), or
- (5) Definite.

### Significance of the Impact

Based on the information contained in the points above, the potential impacts are assigned a significance rating (**S**). This rating is formulated by adding the sum of the numbers assigned to extent (**E**), duration (**D**) and magnitude (**M**) and multiplying this sum by the probability (**P**) of the impact.

$$S=(E+D+M)P$$

### The significance ratings are given below

- (<30) low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- (30-60) medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- (>60) high (i.e. where the impact must have an influence on the decision process to develop in the area).

## 13.1 DESCRIPTION OF THE ENVIRONMENTAL ISSUES AND POTENTIAL IMPACTS INCLUDING CUMULATIVE IMPACTS IDENTIFIED

This section of the draft EIR describes the potential impacts that the proposed project may pose on the receiving environment. Impacts associated with the relevant environmental components within the study area as identified, have been assessed based on the consultant's opinion after numerous site and previous experience on similar undertakings as well as consultation with specialist studies. Refer to table below, for the potential impacts identified

## 13.2 IMPACTS THAT ARE LIKELY TO RESULT FROM PLANNING AND DESIGN

### 13.2.1 EMPLOYMENT CREATION

Job creation and investments into the project will result in opportunities during the planning and design phase. This impact will typically be limited to skilled engineers and planning professionals. Proposed project will result in very limited opportunities to the skilled local community during the construction phase. This impact will be positive and provincial in extent.

Issue	Corrective Measure	Impact Rating Criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Employment Creation	No	Positive	Local	Short term	High	Medium	(30-60) = Medium
	Yes						
Corrective Actions	No mitigation measures have been identified.						

Indirect Impacts:

None Identified.

Cumulative Impacts:

Job creation and investments into the project will result in opportunities during the planning and design phase. This impact will typically be limited to skilled engineers and planning professionals. Proposed project will result in very limited opportunities to the skilled local community during the construction phase. This impact will be positive and provincial in extent.

### 13.3 IMPACTS ASSOCIATED WITH THE CONSTRUCTION PHASE

It is important to note that the impacts identified are similar to all two route alternatives.

#### 13.3.1 BIODIVERSITY

Corridor Alternatives	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
<b>13.3.1.1 IMPACT ON VEGETATION AND PLANT SPECIES OF CONCERN</b>							
Corridor 1	No	Negative	Local	Long Term	Moderate	Certain	<b>Medium</b>
	Yes	Negative	Local	Long Term	Low	Probable	<b>Low</b>
Corridor 2	No	Negative	Local	Long Term	Moderate	Certain	<b>Medium</b>
	Yes	Negative	Local	Long Term	Low	Probable	<b>Low</b>
<b>Mitigation Measures</b>							

Corridor Alternatives	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
<ul style="list-style-type: none"> <li>• Placement of pylons and other infrastructure within the High Sensitivity areas and drainage lines should be avoided.</li> <li>• Preconstruction walk-through of the approved development footprint to ensure that sensitive habitats and species are avoided where possible.</li> <li>• Ensure that lay-down and other temporary infrastructure is within low sensitivity areas, preferably previously transformed areas if possible.</li> <li>• Minimise the development footprint as far as possible and rehabilitate disturbed areas that are no longer required by the operational phase of the development.</li> <li>• Preconstruction environmental induction for all construction staff on site to ensure that basic environmental principles are adhered to. This includes topics such as no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimizing wildlife interactions, remaining within demarcated construction areas etc.</li> <li>• Demarcate all areas to be cleared with construction tape or other appropriate and effective means. However, caution should be exercised to avoid using material that might entangle fauna.</li> </ul>							
<b>13.3.1.2 IMPACT ON FAUNA DUE TO CONSTRUCTION ACTIVITY</b>							
Corridor 1	No	Negative	Local	Long Term	Moderate	Highly Probable	<b>Medium</b>
	Yes	Negative	Local	Long Term	Low	Probable	<b>Low</b>
Corridor 2	No	Negative	Local	Long Term	Moderate	Highly Probable	<b>Medium</b>
	Yes	Negative	Local	Long Term	Low	Probable	<b>Low</b>
<b>Mitigation Measures</b>							

Corridor Alternatives	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
	<ul style="list-style-type: none"> <li>• Preconstruction walk-through of powerline corridor to identify areas of faunal sensitivity.</li> <li>• During construction any fauna directly threatened by the construction activities should be removed to a safe location by the ECO or other suitably qualified person.</li> <li>• Any trenches that are required for pylons etc, should not be left open for extended periods as fauna such as tortoises will fall in and become trapped. Any open trenches should be checked regularly for trapped fauna.</li> <li>• The illegal collection, hunting or harvesting of any plants or animals at the site must be strictly forbidden. Personnel must not be allowed to wander off the construction site.</li> <li>• No fires should be allowed within the site as there is a risk of runaway veld fires.</li> <li>• No fuel wood collection should be allowed on-site.</li> </ul> <ul style="list-style-type: none"> <li>• If any parts of site such as construction camps must be lit at night, this should be done with low-UV type lights (such as most LEDs) as far as practically possible, which do not attract insects and which should be directed downwards.</li> <li>• All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill.</li> <li>• No unauthorized persons should be allowed onto the site and site access should be strictly controlled</li> <li>• All construction vehicles should adhere to the speed limit (40km/h for cars and 30km/h for trucks) to avoid collisions with susceptible species such as reptiles and small animals.</li> <li>• All personnel should undergo environmental induction with regards to fauna and in particular awareness about not harming or collecting species such as snakes, tortoises and snakes which are often persecuted out of fear or superstition.</li> </ul>						
<b>13.3.1.3 INCREASED EROSION AND DEGRADATION RISK</b>							
Corridor 1	No	Negative	Local	Long Term	Moderate	Highly Probable	<b>Medium</b>



Corridor Alternatives	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
	Yes	Negative	Local	Long Term	Moderate	Probable	Medium-Low
Corridor 2	No	Negative	Local	Long Term	Moderate	Probable	Medium
	Yes	Negative	Local	Long Term	Low	Improbable	Low
<b>Mitigation Measures</b>							
<ul style="list-style-type: none"> <li>There must be regular monitoring for erosion at least 2 years after decommissioning by the applicant to ensure that no erosion problems develop as a result of the disturbance, and if they do, to immediately implement erosion control measures.</li> <li>All erosion problems observed must be rectified as soon as possible, using the appropriate erosion control structures and revegetation techniques.</li> <li>All disturbed and cleared areas must be re-vegetated with indigenous perennial shrubs and grasses from the local area.</li> </ul>							
<b>13.3.1.4 IMPACT ON CBAs AND LISTED ECOSYSTEMS</b>							
Corridor 1	No	Negative	Local	Long Term	Moderate	Highly Probable	Medium
	Yes	Negative	Local	Long Term	Moderate	Probable	Medium-Low
Corridor 2	No	Negative	Local	Long Term	Moderate	Probable	Medium
	Yes	Negative	Local	Long Term	Low	Improbable	Low
<b>Mitigation Measures</b>							
<ul style="list-style-type: none"> <li>Minimise the development footprint within the CBAs and high sensitivity areas.</li> <li>Conservation areas should be avoided where possible.</li> <li>All disturbed areas must be rehabilitated with locally occurring shrubs and grasses after construction and decommissioning to reduce the overall footprint of the development.</li> </ul>							

### 13.3.2 AVIFAUNA

Corridor Alternatives	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
<b>13.3.2.1 COLLISION OF BIRDS WITH EARTH WIRES</b>							
Corridor 1	No	Negative	Local	Permanent	Medium	Medium	<b>Medium</b>
	Yes	Negative	Local	Permanent	Medium	Low	<b>Low</b>
Corridor 2	No	Negative	Local	Permanent	Medium	Medium	<b>Medium</b>
	Yes	Negative	Local	Permanent	Medium	Low	<b>Low</b>
<b>Mitigation Measures</b>							
<ul style="list-style-type: none"> <li>Choose optimum route for the power line.</li> <li>Conduct avifaunal walk through to ground truth final alignment and identify high risk sections of power line.</li> <li>Install line marking devices on high risk sections to make cables more visible to birds and reduce risk of collisions.</li> <li>Monitor line annually to measure how many birds are killed through collision.</li> </ul>							
<b>13.3.2.2 DESTRUCTION OF BIRD HABITAT DURING CONSTRUCTION</b>							
Corridor 1	No	Negative	Local	Permanent	Low	High	<b>Low</b>
	Yes	Negative	Local	Permanent	Low	High	<b>Low</b>

Corridor Alternatives	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Corridor 2	No	Negative	Local	Permanent	Low	High	Low
	Yes	Negative	Local	Permanent	Low	High	Low
<b>Mitigation Measures</b>							
<ul style="list-style-type: none"> <li>Choose optimum route for power line.</li> <li>Conduct avifaunal walk through to ground truth final alignment and identify sensitive habitats</li> <li>Minimise any vegetation clearing required</li> </ul>							

Corridor Alternatives	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
<b>13.3.2.3 DISTURBANCE OF BIRDS</b>							
Corridor 1	No	Negative	Local	Short term	Low	Low	Low
	Yes	Negative	Local	Short term	Low	Low	Low
Corridor 2	No	Negative	Local	Short term	Low	Low	Low
	Yes	Negative	Local	Short term	Low	Low	Low
<b>Mitigation Measures</b>							

Corridor Alternatives	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
<ul style="list-style-type: none"> <li>Choose optimum route for power line.</li> <li>Conduct avifaunal walk through to ground truth final alignment and identify any breeding <b>SITES</b> for sensitive species. If any found provide case specific management measures.</li> </ul>							
<b>13.3.2.4 AVIFAUNA ELECTRICAL FAULTING CAUSED BY BIRDS</b>							
Corridor 1	No	Negative	Local	Permanent	Low	Medium	<b>Medium</b>
	Yes	Negative	Local	Permanent	Low	Low	<b>Low</b>
Corridor 2	No	Negative	Local	Permanent	Low	Medium	<b>Medium</b>
	Yes	Negative	Local	Permanent	Low	Low	<b>Low</b>
<b>Mitigation Measures</b>							
<ul style="list-style-type: none"> <li>Choose optimum route for power line.</li> <li>Conduct avifaunal walk through to ground truth final alignment and identify towers requiring Bird Guards</li> <li>Install Bird Guards on relevant towers as per Eskom Transmission Guidelines</li> </ul>							

### 13.3.3 HERITAGE

Corridor Alternatives	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
<b>13.3.3.1 HERITAGE IMPACT</b>							
Corridor 1	No	Negative	Local	Permanent	Low	Medium	<b>Medium</b>
	Yes	Negative	Site	Long term	Medium	Medium	<b>Medium</b>
Corridor 2	No	Negative	Local	Permanent	Medium	Medium	<b>Medium</b>
	Yes	Negative	Site	Long term	Medium	Low	<b>Low</b>
<b>Mitigation Measures</b>							
<ul style="list-style-type: none"> <li>• Avoid the corridor with the high percentage of households;</li> <li>• All river banks are viewed to be sensitive and should be avoided in the best way possible;</li> <li>• Avoid impacting on grave sites during final stage of planning, meaning, attempt should be made to remain within the servitudes of the existing powerline</li> <li>• A heritage practitioner should complete a “walk down” of the final selected power line servitudes, and all other activity areas (access roads, construction camps, etc.) prior to the start of construction;</li> </ul>							

### 13.3.4 SOCIAL IMPACT

Corridor Alternatives	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Corridor 1	No	Negative	Local	Short term	High	High	Medium
	Yes	Negative	Local	Short term	Low	Medium	Low
Corridor 2	No	Negative	Local	Short term	Very High	Definite	High
	Yes	Negative	Local	Short term	Moderate	High	Medium
<b>Mitigation Measures</b>							
<ul style="list-style-type: none"> <li>Residents must be kept abreast with the on-going activities.</li> <li>A Land owner liaison officer must be appointed to manage and address societal issues accordingly.</li> <li>Liaison with landowners prior to entering their properties;</li> <li>Access to the construction site should be controlled;</li> <li>Warning signs should be placed on site to make people aware of the dangers;</li> <li>No-go area should be clearly demarcated, marked and visible;</li> <li>Landowners must be kept abreast with movements in and around their properties; and</li> <li>Health and Safety standards and guidelines must be implemented.</li> </ul>							

### 13.3.5 AGRICULTURAL IMPACT

Corridor Alternatives	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Corridor 1	No	Negative	Site	Permanent	Moderate Definite	Medium	<b>Medium</b>
	Yes	Negative	Site	Long term	Low	High	<b>Medium</b>
Corridor 2	No	Negative	Site	Permanent	Moderate	Medium	<b>Medium</b>
	Yes	Negative	Site	Long term	Low	High	<b>Medium</b>
<b>Mitigation Measures</b>							
<ul style="list-style-type: none"> <li>• Rehabilitation of any bare soil areas caused by the construction process (including any access roads or tracks)</li> <li>• Wherever possible, the siting of pylons away from any cultivated lands, but rather to use servitudes and boundary lines. and</li> <li>• Special care should be given to areas with steeper topography and areas adjacent to water courses.</li> <li>• Sensitive areas such as wetland soils along the river courses must be avoided.</li> </ul>							

### 13.3.6 AIR POLLUTION

Construction activities on the site will lead to land clearing and disturbance to the soil resulting in dust creation. The one direct potential air pollutant during construction may be dust emanating from site preparation and excavations during construction. Further, movement of construction vehicles also represents temporary, but important sources of particulates and dust deposition that can be respired. Given the nature and magnitude of the proposed project it is anticipated that minor dust will be generated from the construction activities. The potential impact on air quality will be short term and can be controlled. Proper implementation of recommended corrective measures will reduce the impact to become insignificant and of very low probability. It is therefore anticipated that this impact will be limited and of low negative significance.

Issue	Corrective Measure	Impact Rating Criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Air Pollution.	No	Neutral	Local	Immediate	Low	High	Low.
	Yes	Neutral	Local	Immediate	Low	Low	Low.
Corrective Actions	<ul style="list-style-type: none"> <li>• Unnecessary clearing of vegetation must be avoided;</li> <li>• All exposed surfaces subjected to dust generation must be managed with appropriate dust suppression methods including amongst others, the use of water tankers etc.;</li> <li>• Vehicles speed limit must be imposed to reduce potential dust;</li> <li>• Unnecessarily exposed surfaces must be rehabilitated after the construction period;</li> <li>• The amount of exposed soil at a particular time must be limited;</li> <li>• Vehicles transporting load beds must be covered to prevent them from being blown by wind when transported;</li> <li>• Regular dust suppression must be implemented by means of spraying water on the affected areas;</li> <li>• Air quality must be regularly monitored and reported on throughout the construction phase; and</li> <li>• Targets must be set for the management of air quality during construction.</li> </ul>						

### 13.3.7 SURFACE AND GROUND WATER POLLUTION

Given the identified wetlands and drainage lines there is a risk that construction material may pollute the surface and/or ground water on site. Substances such as cement residue, bio fuels, and paints must be adequately



controlled. In addition exposed surfaces during construction would provide a source of sediments to be taken up by storm water and resulting in down-stream sedimentation of water resources. Care must be taken during construction to prevent leaks and spillage of materials that may detrimentally affect water quality (especially fuels and chemicals). Adequate measures must be put in place to prevent runoff of construction debris to nearby streams or water bodies. If construction takes place during the rainy season, storm water will have to be managed appropriately to reduce the possibility of construction debris being washed off. This impact is of medium negative significance and can be reduced to a low significance

Issue	Corrective Measure	Impact Rating Criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Surface and ground water pollution.	No	Negative	Regional	Medium	Moderate	Medium	Medium.
	Yes	Negative	Regional	Short	Low	Low	Low.
Corrective Actions	<ul style="list-style-type: none"> <li>• Adequate measures must be taken during construction to manage storm water runoff;</li> <li>• Care must take not to spill fuels or oil during service or re-fuelling of construction equipment;</li> <li>• Prevent pedestrian and vehicular access into the wetland and buffer areas as well as riparian areas;</li> <li>• No vehicle access is allowed within watercourses;</li> <li>• Access roads and bridges should span the wetland area, without impacting on the permanent or seasonal zones;</li> <li>• Possible leaks and spills of hazardous substances into the ground should be avoided at all times;</li> <li>• In the event of a spillage of a hazardous substance the requirements of the EMPr must be implemented;</li> <li>• Obtain Water Use License as appropriate and ensure compliance with the conditions;</li> <li>• Do not locate the construction camp or any depot for any substance which causes or is likely to cause pollution within a distance of 100m of the delineated water resources;</li> <li>• All waste generated during construction is to be disposed of at an appropriate facility and no washing of paint brushes, containers, wheelbarrows, spades, picks or any other equipment adjacent to the watercourses is permitted;</li> <li>• Proper management and disposal of construction waste must occur during the construction of the development;</li> <li>• No release of any substance i.e. cement, oil, that could be toxic to fauna or faunal habitats</li> </ul>						

	<p>within the watercourses;</p> <ul style="list-style-type: none"> <li>• Spillages of fuels, oils and other potentially harmful chemicals must be cleaned up immediately and contaminants properly drained and disposed of using proper solid/hazardous waste facilities (not to be disposed of within the natural environment). Any contaminated soil must be removed and the affected area rehabilitated immediately; and</li> <li>• A spill contingency plan must be drawn up for the construction phase.</li> </ul>
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### 13.3.8 WASTE MANAGEMENT

The inhibition of sites by human beings results to waste generation. A variety of waste material will be produced during the construction phase. The Contractors must adhere to all recommended measures and provide adequate waste skips and bins on the site. Waste must be regularly removed from site and disposed of at appropriate waste disposal sites. With mitigation measures implemented, this impact can be kept at a Low significance.

Issue	Corrective Measure	Impact Rating Criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Waste Management.	No	Negative	Local	Medium	High	Low	<30 = Low.
	Yes	Negative	Site	Short	Moderate	Low	<30 = Low.
Corrective Actions	<ul style="list-style-type: none"> <li>• No waste will be buried on site or incorporated into the foundation trenches;</li> <li>• The work force must be encouraged to sort waste into recyclable and non-recyclable waste;</li> <li>• Waste bins/skips must be appropriately labelled;</li> <li>• No burning of waste is allowed on site;</li> <li>• Waste must be regularly removed from site and disposed of at a registered waste disposal facility and safe disposal certificates will be filed appropriately; and</li> <li>• Where permits are required, it must be obtained from the relevant authority.</li> </ul>						

### 13.3.9 NOISE POLLUTION

The study area consists of farms and tribal land used for agriculture, mining and residential settlements. Construction process is likely to result in an increase in noise levels due to construction vehicles, machinery which can be a nuisance during the construction. The level of noise and the distance it will travel will depend

entirely on the prevailing construction activities within the site which will include groundwork, foundations, hauling of building material to and from specific area assembling of equipment. The additional noise will be local, short term in duration and low in significance.

Issue	Corrective Measure	Impact Rating Criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Noise	No	Negative	Local	Short	Low	Low	Low.
Pollution	Yes	Negative	Site	Short	Minor	Low	Low.
Corrective Actions	<ul style="list-style-type: none"> <li>All construction equipment and vehicles used during construction must be appropriately maintained;</li> <li>Surrounding residents must be notified in advance of construction schedules;</li> <li>Working hours must be restricted to daytime only (7am – 5pm);</li> <li>Where there is a need to for construction work to take place outside these time frames, the Contractor will, with the approval of the ECO, communicate with the I&amp;APs; and</li> <li>Selecting equipment with lower sound power levels which is in accordance with the Health and Safety Regulations.</li> </ul>						

### 13.3.10 SAFETY AND SECURITY

Issue	Corrective Measure	Impact Rating Criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Noise	No	Negative	Local	Short term	Low	Medium	Low.
Pollution	Yes	Negative	Site	Short term	Minor	Low	Low.
Corrective Actions	<ul style="list-style-type: none"> <li>All construction equipment and vehicles used during construction must be appropriately maintained;</li> <li>Surrounding residents must be notified in advance of construction schedules;</li> <li>Working hours must be restricted to daytime only (7am – 5pm);</li> <li>Where there is a need to for construction work to take place outside these time frames, the Contractor will, with the approval of the ECO, communicate with the I&amp;APs; and</li> <li>Selecting equipment with lower sound power levels which is in accordance with the Health and Safety Regulations.</li> </ul>						

### 13.3.11 FIRE HAZARD

There may be an increase in the risk of veld fires as a result of construction activities and these would result from activities such as smoking and cooking food, storage of fuel and other flammable solvents on site. These uncontrolled fires on site could cause damage to infrastructure, the biophysical environment and impact on the working environment. This impact is considered to be of medium significance. Should the recommended mitigation measures be implemented, the significance of the impact will be even lower and negative.

Issue	Corrective Measure	Impact Rating Criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Fire Hazards	No	Negative	Local	Short term	Low	High	Medium.
	Yes	Negative	Local	Short term	Low	Low	Low.
Corrective Actions	<ul style="list-style-type: none"> <li>• Camp sites and laydown areas will not be allowed within the sensitive area;</li> <li>• Areas where flammable substances are kept must have proper warning signs on display (e.g. highly flammable, No smoking etc.) to warn personnel of risks associated with such areas;</li> <li>• No burning of waste and cooking will be allowed on site;</li> <li>• Contracting personnel must be well versed in the relevant existing fire and safety management procedures and activities on site;</li> <li>• Implement fire hazard sensitive on- and offloading procedures;</li> <li>• Designate a site safety official and ensure that personnel are adequately trained regarding fire hazards and procedures;</li> <li>• Fire fighting equipment (fire beaters, fire extinguishers etc.) must be made available on site; and</li> <li>• Strategically placed emergency access points along servitude at times when access is restricted to ensure that landowners and emergency services are able to respond to any outbreak of a fire.</li> </ul>						

### 13.3.12 VISUAL IMPACT

The proposed activity will indeed change the visual character of the site particularly considering that sections of the corridors are located in the elevated points and can be viewed from the nearby roads, however, it must be noted that there are already existing overhead power lines located within the vicinity of the proposed development. Local variations in topography and man-made structures could cause local obstruction of views in certain parts of the view shed. Given the topography of the site and the location, the impact can be considered

definite, long term, local in extent but low in significance. The impacts of both alternatives are medium negative significance; however with mitigation the impacts can be reduced to low during the construction phase.

Issue	Corrective Measure	Impact Rating Criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Visual Impact	No	Negative	Local	Short term	Moderate	High	Medium.
	Yes	Negative	Site	Short term	Low	Low	Low.
Corrective Actions	<p><u>Access Roads</u></p> <ul style="list-style-type: none"> <li>• Make use of existing access roads where possible;</li> <li>• Where new access roads are required, the disturbance area should be kept to a minimum. The two track dirt road will be the most referred option;</li> <li>• Locate access routes so as to limit modification to the topography and to avoid the removal of established vegetation;</li> <li>• Maintain no or minimum cleared road verges;</li> <li>• If it is necessary to clear vegetation for a road, avoid doing so in a continuous straight line. Alternatively, curve the road in order to reduce the visible extent of the cleared corridor; and</li> <li>• Provide strategically distributed crossing points to secure existing access routes currently used by the public.</li> </ul> <p><u>Construction Camp and Laydown Area</u></p> <ul style="list-style-type: none"> <li>• Locate construction camps in areas that are already disturbed or where it isn't necessary to remove established vegetation like for example naturally bare areas;</li> <li>• Utilise existing screening features such as dense vegetation stands or topographical features to place the construction camps and lay-down yards out of the view of sensitivity visual receptors;</li> <li>• Keep the construction sites and camps neat, clean and organised in order to portray a tidy appearance; and</li> <li>• Screen the construction camp and lay-down yards by enclosing the entire area with a dark green or black shade material of no less than 2m height.</li> <li>• Keep disturbed areas to a minimum.</li> <li>• No clearing of land to take place outside the demarcated footprints.</li> <li>• Make use of stepping in building platforms to minimise cut-and-fill areas and lower the</li> </ul>						

	<p>structures into the site as much as possible.</p> <ul style="list-style-type: none"> <li>• Institute a planting regime around the boundaries of the project site to 'soften' the views onto the infrastructure from the respective receptors. Only indigenous plant species to be introduced.</li> <li>• The contractor should maintain good housekeeping on site to avoid litter and minimise waste.</li> <li>• Erosion risks should be assessed and minimised.</li> <li>• The steel components should not be painted but be galvanised and allowed to oxidise naturally over time. The grey colour produced in this process will help to reduce the visual impact.</li> </ul>
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### 13.3.13 EMPLOYMENT CREATION

The proposed development will have the capacity to produce considerable employment opportunities during the construction phase, the job opportunities will however, be limited as the construction is put out to tender and Contractors who usually have their own skilled workforce are appointed to undertake the construction activities. The construction activities will also result in a demand for equipment, building material and labour. The use of local labour would have a positive impact on the local economy and promote skills transfer. The significance of this impact is anticipated to be medium positive.

Issue	Corrective Measure	Impact Rating Criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Employment Creation	No	Positive	Regional	Long Term	Moderate	Medium	Medium
	Yes						
Corrective Actions	<ul style="list-style-type: none"> <li>• Ensure the prioritisation of locals as and when opportunities arise;</li> <li>• Create opportunities for the employment of women;</li> <li>• Where possible use labour intensive methods of construction; and</li> <li>• Where possible, go beyond the minimum wage rate and invest in local staff.</li> </ul>						

### 13.3.14 INFLUX OF JOB SEEKERS

Construction activities will require a well-established work force. The workmanship required may not necessarily be available from the local communities and result in workers being sourced from other communities. In addition there may be a likelihood of migrant workers (including unskilled labourers) moving into the area in search of employment. These workers could have an impact on the social structures present in the local communities due to the lengthy period of construction.

- The threat of HIV/Aids and other STI's may also have an impact on the local community resulting from an influx of migrant labourers to the areas surrounding the site.
- Increased risk of criminal activities due to influx of workers.
- Social instability on existing families

With the implementation of the recommended mitigation measures the significance of the impact can be reduced from medium negative to low negative.

Issue	Corrective Measure	Impact Rating Criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Influx of Job Seekers.	No	Negative	Regional	Long term	Low	Medium	Medium
	Yes	Negative	Local	Medium term	Minor	Low	Low
Corrective Actions	<ul style="list-style-type: none"> <li>• Ensure that employment procedures and policies are communicated to local stakeholders, especially community representative organisations and ward councillors;</li> <li>• Raise awareness amongst construction workers about local traditions and practices;</li> <li>• Ensure that the local community communicates their expectations of construction workers' behaviour with them;</li> <li>• Have clear rules and regulations for access to the camp / site office to control loitering. Consult with the local SAPS to establish standard operating procedures for the control of the workforce;</li> <li>• Make condoms and other forms of contraceptives readily accessible to workers; and</li> <li>• Construction workers must be clearly identifiable by wearing proper construction uniforms displaying the logo of the construction company. Where possible, construction workers could also be issued with identification tags to enable them to be visible and distinguishable within the construction site.</li> </ul>						

Direct Impacts: No-Go

Should the proposed development not occur, none of the identified impacts will result.

### Indirect Impacts –No Go

The threat of HIV and spread of STI's is one of indirect impact associated with the development however; the No-go alternative would remove the need for construction workers and thereby remove the associated social impacts identified above.

### Cumulative Impacts

None identified.

## 13.4 IMPACTS ASSOCIATED WITH OPERATION PHASE

### 13.4.1 BIRD COLLISION, ELECTROCUTIONS AND FAULTING

Direct interactions occur when birds collide with powerlines, possibly because they fail to see the wires as they are focusing on something that lies beyond, e.g. a perch or food source. Birds might also be killed by striking power lines support structures. The likelihood of birds colliding with power lines depends on various aspects. Faulting which is caused by bird on power lines is rated medium with proper mitigation in place; the potential impact of faulting is one that can be reduced to low significance



Issue	Corrective Measure	Impact Rating Criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Bird Faulting	No	Negative	Site	Medium term	Low	High	Medium
	Yes	Negative	Site	Long term	Low	Low	Low
Bird Collision	No	Negative	Local	Long term	Low	Low	Medium
	Yes	Negative	Local	Long term	Low	Low	Low
Corrective Actions	<ul style="list-style-type: none"> <li>• Installation of bird guards to reduce faulting; and</li> <li>• Installation of mitigation devices to insulate different live components, recommended to fit this only if electrocution occurs after construction.</li> </ul>						

#### 13.4.2 VISUAL IMPACT

A negative visual impact is expected during the operational phase as the towers intrude on existing landscape views. The impact will be definite, local in extent, long term and of high significance. Impacts on all proposed route alternatives are rated medium to high and medium to low with mitigation measures.

Issue	Corrective Measure	Impact Rating Criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Visual Impact	No	Negative	Local	Permanent	Moderate	Definite	High
	Yes	Negative	Local	Permanent	Moderate	Definite	High
Corrective Actions	Use the compact cross-rope suspension tower, as it is the most permeable and creates a low degree of visual obstruction.						

#### 13.4.3 IMPACT ON ECONOMY

The development of the proposed project has become necessary as part of Eskom's strategy to strengthen its transmission power network between the Witkop substation (located near Polokwane) and the Maphutha Substation (located near Steelpoort) within the jurisdiction of Sekhukhune and Capricorn District Municipalities in the Limpopo Province. The aim of the proposed development is to increase the transfer capacity of the

network beyond the forecasted 2030 load under all N-1 contingencies in Limpopo province and the country as a whole. The proposed development will directly and indirectly improve the standard of living for Limpopo communities as it will create employment opportunities, generate income and contribute to the local economy and to a larger extent the country as a whole.

Issue	Corrective Measure	Impact Rating Criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Economy	No	Positive	Regional	Medium term	Moderate	High	High
	Yes	Positive	Regional	Medium term	Moderate	High	High
Corrective Actions	<ul style="list-style-type: none"> <li>Regular maintenance of the facility should be done continuously to ensure uninterrupted supply of energy;</li> <li>Ensure that the project is run in a responsible manner and that the environment is adequately protected from negative impacts;</li> <li>Put adequate monitoring systems in place throughout the duration of the project and beyond; and</li> <li>Ensure that the value of the project is balanced against cost related to both the negative environmental and social impacts on the region.</li> </ul>						

### 13.5 DECOMMISSIONING PHASE

On-going maintenance and upgrades, where necessary, will be carried out. Decommissioning will be subjected to an EIA process; however, potential impacts are assessed hereunder.

#### Direct Impacts

##### 13.5.1 DUST GENERATION

Decommissioning of the facility and other infrastructure may lead to an increased amount of airborne particles in the local atmosphere as the infrastructure is dismantled and transported to the disposal site. This impact will be of low significance with proper mitigation in place

Issue	Corrective Measure	Impact Rating Criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Dust	No	Negative	Local	Immediate	Low	High	Low
Generation	Yes	Negative	Local	Immediate	Low	Medium	Low
Corrective Actions	<ul style="list-style-type: none"> <li>Personnel must be well versed in the relevant existing waste management procedures and activities on site; and</li> <li>This will include sorting of waste types and correct disposal to either recycling facilities, local registered waste disposal sites, and in extreme cases to registered hazardous waste disposal sites.</li> </ul>						

### 13.5.2 SURFACE AND GROUND WATER POLLUTION

During the decommissioning phase spillages from construction vehicles and machinery may occur when existing facility is removed from the site. Potential sources of pollution to this resource result from surface and sub-surface activities that could possibly leak and or spill hazardous substances onto the surface that are then transported to the groundwater body through the underlying soils. It is anticipated that the significance rating can be reduced to low with the implementation of mitigation measures

Issue	Corrective Measure	Impact Rating Criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Surface	No	Negative	Local	Immediate	Moderate	High	Medium
and Ground Water Pollution.	Yes	Negative	Local	Immediate	Low	Medium	Low
Corrective Actions	<ul style="list-style-type: none"> <li>Drip trays must be placed underneath parked construction equipment;</li> <li>Adequate spill kits must be provided on site;</li> <li>Possible leaks and spills of hazardous substances into the ground should be avoided at all times; and</li> <li>In the event of a spillage of a hazardous substance the requirements of the EMPr must be implemented.</li> </ul>						

### 13.5.3 SOIL EROSION

The clearing of vegetation, as well as soil exposure during decommissioning of the facilities may lead to erosion of these surfaces due to rain and wind. It is anticipated that the significance of this impact can be reduced from medium negative to low negative significance with the implementation of the recommended mitigation measures.

Issue	Corrective Measure	Impact Rating Criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Surface and Ground Water Pollution.	No	Negative	Local	Immediate	Moderate	High	Medium
	Yes	Negative	Local	Immediate	Low	Low	Low
Corrective Actions	<ul style="list-style-type: none"> <li>No unnecessary clearing of vegetation will be allowed;</li> <li>Construction vehicles and machinery to be driven on designated roads; and</li> <li>Areas cleared of vegetation must be re-vegetated with indigenous vegetation.</li> </ul>						

### 13.6 CUMULATIVE IMPACTS

Cumulative impacts in relation to an activity, means the past, present and reasonably foreseeable future impacts of an activity, considered together with the impacts 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 (DEA, 2014 EIA Regulations).

This section provides cumulative impacts ratings associated with the proposed development which include the waste generation, traffic, socio-economic and visual impacts. It also outlines the mitigation measures of each rated cumulative impacts as follows:

#### 13.6.1 WASTE GENERATION

During the construction phase of the proposed powerline there will be a variety of waste material produced within the study area. The waste generation impact rating and the proposed mitigation measures are provided in table below as follows:

Aspect	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Waste	No	Negative	Local	Short term	High	Definite	Medium
	Yes	Negative	Site	Short Term	Low	High	Low
Corrective Actions	<ul style="list-style-type: none"> <li>No waste will be buried on site or incorporated into the foundation trenches;</li> <li>The work force must be encouraged to sort waste into recyclable and non-recyclable waste;</li> <li>No burning of waste will be allowed on site; and</li> <li>Waste must be regularly removed from site and disposed of at a registered waste disposal facility.</li> </ul>						

### 13.6.2 SOCIO-ECONOMIC IMPACT

The proposed development will result in a positive socio-economic impact as the demand for equipment, building material and labour will increase. Secondary service provision such as food supply, toilet hire, equipment maintenance and many more items would also stimulate the local economy especially during the construction phase. The impacts of socio-economic impacts associated with the proposed development are rated as follows:

Aspect	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Socio-economic	No	Positive	Regional	Short Term	High	Definite	Medium
Corrective Actions	<ul style="list-style-type: none"> <li>Contractors must by all means practice the localisation matrix while seeking for construction equipment or building materials.</li> <li>For minimal jobs, the appointed contractor should by all means consider the local residents for jobs that do not need any skill transfer.</li> <li>Property owners or occupiers must be treated with respect and courtesy at all times;</li> <li>The culture and lifestyles of the communities living in close proximity to the proposed development must be respected;</li> <li>A register must be maintained of all complaints or queries received as well as action</li> </ul>						

	taken.
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### 13.6.3 VISUAL IMPACT

The proposed activity will change the visual character of the area particularly considering that the proposed site is located next to regional roads (R37, R555 and R518). Given the undulating topography of the site and the proximity to these routes, the impact can be considered definite and long term. Cumulative impact will be higher than anticipated due to existing power lines and substations. The visual cumulative impacts and mitigation measures within the proposed study area are provided as follows:

Aspect	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Visual	No	Negative	Local	Long Term	High	Definite	High
	Yes	Negative	Local	Long Term	Moderate	medium	Medium
Corrective Actions	<ul style="list-style-type: none"> <li>Keep the construction sites and camps neat, clean and organized in order to portray a tidy appearance; and</li> <li>Screen the construction camp and lay-down yards by enclosing the entire area with a dark green or black shade material of no less than 2m height.</li> </ul>						

### 13.6.4 TRAFFIC IMPACT

During the construction phase increased heavy vehicle traffic should be expected. Without management, such increased traffic loads may negatively impact existing traffic flow. Further unmanaged construction vehicles may decrease road safety for other road users and uncontrolled movement of construction vehicles may result in unnecessary impacts to the environment through vegetation and habitat destruction. The traffic impacts ratings and mitigation measures associated with the proposed project presented in the table below as follows.

Aspect	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	

<b>Traffic</b>	No	Negative	Regional	Short Term	High	Medium	Medium
	Yes	Negative	Local	Short Term	Moderate	Low	Low
<b>Corrective Actions</b>	<ul style="list-style-type: none"> <li>The delivery of construction material and equipment should be limited to hours outside peak traffic times (including weekends) prevailing on the surrounding roads;</li> <li>Access roads must be clearly marked; and</li> <li>Delivery vehicles must comply with all traffic laws and bylaws.</li> </ul>						

#### 14. SUMMARY OF THE FINDINGS AND RECOMMENDATION OF ANY SPECIALIST REPORT COMPLYING WITH APPENDIX 6 TO THESE REGULATIONS AND AN INDICATION AS TO HOW THESE FINDINGS AND RECOMMENDATION HAVE BEEN INCLUDED IN THE FINAL ASSESSMENT REPORT

Six specialist studies were undertaken during the EIA process and are listed in Table 15 below. The contact details of the specialists are also included in the table. In addition to the ones undertaken during the Scoping phase, Visual Impact study was undertaken during this phase.

**Table 9: specialist and their contact details**

<b>Specialist Study</b>	<b>Specialist</b>	<b>Aspects</b>
Biodiversity Impact Assessment	Simon Todd	Flora and fauna
Heritage Impact Assessment	Munyadziwa Magoma	Heritage and archaeology
Avifauna Impact Assessment	Jon Smallie	Avifauna
Agriculture Impact Assessment	Garry Peterson	Soils and Agricultural potential
Social Impact Assessment	Neville Bews	Social
Visual Impact Assessment	Kathrin Hammel-Louw	Visual

#### 14.1 BIODIVERSITY

The Fauna and Flora Impact Assessment was undertaken by Simon Todd of Simon Todd Consulting.

The report highlighted that the two alternatives for the Maphutha-Witkop 400kV power line traverse a wide range of habitats and environments. Large tracts of the corridors have however been transformed for crop

production or heavily degraded as a result of overgrazing. As a result, the affected sections are considered low sensitivity, with little scope for significant ecological impact. There are however a number of more sensitive features present within each corridor including drainage features, wetlands, rocky ridges and areas of good condition bushveld or grassland vegetation. There is however not a large discrepancy in the abundance of such features between the different corridor alternatives.

The sections of the corridors towards Witkop substation are all considered moderately sensitive on account of the intact nature of the Polokwane Plateau Bushveld vegetation present and the relatively high conservation value of this unit which has been significantly impacted by transformation and degradation. There are also numerous minor and several major drainage systems which cross the corridors including the Olifants and Steelpoort Rivers, with associated forest and riparian vegetation and which are considered to be very high sensitivity. Some of the ridges along the corridors are also considered to be sensitive and vulnerable to disturbance including Schuinsrand, Potlake and the Leolo Mountains near Schoonoord. The development footprint within such areas should be minimized as far as possible and existing disturbance alignments used where present.

Most sections of the study area also have relatively high numbers of protected tree species present, with *Marula Sclerocarya birrea* being dominant across most of the study area and other species such as *Boscia albitrunca* and *Acacia erioloba* being locally abundant. The protected trees are often present even in transformed landscapes and the power line is likely to result in the loss of large numbers of such trees if these are cleared from the power line servitude during construction. Within the transformed landscapes, these trees do not pose a threat to the power line and should be left in place where possible.

Overall, **Alternative 2** is identified as the preferred alternative and likely to generate the lowest overall impact. Alternative 1 is considered the less preferred alternative because it is significantly longer and also includes several areas of high sensitivity where mitigation would be difficult.

With the application of the suggested mitigation measures applied, the development of the Maphutha-Witkop 400kV power line would generate low impacts on fauna, but moderate impacts on flora and in particular protected tree species. However, the abundance of protected tree species in the wider area is high and the loss of the trees from the development would not impact the local populations of these species. The impact of the power line on protected trees species could also be significantly reduced through reducing the vegetation



clearing requirements of the power line servitude as these trees do not generally pose a significant fire risk to the power line in many sections of the corridor.

## 14.2 HERITAGE

The Heritage Impact Assessment was undertaken by Munyadziwa Magoma of Vhubvo Archeo-Heritage Consultants.

The Archaeological and Cultural Heritage Phase I Impact Assessment for the proposed development has identified that Historical Age are known to occur in the region of study area. From the survey conducted, the only sign of sites of heritage potential were mostly graves. However, it should be noted that detailed information regarding the proposed powerline are not yet finalised i.e., the exact position of the powerline and access roads, it might be possible that specific aspects related to development might have a direct disturbance, which would result in irreplaceable loss of heritage resources. Most of the households which are within the proposed corridors have family graves; the developers should avoid the corridor with the high percentage of households.

Iron Age people preferred to settle on the alluvial soils close to rivers, as such, all river banks are viewed to be sensitive and should be avoided in the best way possible. Although no remains of Stone/ Iron Age sites were noted during site visit, the area could still contain camps and some areas with suitable substrates that could have been used as quarries for material to produce tools.

The specialist indicated that there were no heritage fatal flaws which can hamper the success of this development in any of the identified corridors. However, **Corridor Alternative 1** is the preferred alternative from a heritage impact perspective. Eskom should however avoid impacting on grave sites during final stage of planning, and attempt should be made to remain within the servitudes of the existing powerline

## 14.3 AVIFAUNA

The Avifaunal report was compiled by Jon Smallie of WildSkies Ecological Services.

The primary aim of this assessment was to determine and assess the avifaunal communities associated with the study area and the sensitivity of the site from an avifaunal perspective in an effort to provide valuable insight pertaining to the impacts of the powerline on avian ecology within the study site.

The study highlighted that the proposed power line passes through areas that are rich in avifauna, due to its varied geology and vegetation. A large number of regionally Red Listed bird species could occur on site. The most relevant of these are eagles, vultures, storks, bustards and Secretarybird.

Disturbance of birds is of low significance; however, if threatened raptors are found to breed close to the alignment this would change. New nests could be built between the writing of this report and construction of the power line and so it is essential that a detailed site specific avifaunal walk-through be conducted as close as possible to construction to identify any nests. The specialist indicated that **Corridor Alternative 2** (southern) is the most preferred overall for avifauna.

#### 14.4 AGRICULTURE

The agricultural potential report was prepared by Garry Paterson of ARC-Institute for Soil, Climate and Water

The primary aim of this Agricultural Potential Assessment included:

- Establishment and description of the soil and agricultural status quo of the proposed powerline alternatives;
- Description of the land use and capability of the site based on the soil forms identified, slope of the site, climatic data, rockiness, surface crusting and wetness;
- Most of the study area is not inherently susceptible to erosion. However high potential soils are on relatively flat topography, and have stable clay mineralogy, while on the steeper slopes, the rock outcrops and continuous vegetation cover mean that these areas are also not highly erodible. However, incorrect management practices in many of the rural areas along the routes (mainly overgrazing or cultivation of unsuitable soils), have led to the development of severe gully erosion.

The impacts of constructing a transmission line will be negative, as the natural environment will be disturbed. The specialist recommended **Corridor alternative 1**

## 14.5 SOCIAL

The Social Impact Assessment was undertaken by Neville Bews of Dr. Neville Bews & Associates.

The report highlighted that there are a number of villages and settlements within the 3 km EIA zone and, being within a 3 km radius of the power line, most of these settlements are unlikely to be directly affected. The fact that this is an elevated transmission line means that, once constructed, most daily activities can continue as usual under the line and communities further from the line, considering a 55 meter servitude, are unlikely to be affected. Notwithstanding this, the possible effect of electromagnetic fields (EMFs) remains a contentious issue to be answered within the realms of physics and medicine although it does have social consequences. On a general basis, the generation and distribution of electricity are associated with the following 3 somewhat contentious issues;

- Scarcity of suitable sites on which to place new infrastructure;
- Exposure of people and animals to electromagnetic fields (EMFs) and
- Potential decline in property values associated with both EMFs and the visual impact of transmission lines.

In respect of the corridor alternatives considered, Alternative 1 affects more people when compared to the other route alternatives 2. Therefore Alternative 1 has emerged as the socially least preferred corridor and **Corridor Alternative 2**, the red route, would be the socially preferred route but this can easily be overridden for either technical or environmental reasons or both.

## 14.6 VISUAL

The Visual report was compiled by Kathrin Hammel, Outline Landscape Architects.

The study area consists primarily of human settlements and the landscape is degraded around these settlements. There is also vacant undeveloped land, as well as land used for cultivation and subsistence farming. Mining, especially ferrochrome, is one of the key land uses and contributes significantly to the visual degradation of parts of the study area.

The study area also consists of areas of un-spoilt landscape with some spectacular features and views such as the Wolkberg south of the Witkop Substation, Potlake Nature Reserve, along the proposed Corridor Alternative 1. The study area is divided into distinct landscape types, which are areas within the study area that are relatively homogenous in character (Swanwick, 2002). Landscape types are distinguished by differences in topographical features, vegetation communities and patterns, land use and human settlement patterns.

The Corridor Alternative 1 is regarded as the most preferred alternative as its alignment follows along an existing line and servitude and along a main transportation route. It is considered to cause the least impact on the landscape character due to the reduced sensitivity of the landscape along the roads and servitudes.

The impact of Corridor 1 on visual receptors varies between residents, tourists (mainly passing through) and motorists. Its great advantage lies in the fact that viewers are already exposed to a similar power line, so negative perception of a new power line following along an existing route has a less significant landscape and visual impact on tourists and residents as compared to Corridor Alternative 2.

#### **14.7 TOURISM**

Tourism study formed part of Visual Impact Assessment report which was compiled by Kathrin Hammel, Outline Landscape Architects.

The study area has limited tourist activity with small pockets of high biodiversity and Bushveld landscapes. The entire study area is considered to have a moderate to low tourism potential, mostly because of the environmental degradation caused by the mining developments and many human settlements. The temporary exposure to possible unsightly views of the construction camps and the associated activity will be minimal and localised.

The preferred alternative follows along an existing power line. The presence of the transmission line in the field of the tourists, within the study area, will only have a high significance on tourists in near proximity to the power line, which will be mainly along main transportation routes.

The severity of the visual impact of the power lines on tourists will be low, causing a low visual impact. The study area has limited tourist activity with only interspersed pockets with high biodiversity and Bushveld landscapes. These characteristics provide the basis for the tourism industry which plays a major role in the economy of the Limpopo Province. It can however be used as a thoroughfare along main roads to major tourist destinations such as the Kuschke Nature Reserve, just north-west of Witkop Power Station, Potlake Nature

Reserve and Kruger National Park to the east. There are some private game farms and lodges that are found within the study area.

## **15. AN ENVIRONMENTAL IMPACT STATEMENT WHICH CONTAINS**

### **15.1 A SUMMARY OF THE KEY FINDINGS OF THE ENVIRONMENTAL IMPACT ASSESSMENT**

This final EIR serves to primarily assess the likely impact the development may have on the surrounding environment and to provide recommendations regarding available alternatives, mitigation and management measures. The process aims to ensure that impacts are identified and where negative impacts are anticipated that these are prevented, and minimised and remedied (should these be unavoidable) and where positive impacts are identified that these are enhanced as far as possible.

The EIR presents the relevant information to the Competent Authority for the purposes of decision making. In making a decision regarding this application the key findings must be considered as well as the other information contained within this report. The suggested mitigation measures must also be considered and compliance therewith should form a condition of any decision made to proceed with the development. In addition these conditions should be incorporated into a Construction and Operational Phase EMP which serves to guide and inform sustainable environmental practices during the construction process. The complete identified management and mitigation measures are listed in the EMP. These measures include those listed in this report.

### **15.2 PLANNING AND DEVELOPMENT PHASE**

Impacts associated with the planning and development phase of the proposed activity includes the creation of job opportunities for skilled engineers and planning professionals. This positive impact will be definite and short term in duration. No significant negative impact has been associated with this phase and the proposed activity

### **15.3 CONSTRUCTION PHASE**

The positive impacts identified for this phase include job creation and a positive economic outlook for the mining community, the province and the country at large, these impacts will be enhanced in order to maximize the benefits. The negative impacts associated with the construction phase of the proposed activity can be regarded as being of low to medium significance. These include the following:

- Impact on flora;
- Impact on fauna;
- Impact on Social;
- Impact on Avifauna
- Heritage
- Visual impact; and
- Impact on agriculture.
- Impact on Tourism

Impacts of medium to high significance include the following:

- Safety and security; and
- Resettlement.

With corrective measures in place as well as implementation of recommendations made by the specialist none of the identified negative impacts are considered to be a fatal flaw.

#### **15.4 OPERATION PHASE**

No significant negative impact can be associated with the operational phase of the proposed activity. However, possible impact on avifauna due to electrocution and collision as a result of the proposed 400kv powerline has been identified as well as visual impact. Positive impact includes enhanced and improved operations for the mine and a positive benefit for the country at large in terms of Gross Domestic Product (GDP).

#### **15.5 DECOMMISSIONING PHASE**

It must be noted that decommissioning will not take place in the foreseeable future, however, negative impacts that have been identified with the decommissioning phase include dust generation, loss of flora and potential surface and ground water pollution. However, if decommissioning were to take place it will have a negative impact due to job losses and waste generation and will be subjected to the relevant regulations and approvals.

- 16. A MAP AT APPROPRIATE SCALE WHICH SUPERIMPOSES THE PROPOSED ACTIVITY AND ITS ASSOCIATED STRUCTURES AND INFRASTRUCTURE ON THE ENVIRONMENTAL SENSITIVITIES OF THE PREFERRED SITE INDICATING THAT SHOULD BE AVOIDED INCLUDING BUFFERS**

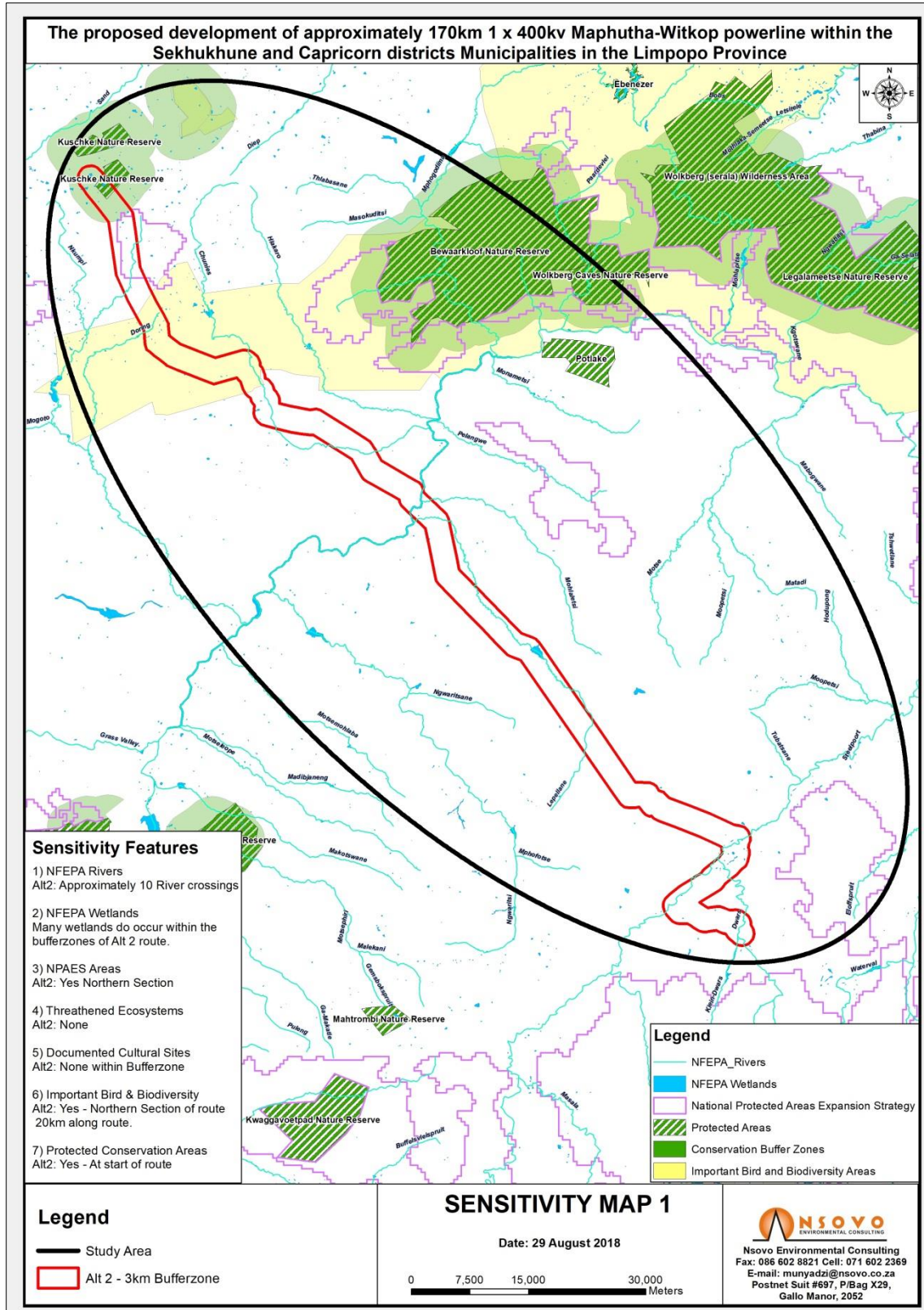


Figure 14: Sensitivity Map 1 with Buffers



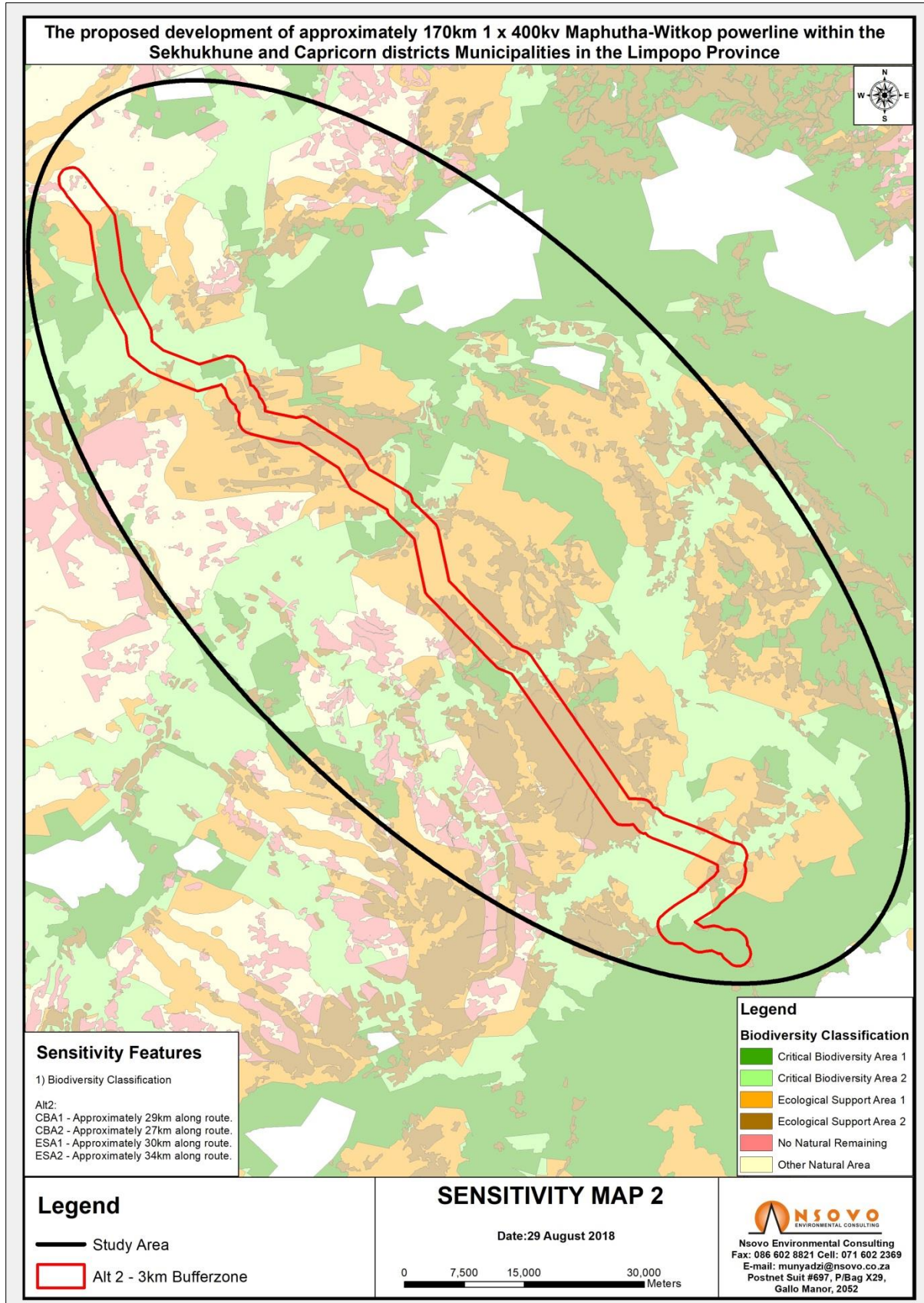


Figure 15: Sensitivity Map 2 with buffers

## 17. A SUMMARY OF THE POSITIVE AND NEGATIVE IMPACTS AND RISKS OF THE PROPOSED ACTIVITY AND IDENTIFIED ALTERNATIVES

Issue	Rating	Description
Employment	Positive-No mitigation required	Job creation and investments into the project will result in opportunities during the planning and design phase. This impact will typically be limited to skilled engineers and planning professionals. Proposed project will result in very limited opportunities to the skilled local community during the construction phase. This impact will be positive and provincial in extent.
Air Pollution	Neutral	Potential air pollutant during construction may be dust emanating from site preparation and excavations during construction. Given the nature and magnitude of the proposed project it is anticipated that if not mitigated the impact will be local in extent, and short term. Mitigation measures such as regular dust suppression can reduce the impact to become site specific.
Visual Impact	Negative	<p>The visual impact of an object in the landscape decreases quickly as the distance between the observer and the object increases. The visual impact at 1 km is approximately a quarter of the impact viewed from 500m; and the visual impact at 2km is one eighth of the impact viewed from 500m. Therefore, objects appear insignificant in any landscape beyond 5km.</p> <p>The visibility of the proposed structure and infrastructure would be a function of several factors, including: landform, vegetation, views and visibility, genius loci (or sense of place), visual quality, existing and future land use, landscape character and scale.</p> <p>The proposed activity will change the visual character of the corridor particularly considering that the most part of proposed corridor is located in an area that is sloping; the elevated points of</p>

Issue	Rating	Description
		<p>the corridor can be viewed from the nearby roads, however, it must be noted that there are already existing overhead power lines located within the vicinity of the proposed development. Local variations in topography and man-made structures could cause local obstruction of views in certain parts of the view shed. Given the topography of the study area the impact can be considered definite, long term, local in extent but low in significance.</p>
Fauna	Negative	<p>Considering the insignificant extent of the relatively narrow and linear servitude it is not expected that any endangered species of conservation will be put at risk.</p> <p>However, there are no species that appear to be particularly vulnerable to the development, none of these species have their distribution centred on the site or known to have significant populations within the affected area. Where they occur within the site, they are associated with specific habitats such as forest patches, wetlands and riparian areas or occur more broadly across the area at a low density. Due to the linear nature of the development, the local impact in any of these area is relatively low and provided that sensitive features such as forest patches are avoided, then the overall impact on listed species would be low as there are no species that appear to be particularly vulnerable to the development.</p>
Flora	Negative	<p>Potential ecological impacts resulting from the development of the proposed 180km 400KV Maphutha-Witkop powerline stem from a variety of different activities and risk factors associated with the preconstruction, construction and operational phases of the project potentially including the following:</p>

Issue	Rating	Description
		<p><b>Construction Phase</b></p> <ul style="list-style-type: none"> <li>• Vegetation clearing for access roads, laydown areas and the towers may impact intact vegetation.</li> <li>• Increased erosion risk would occur due to the loss of plant cover and soil disturbance during the construction phase. Some parts of the corridor are on steep slope and risk of erosion would be high. This may impact downstream riparian and wetland habitats if a lot of silt enters the drainage systems.</li> <li>• Increased human presence can lead to illegal plant harvesting and other forms of disturbance such as fire.</li> </ul> <p><b>Operational Phase</b></p> <ul style="list-style-type: none"> <li>• The presence of the facility may disrupt the connectivity of the landscape for some species which may impact their ability to disperse or maintain gene flow between subpopulations.</li> <li>• The facility will require management and if this is not done appropriately, it could impact adjacent intact areas through impacts such as erosion, alien plant invasion and contamination from pollutants, herbicides or pesticides.</li> </ul> <p><b>Cumulatively</b>, the development would contribute to the cumulative fragmentation of the landscape and would potentially disrupt the connectivity of the landscape for fauna and flora and impair their ability to respond to environmental fluctuations.</p>
Noise	Negative	In South Africa, the assessment of noise levels in the environment is governed by the South African Bureau of Standards (SABS) noise standard 0103 – ‘The measurement and rating of environmental noise with respect to annoyance and to speech communication’ (SABS 1994). Additional SABS standards cover

Issue	Rating	Description
		<p>the measurement of noise over different distances from the source (SABS 0357 – ‘The calculation of sound propagation by the Concave method’), and standards for different sectors (e.g. industry).</p> <p>An increase in noise is expected to emanate from construction activities, which might have an impact especially on the surrounding communities. Noise associated with the construction activities can be mitigated by limiting the construction operation to business hours, during which noise will not be of such a big concern to surrounding residents. According to the SABS 0103 acceptable noise levels at day time is 45dBA. A noise intrusion is disturbing if it exceeds 7dBA or more. Given the nature of the project, it is highly unlikely that the stipulated noise levels will be exceeded at any given time. During the operational phase the impact of noise will also be reduced to almost insignificant levels, given the nature of the proposed project.</p> <p>Noise has been identified as potentially low due to the proposed development being in a remote area, far removed from communities. The noise impact may be local during construction and site specific during operations.</p>
Soil and Agricultural potential	Negative	<p>The overall impacts of the proposed powerline on the soil and agricultural capability of any of the target corridor and their immediate surrounds will be medium. Most of the high potential soils are on relatively flat topography, and have stable clay mineralogy, while on the steeper slopes, the rock outcrops and continuous vegetation cover mean that these areas are also not highly erodible. However, incorrect management practices in many of the rural areas along the routes (mainly overgrazing or cultivation of unsuitable soils), have led to the development of severe gully</p>

Issue	Rating	Description
		erosion.
Bird Population	Negative	<p>Due to its size and prominence, electrical infrastructure constitutes an important interface between wildlife and man. Negative interactions between wildlife and electricity structures take many forms, but two common problems in southern Africa are electrocution of birds (and other animals) and collision of birds with power lines. With proper mitigation measures implemented, these potential impacts can be reduced.</p> <p>For the proposed development, major risks to birds that may be caused by the proposed facilities are disturbance by construction activities (temporary), on-going disturbance during operation phase, collision with and electrocution on the power line.</p> <p>The proposed construction of the power lines will pose a limited threat to the birds occurring in the vicinity of the new infrastructure. The power line poses a low collision risk and a low electrocution risk. The impact of displacement due to habitat transformation will have a low impact on avifauna due the largely transformed nature of the proposed site.</p> <p>The construction and maintenance activities associated with the proposed development will have an impact on avifaunal species through disturbance. Species will be particularly sensitive to this disturbance during the breeding season.</p>
Waste	Negative	Naturally, the inhabitation of the land will result in the accumulation of various forms of waste in the area. The aesthetic value of the area would decrease if such waste is not collected and disposed of

Issue	Rating	Description
		<p>appropriately. Waste material will be generated during the construction phase. Such waste may accumulate from the workers campsite or from litter left around the work area by the construction staff. Other waste substances may accumulate from cement bags amongst other construction material.</p> <p>The impact of waste is definite and will last for the duration of the construction phase as well as the operational phase, although reduced.</p>
Soil Erosion	Negative	<p>Movement of heavy machinery across the land as well as vegetation clearance may cause destabilisation of soils which then become susceptible to erosion. Continuous movement of vehicles over the land during the construction phase may leave it susceptible to erosion.</p>
Heritage	Negative	<p>The heritage significance of each alternative site has been assessed in terms of the National Heritage Resources Act, 1999 (No 25 of 1999). A Phase 1 Archaeological Impact Assessment was conducted and the results are incorporated in this Report. (Also refer to Appendix C4).</p>
Surface and Groundwater Pollution	Neutral	<p>The proposed alternatives are in close proximity to a number of watercourses. The impact on water quality, if any, could be sedimentation, decrease in quality and possible contamination of surface water and groundwater. This could result from fuel spillages, sewer systems, liquid waste, etc.</p> <p>An increased volume of storm water runoff, peak discharges, and frequency and severity of flooding is therefore often characteristic of transformed catchment. The impact on water is site specific but</p>

Issue	Rating	Description
		<p>can be local or regional if proper measures are not put in place.</p> <p>There may be a need to apply for a Water Use Licence with DWS considering the proximity of the study area to surface water bodies.</p>
Social Environment	Negative/Positive	<p>The construction phase may have a negative impact on the surrounding landowners if not properly managed. It could result to disturbance of residents as a result of construction related activities. Other social related issues may include theft and risk of fire.</p> <p>Conversely, a positive impact can emanate from the proposed development through employment of local residents. Also, a micro-economic environment could be created through vending/trade between contract workers and the locals. This impact will be local.</p>
Climate	Neutral	Local climate conditions do not appear to be of a significant concern to the proposed project. In a broader scale the project will have no impact on the local and/or global climate change.
Topography	Negative	The topography of the study area is undulating; this may pose design challenges particularly in the steeper area.
Traffic	Negative	A significant amount of material and equipment will be delivered to the site during the construction phase of the development. It is therefore expected that there will be a considerable impact on R37, R555 and R518

**18. RECOMMADATION FROM SPECIALIST REPORTS, THE RECORDING OF THE PROPOSED IMPACT MANAGEMENT OBJECTIVES AND IMPACT MANAGEMENT OUTCOMES FOR THE DEVELOPMENT FOR INCLUSION IN THE EMPR AS WELL AS FOR INCLUSION AS CONDITIONS IN THE ENVIRONMENTAL AUTHORISATION**

Six specialist studies were undertaken and input from these studies was key in the preparation of this EIA report. The recommendation made by the specialist guided the consideration of the most suitable and preferred



alternative. Further although none of the alternatives were considered as fatal flaw, the specialists made several recommendations to be included in the EMPr in an effort to reduce the severity of the identified impacts on the environment. The recommendations are highlighted in the Table below:

**Table 10 Specialist recommendations**

Specialist	Recommendations
Agriculture	<ul style="list-style-type: none"> <li>• The transmission line should avoid areas where irrigation, especially by overhead or other spray actions, is practiced. rehabilitation of any bare soil areas caused by the construction process (including any access roads or tracks) and wherever possible,</li> <li>• The siting of pylons away from any cultivated lands, but rather to use servitudes and boundary lines.</li> <li>• Special care should be given to areas with steeper topography and areas adjacent to water courses.</li> </ul>
Avifauna	<ul style="list-style-type: none"> <li>• Conduct avifaunal walk through to ground truth final alignment to identify the following:               <ul style="list-style-type: none"> <li>○ high risk sections of power line,</li> <li>○ towers requiring Bird Guards breeding</li> <li>○ sites for sensitive species and habitat</li> </ul> </li> <li>• Installation of Bird Guards on high risk towers to ensure that large birds cannot perch directly above the relevant live hardware.</li> <li>• Install line marking devices on high risk sections to make cables more visible to birds and reduce risk of collisions</li> <li>• Monitor line annually to measure how many birds are killed through collision.</li> <li>• Install Bird Guards on relevant towers as per Eskom Transmission Guidelines</li> <li>• Once line is operational, any management of bird nests on power line must be strictly according to Eskom Transmission guidelines for nest management, and relevant legislation</li> </ul>

Biodiversity	<ul style="list-style-type: none"> <li>• The study area has relatively high numbers of protected tree species, (<i>Marula Sclerocarya birrea</i>, <i>Boscia albitrunca</i> and <i>Acacia erioloba</i>) however; the trees do not pose any threat to the power line and should be left in place where possible.</li> <li>• The development footprint within sensitive areas such as Schuinsrand, Potlake and the Leolo Mountains should be minimized as far as possible and existing disturbance alignments used where present.</li> <li>• Reduce the vegetation clearing requirements of the power line servitude as most of the trees do not generally pose a significant fire risk to the power line.</li> </ul>
Heritage Impact Assessment	<ul style="list-style-type: none"> <li>• Avoid impacting on grave sites during final stage of planning.</li> <li>• Attempt should be made to remain within the existing powerline servitudes.</li> <li>• River banks are viewed to be sensitive and should be avoided in the best way possible;</li> <li>• Heritage practitioner should complete a “walk down” of the final selected power line servitudes, and all other activity areas (access roads, construction camps, etc.) prior to the start of any construction</li> </ul>
Social Impact Assessment	<ul style="list-style-type: none"> <li>• Ensure that, at all times, people have access to their properties as well as to social facilities such as schools, churches, transport and shops.</li> <li>• Establish channels of communication between local communities and contractors to ensure that construction workers behave in a manner acceptable to the local communities.</li> <li>• Local residents should be recruited to fill semi and unskilled jobs</li> <li>• A skills transfer plan should be put in place at an early stage and workers should be given the opportunity to develop skills which they can use to secure jobs elsewhere post-construction</li> <li>• A procurement policy promoting the use of local business should, where possible, be put in place to be applied throughout the construction and operational phases of the project</li> <li>• Provide a channel through which communities can route grievances or</li> </ul>

	concerns regarding service disruption as a result of the project.
Visual Impact Assessment with Ecotourism Input	<ul style="list-style-type: none"> <li>• The preferred type of tower is the compact cross-rop suspension tower. This tower type is the most permeable and creates a low degree of visual obstruction;</li> <li>• Avoid changing the alignment's direction too often in order to minimise the use of the self-supporting strain tower. This tower type is the most visually intrusive as the steel lattice structure is more dense than the other two tower types, hence creating more visual obstruction; and</li> <li>• Rehabilitate disturbed areas around pylons as soon as practically possible after construction. This should be done to restrict extended periods of exposed soil.</li> <li>• Locate access routes so as to limit modification to the topography and to avoid the removal of established vegetation</li> <li>• Avoid crossing over or through ridges, rivers, pans or any natural features that have visual value. This also includes centers of floral endemism and areas where vegetation is not resilient and takes extended periods to recover;</li> <li>• Maintain no or minimum cleared road verges;</li> <li>• Access routes should be located on the perimeter of disturbed areas such as cultivated/fallow lands as not to fragment intact vegetated areas; and</li> <li>• If it is necessary to clear vegetation for a road, avoid doing so in a continuous straight line. Alternatively, curve the road in order to reduce the visible extent of the cleared corridor.</li> <li>• Locate the alignment and the associated cleared servitude so as to avoid the removal of established vegetation; and</li> <li>• Avoid a continuous linear path of cleared vegetation that would strongly contrast with the surrounding landscape character. Feather the edges of the cleared corridor to avoid a clearly defined line through the landscape.</li> </ul>

## 19. THE FINAL PROPOSED ALTERNATIVES WHICH RESPOND TO THE MANAGEMENT MEASURES, AVOIDANCE AND MITIGATION MEASURES IDENTIFIED THROUGH ASSESSMENT

The identification of alternatives is an important component of the EIA process. Consideration of alternatives focused mostly on corridor alternatives as compared to activity alternatives. The various alternatives have been assessed in terms of both environmental acceptability as well as economic feasibility.

The selection of the preferred alternative is based on several factors:

- Specialists' recommendations;
- Environmental constraints;
- Technical feasibility;
- Economic cost-benefit analysis;
- Public input;
- Best practicable environmental option i.e. the option that provides the most benefit or causes the least damage to the environment at a cost acceptable to society in both the long and short term; and
- Optimisation of existing infrastructure, such as access roads

### 19.1 COMPARATIVE ASSESSMENT

Following the public participation process, the undertaking of specialist studies and impact assessment of the proposed routes a comparative analysis was made as depicted in Table 15 below

Aspect	Corridor Alternative 1	Corridor Alternative 2
Distance	±179KM It is the longest alternative, therefore minimal disturbance	±160Km It is relatively shorter
	Less Preferred	Preferred.
Ecological	Sensitive sections of the route include the initial mountainous section towards the R37 as well as the Olifants River crossing	This is considered to be the preferred route as it is relatively shorter and the sensitive sections present are adjacent to existing power line routes.
	Less Preferred	Preferred

Agricultural	<p>It crosses more areas with a high percentage of better soils, but there are also high potential soils along Alternative 2.</p> <p>From the point of view of soils and agricultural potential would probably be Alternative 1</p>	<p>It has high potential soils</p>
	Preferred	Less Preferred
Heritage	<p>The only challenge along this corridor is that some of the section that it transverses are intact, and such land possesses a high possibility of archaeological finds, especially on mountainous areas, However, this can be avoided by remaining in the servitudes of the existing line that it stretches nearby. Corridor Alternative 1 is the preferred alternative from a heritage impact perspective</p>	<p>Chances of finding graves in this Corridor are considered higher as evident in the several graves that were noted along this corridor.</p> <p>This Alternative thus remains sensitive from an archaeological perspective</p>
	Preferred	Less Preferred
Avifauna	<p>195km long – significantly longer</p> <p>Closer to Cape Vulture roosts (10km from 2 roosts &amp; 1.5km from one).</p> <p>It should ideally not be used although it is not fatally flawed.</p>	<p>160km long</p> <p>Further from Cape Vulture roosts (40-50km from 2, 7km from one)</p>
	Less Preferred.	Preferred
Visual	<p>The Alternative 1 is the most preferred alternative.</p> <p>Its alignment follows along an existing line and servitude and along a main</p>	<p>Alternative 2 is not preferred as it is densely populated and the presence of a transmission line will spoil their current views.</p>

	<p>transportation route.</p> <p>Causes the least impact on the landscape character due to the reduced sensitivity of the landscape along the roads and servitudes</p>	
	Preferred	Less Preferred
Social	<p>It affects more people; therefore, it has emerged as the socially least preferred route.</p>	Alternative 2 is preferred.
	Less Preferred	Preferred

## 20. 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

Recommendations made by the specialists have been highlighted above and the EAP recommends that all those recommendations be included in the EA.

Further based on thorough and detailed assessment undertaken for this proposed development, it is recommended that **Corridor** Alternative 2 be authorized. This recommendation is based on the following:

- It is the shorter corridor of the two alternatives.
- It is less sensitive from an avifaunal point of view as it is far removed from the identified important bird area. Being the shortest alignment, it will have the least impact on the birds' habitat in the area.
- Although there are some sensitive features along the power line corridor 2, impacts on these features can generally be mitigated to acceptable levels as the sensitive sections present are adjacent to the existing power line routes.
- It affects less communities; therefore there will be fewer relocations.

A draft EMPr has been prepared and it will serve as the key reference of the Environmental Assessment Practitioners recommendations jointly with Eskom's policies that are already in place. The EMPr has included

measures proposed to mitigate any adverse impacts of the activities and the monitoring. Some of the key recommendations include:

The exact tower positioning of the power lines has not be determined; it is therefore recommended that a walk down be undertaken by the specialists to determine the least sensitive location within the approved route alternative.

## **21. A DESCRIPTION OF ANY ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE WHICH RELATE TO THE ASSESSMENT AND MITIGATIONS MEASURES PROPOSED**

### **21.1 ASSUMPTIONS**

- It is assumed that technical data supplied by the client was correct and valid at the time of compilation of specialist studies and the Draft EIA report.
- It is assumed that all information provided by the client is true and correct.
- It is furthermore assumed that the alternatives presented by the client are feasible.

### **21.2 LIIMITATIONS**

#### **21.2.1 PUBLIC PARTICIPATION PROCESS**

Given the magnitude of the project and the various extent and portions of farms in the area of which some are private and not easily accessible, it is highly likely that some I&APs were not reached. However, efforts were made as part of the process to advertise on local media as well as placing of notices at conspicuous places within the communities.

#### **21.2.2 LITERATURE REVIEW IS VIEWED AS CORRECT**

The compilation of the reports was based on various literature reviews which are viewed as correct at the time. However, it is acknowledged that there might be some gaps in knowledge with regards to the literature reviewed although conceited efforts were made to attain as much information as possible.

### **21.2.3 HERITAGE STUDY**

It is possible that the Phase 1 HIA may have missed heritage resources in the project area, as some heritage sites may occur in thick clumps of vegetation while others may lie below the surface of the earth and may only be exposed once development commence.

### **21.2.4 ECOLOGICAL ASSESSMENT**

The major potential limitation associated with the sampling approach is the narrow temporal window of sampling. Ideally, a site should be visited several times during different seasons to ensure that the full complement of plant and animal species present are captured. However, this is rarely possible due to time and therefore, the representivity of the species sampled at the time of the site visit should be critically evaluated.

The lists of amphibians, reptiles and mammals for the study area are based on those observed in the vicinity of the site as well as those likely to occur in the area based on their distribution and habitat preferences, as well as the implications of the high levels of transformation for faunal presence. This represents a sufficiently conservative and cautious approach which takes the study limitations into account.

### **21.2.5 VISUAL IMPACT ASSESSMENT**

This assessment was undertaken during the conceptual stage of the project and is based on information available at the time.

- The exact alignment of the proposed line and position of the pylons are not yet determined and the alternatives only specify proposed corridors. The visibility results have been generated from the anticipated alignment and may deviate from the route for the final approved alignment. The differences are considered omissible;
- This level of assessment excludes surveys to establish viewer preference and their sensitivity.
- The site visit was conducted during July 2018 and the photographs used in this report illustrate the character of the landscape in the dry winter season.

## **22. 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**



Based on the findings of the scoping Report, EIA and the identified potential environmental and social impacts, it is the opinion of the EAP that the development for the proposed 400kV Maphutha-Witkop powerline and associated infrastructure can be mitigated to an acceptable level. The final Scoping, EIA and associated Public Participation Process were performed as dictated by the requirements of the NEMA and associated regulations.

The proposed route alternatives have been under detailed assessment, the primary objective been to assess the suitability of the proposed study area for the intended use from an environmental perspective. This thorough investigation was furthermore enhanced by input from ecologists, archaeologist, visual, avifauna, social, and agricultural specialist.

The findings of the investigations from the specialists input and the EAP have been comprehensively documented in this report together with the specified recommendations. Based on the investigations, no fatal flaws or highly significant impacts that would impede the proposed development or necessitate redesign or termination of the project have been identified.

Based on the reasons highlighted above, it is recommended that **Corridor Alternative 2** be approved and all management and mitigation measure put it place to reduce the environmental impact and particularly the biodiversity, avifauna, heritage, and ecology.

The no-go alternative was assessed and consideration of this option will have even greater social and economic consequences particularly if the security of electricity supply is compromised. Therefore, given the various developments, both industrial and residential taking place across the country the need to secure reliable supply is vital.

With mitigation measures proposed as well as recommendations made by the specialist, the impacts are manageable.

**23. 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**

The proposed activity entails the construction of  $\pm$  180km 400kV powerline, wherein construction is expected to commence approximately 3 years following which the operational phase will commence. The associated impacts of both the construction and operational phases of the project have been detailed and mitigation measures and monitoring plan have been put in place.

The construction phase will take approximately of 3 years, while the operation will be almost permanent as decommissioning is not foreseen in the near future. It is therefore recommended that the Environmental Authorisation be issued for the construction phase of the project and conditions be put in place for post construction monitoring until the site is fully reinstated and further for the ongoing management.

**24. AN UNDERTAKING UNDER OATH OR AFFIRMATION BY THE EAP IN RELATION TO THE LEVEL OF AGREEMENT BETWEEN THE EAP AND INTERESTED AND AFFECTED PARTIES ON THE PLAN OF STUDY FOR UNDERTAKING THE ENVIRONMENTAL IMPACT ASSESSMENT**

The draft Plan of Study was part of the draft Scoping Report which was made available to I&APs and Organs of State for a 30 days review and comment period. Comments/issues raised have been addressed and are included in the Issues and Response Report (**Appendix D4**).

No agreement between the EAP and I&APs is in place.

**25. WHERE APPLICABLE DETAILS OF ANY FINANCIAL PROVISIONS FOR THE REHABILITATION, CLOSURE, AND ONGOING POST DECOMMISSIONING MANAGEMENT OF NEGATIVE ENVIRONMENTAL IMPACTS**

There are no financial provisions made for this project, however, detailed rehabilitation measures are included in the attached draft EMPr.

**26. AN INDICATION OF ANY DEVIATION FROM THE APPROVED SCOPING REPORT, INCLUDING THE PLAN OF STUDY**

The Scoping Report and Plan of Study were prepared and approved by the department on the 20<sup>th</sup> June 2018 and this report forms the basis of this EIR. The report is as per the approved plan of study and there are no deviations.

## **27. ANY DEVIATION FROM THE METHODOLOGY USED IN DETERMINING THE SIGNIFICANCE OF POTENTIAL ENVIRONMENTAL IMPACTS AND RISKS**

The methodology used in determining the significance of potential environmental impacts is discussed above which is in aligned to the Department of Environmental Affairs' standard and minimum requirement. There are no deviations from the methodology

### **27.1 A MOTIVATION FOR THE DEVIATION**

There are no deviations from the methodology.

## **28. UNDERTAKING UNDER OATH OR AFFIRMATION BY THE EAP**

In undertaking the draft and final Scoping phases as well as this EIR, the EAP has taken into consideration the requirements stipulated in the EIA Regulation of December 2014 as amended, as well as other relevant Acts and Regulations. The EAP hereby confirm that with the information available at the time of preparing the draft EIR and the reports prepared by the specialists, the following has been taken into account in preparing this report:

- The correctness of the information provided in the report;
- The inclusion of comments and inputs from stakeholders and interested and affected parties; and
- Any information provided by the EAP to the interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties.

Refer to **Appendix E** for the Declaration of the EAP.

## **29. WHERE APPLICABLE, ANY SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY**

The information required by the authority is currently available and has been included in this final EI Report.

## **30. ANY OTHER MATTER REQUIRED IN TERMS OF SECTION 24(4) (A) AND (B) OF THE ACT**

This Report has been prepared in terms of NEMA, its respective 2014 EIA Regulations as well as other various Acts.

### 31. CONCLUSION

The Environmental Impact Assessment was undertaken as dictated by the National Environmental Management Act and associated regulations as well as the EIA regulation of December 2014 as amended.

The alternative routes have been scrutinized and a detailed assessment conducted; the primary objective being to assess the suitability of the site for the intended use as well as to assess the impact of the proposed development on the environment. This report has comprehensively addressed the baseline environment which formed the backdrop of the impact assessment. Information provided has been supported by Specialist studies that were undertaken. The findings of the investigations, comments from affected and interested stakeholders are documented in this report together with the specified recommendations. Based on the investigations, no critical flaws that would impede the development have been identified.

No fatal flaws or highly significant impacts were identified during the scoping phase and EIA phases of the project that would necessitate substantial redesign or termination of the project. The main impacts have been discussed and mitigation measures have been identified that will serve to mitigate the scale, intensity and significance of the impacts that have high or medium rating. The EMPr contains more detailed mitigation measures.

The mitigations measures and recommendations made in the following specialist studies must be adhered to:

- Biodiversity Assessment;
- Agricultural Potential;
- Avifauna Assessment;
- Social Impact Assessment;
- Archaeological Assessment; and
- Visual Impact Assessment

Further, the following is recommended by the EAP:

- That given all the reasons discussed above **Corridor Alternative 2** is supported.

- That a final walkthrough of the approved corridor must take place to identify sensitivities and assist in identifying areas that require conservation.
- That all necessary permits from the national and/or provincial heritage resources be obtained as recommended by the Heritage Specialist.
- That all mitigation measures made by the specialist are taken into consideration during both the construction and operational phase.
- The applicant shall ensure that fluids are stored and handled properly in a concrete to cement lined with berm walls to avoid any seepage into the ground water resources and also to ensure that the design of the storage area is such that any leakages or spillages can be contained.
- That the Environmental Management Programme attached hereto be a living document that guides the construction and operational phases of the proposed project.
- That all necessary permits and licenses required by any Act, Policy, Law or By-Law be obtained prior construction.
- An integrated waste management approach be implemented that is based on waste minimisation and must incorporate reduction, reuse, recycling and disposal where appropriate.
- That necessary Water Use Licenses must be obtained as applicable from the Department of Water and Sanitation.
- Excessive wash-down of soil shall be prevented and the disturbed areas shall be rehabilitated on an on-going basis to prevent erosion.
- The applicant will provide the Department of Water and Sanitation with the quality and estimated quantity of the water that will be used for dust suppression during the developmental phase of the proposed project.
- As per Section 19(1) of the NWA, the applicant will ensure that any pollution incident(s) (of a water resource) originating from the proposed project shall be reported to the Regional Office of the DWA within 24 hours.
- Issues of landownership must be dealt with prior to construction.
- The National Environmental Management principles must be adopted and strict adherence maintained.
- Sensitive seepage zones and wetlands must be avoided for tower placement. This must be identified by an ecologist during the walk down assessment.
- The applicant must ensure that the following takes place with regard to the power line to reduce the identified impacts
  - Sections of the power line crossing adjacent to dams, rivers, drainage lines and watercourses are marked with bird flappers on the earth wires to reduce the impact on avifauna.
  - Where power lines runs parallel to riverine, riparian and wetland areas, the design should be in accordance with the requirement of the National Water Act, 1998 (Act 36 of 1998).
  - The identified areas of red data floral and other sensitive vegetation are avoided at all times.

- The spans between the towers must be increased to the maximum necessary to meet technical and safety requirements in order to limit the impact on sensitive areas.
- Specialist report must inform the nature and positioning of the power lines to ensure that no sensitive environments are impacted upon.

The undertaking of this EIA has fully complied with the requirements of the NEMA and associated regulations. It is therefore recommended that the environmental authorisation for the proposed 400kV Maphutha-Witkop powerline and associated infrastructure be granted

### 32. REFERENCES

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