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FINAL SCOPING REPORT

LIMPOPO EAST CORRIDOR STRENGTHENING PROJECT

PROPOSED CONSTRUCTION OF ± 110 KM 400KV POWER LINE FROM FOSKOR MTS TO
SPENCER MTS WITHIN MOPANI DISTRICT MUNICIPALITY, LIMPOPO PROVINCE,

DEA REFERENCE: 14/12/16/3/3/2/1023



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SPENCER MTS WITHIN MOPANI DISTRICT MUNICIPALITY, LIMPOPO PROVINCE

SEPTEMBER 2017

This document presents the Final Scoping Report for the Limpopo East Corridor Strengthening Project and the information and assessment presented is based on the information supplied by the 'applicant', Eskom Holdings SOC Limited, environmental baseline data collected during the field surveys conducted between October 2016 and February 2017 and stakeholder opinion.

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1. BACKGROUND

The load profile undertaken by Eskom Holdings SOC Ltd for the Limpopo Province showed that Spencer substation will be having a peak demand of 318MVA by 2018. Eskom Transmission Grid Planning therefore initiated a study to investigate possible alternatives and solutions to address the transformation constraints at Spencer MTS, as well as 275kV transmission network constraints on the network supplying Spencer MTS supply zone. The activities identified to address these constraints entailed the following:

- i. Construct a 400kV power line from Foskor Substation to Spencer Substation with a length of approximately ± 110 km;
- i. Establish 400/132kV transformation and install 1 x 500MVA, 400/132kV at Spencer Substation; and
- ii. Establish 400/275kV transformation at Foskor substation.

A separate project is currently underway to obtain the environmental authorization for the 400/275kV transformation at Foskor substation. This report will thus focus on the proposed construction of the 400kV power line from Foskor substation to Spencer substation and the upgrade of Spencer substation.

According to Listing Notice 1, 2 and 3 of the EIA Regulations, Government Notice R982 as amended in April 2017, undertaking these activities will result in detrimental impacts to the environment. Eskom Holdings SOC Limited has therefore appointed DIGES Group to carry out the Environmental Impact Assessment for the proposed works in compliance with the EIA Regulations, Government Notice R982 as amended. As part of the Environmental Impact Assessment (EIA) application for the proposed development, a scoping phase is to be undertaken. This scoping report therefore identifies the issues that the Environmental Impact Assessment will examine and the scope of the assessment required to ensure that the EIA will conform to the requirements of the National Environmental Management Act (Act No. 107 of 1998).

Project Description

The proposed project involves the following activities:

- Construction and operation of ± 110 km 400kV power line from the existing Foskor substation to Spencer substation;

- ❑ Extension of Spencer substation by adding/constructing 400/132kV transformation yard and 1x500MVA, 400/132kV transformer; and
- ❑ The construction of a transformer oil holding dam with a capacity of 120m³.

Location

The proposed project is located within Mopani District Municipality and will span across four Local Municipalities; Ba-Phalaborwa, Greater Letaba, Greater Tzaneen and Maruleng. The District Municipality is in the north east of Limpopo Province and can be accessed via the R71 from Tzaneen, R40 from Lydenburg, R81 from Polokwane and various district roads. The proposed alternative power line corridors will traverse across nature reserves, residential areas, mining areas, commercial and subsistence farms, natural areas and several rivers and drainage lines.

The traversed farms are in private ownership and communal land owned by the Government and under the control of Traditional Authorities.

2. REPORT LAYOUT

To address the information required as set in Appendix 2 of the EIA Regulations of December 2014 as amended, the Scoping Report will follow the structure or layout outlined below:

Section 1: Background – deals with background of the project including the objectives of this EIA and the process.

Section 2: Administrative, Legal and Policy Requirements – To facilitate the scoping assessment and understand the significance of the constructing and maintain the proposed development in the area, all relevant requirements from applicable laws, and provincial and local regulations are discussed and their relevance ascertained.

Section 3: Project description – locality, and technical details of the project, as well as need and desirability of the project.

Section 4: Alternatives evaluation – A description of the alternatives identified and being assessed.

Section 5: The receiving environment – a summary of the environment that will be potentially affected by the project activities.

Section 6: Public Consultation– a summary of the consultation process undertaken with stakeholders and Interested and Affected Parties (I&AP's), and the issues identified during this process.

Section 7: Alternatives- This section identifies the activity alternatives including the no-go option.

Section 8: Potential impacts and Determination of Significance – A discussion of the anticipated impacts during the construction and operational phase.

Section 9: Plan of Study: details the steps to be undertaken when carrying out the EIA and outlines the Terms of Reference for the identified specialist studies required.

Section 10: Conclusions and recommendations

Section 11: References

Appendices: Appendices relating to Scoping Phase are collated at the back of the document. The following documents form the Appendices of the Report:

3. APPROACH TO THE STUDY

A Scoping and Environmental Impact Assessment was prescribed to assess the damage that will be done during the project cycle (construction, operation and decommissioning) as the activity falls under activity 27 of Listing Notice 1 (Government Notice R983 as amended), 9 of Listing Notice 2 (Government Notice R984 as amended) and item 12 e(ii) of Listing Notice 3 (Government Notice R985 as amended) which are listed in the table below.

Relevant Government Notice	Activity	Description	Applicability
R983	27	<i>The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation.</i>	The expansion of the transformation yard at Spencer substation requires ±9 ha.
R984	9	<i>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 excluding the development of bypass infrastructure for the transmission and distribution of electricity.</i>	Construction of ±110km, 400kV power line from Foskop substation to Spencer substation.
R985 (R324 as amended in 2017)	12e(ii)	<i>The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan in Limpopo within critical biodiversity areas identified in bioregional plans</i>	Clearing of indigenous vegetation at towers within CBA areas during construction

It should be noted that at project inception, the Background Information Document and newspaper adverts only indicated that activities 14 and 27 of Listing Notice 1 and activity 9 of Listing Notice 2 were being applied for. After numerous discussions with the biodiversity specialist, it was also concluded that activity 12e(ii) of Listing Notice 3 as amended should also be applied for as more than 300m² of vegetation within CBA areas would be cleared during construction. In addition, taking into account the comments from the Competent Authority, activity 14 of Listing Notice 1 as amended was removed from the application as transformer oil is not classified as a dangerous good according to SANS 10234: supplement 2008 1.00. Reference is made to Appendix B-2b for the Material Safety Data Sheet for transformer oil which shows the chemical composition of the oil.

The scoping phase entailed the following:

- ❖ Site visits to assess and identify alternatives;
- ❖ Identification of Interested and Affected parties;
- ❖ Notification of the relevant stakeholders;
- ❖ Public participation meetings, newspaper adverts and placement of site notices to inform the public;
- ❖ Identification of specialists studies needed to evaluate the potential impacts; and
- ❖ Drafting of a Plan of Study explaining how the environmental impact assessment will be undertaken.

4. PRELIMINARY FIELD INVESTIGATION

Determination of the current environmental baseline conditions was done through review of existing information as well as field surveys to establish site specific issues and sensitivity. Literature relating to the project area was reviewed to comprehend the status quo of the project area and its surroundings. Topographic and thematic maps outlining the project area were also utilized. DIGES Group conducted several site inspections from November 2016 to February 2017. During the field surveys, most of the project area was covered with a vehicle where access routes existed. Photographs were taken to document the existing environmental conditions on site.

5. PUBLIC PARTICIPATION

Public Participation Process was done according to Regulation 41 of the Government Notice R982 in terms of the Environmental Impact Assessment Regulation as amended in April 2017.

An active approach was taken to identify potential Interested and Affected Parties. The proposed alternative routes were mapped and the affected farms were identified and an on-site survey was carried out to identify the land owners and their contact details. Where land owners were not identified on site, Windeed and the Department of Rural Development and Land Reform were consulted. Stakeholder Government Departments and affected Municipalities were also contacted to get the contact details of the relevant officials. Notification letters and Background Information Documents were submitted to stakeholders via e-mails and post.

Notices containing all information concerning the proposed development were placed on site to inform local people about the proposed project.

The project was advertised in the Mopani, Letaba, Hoedspruit, Phalaborwa Herald and The Citizen from the 20th to the 24th of January 2017 and on the 12th of May 2017 to inform the public about the project inception and the availability of the Draft Scoping Report respectively.

Public meetings were held from the 8th of February to the 3rd of March 2017, the 24th-25th of May 2017 and on the 22nd of August 2017.

6. ALTERNATIVES

Corridor/Location Evaluation

The proposed activity has two alternative power line corridors with two deviations.

86% of the area is in a natural or near-natural state and this is largely due to the conservation and protected areas that are within the District Municipality. The land cover within the protected and conservation area is characterized of woodland, open bushland, thicket or dense bushland and grassland. Foskop substation and some sections of the power line corridors traverse across mining areas in Phalaborwa and Gravelotte. Rural settlements are in areas surrounding Spencer substation and subsistence agriculture and grazing also occurs close to the settlements. Commercial agriculture is also concentrated along the Groot Letaba River.

An initial assessment of these two corridors, two deviations and substation site was done and at the Environmental Impact Assessment Phase, specialist studies will also be undertaken to select the corridor that is preferable in terms of minimum environmental damage, accessibility during maintenance and the interested and affected parties' concerns.

Activity Alternatives

Power can be transmitted by either overhead power lines or underground power lines. The advantages and disadvantages for installing either the underground or the overhead power lines are mainly related to magnetic fields, engineering and costs. The advantages and disadvantages of both types of power lines were considered and overhead power lines were preferred hence there will be no further assessment of the underground lines.

Access Routes

Access to the power line route will be from the existing village access roads and the existing tracks within the nature reserves. Where no access exists near to the power line route, access tracks will be created which will suite the nature of the terrain and the activities undertaken within the area.

Substation Structure

Substations are built to ESKOM's specific standards in terms of their structure and layout for operation and maintenance purposes. The proposed 400/132kV transformation yard and 1x500MVA, 400/132kV transformer is therefore expected to be generic with standard specification for such infrastructure.

Operation Alternatives

Operation alternatives were not considered because ESKOM has standards and regulations in place for the operation and maintenance of 400kV power lines and 400/132kV substations.

No-go Alternatives

The 'no-go' alternative assumes that the activity does not go ahead implying that the current state does not change; power lines and substation upgrade will not be constructed. This option would entail not strengthening the existing network to test the robustness of the Spencer Network. The advantages and disadvantages of this alternative will be assessed during the Environmental Impact Assessment Phase.

7. POTENTIAL IMPACTS

Risks and key issues were identified through an internal process based on similar developments and site visits. The identified impacts included the following:

- Biodiversity impacts;
- Hydrological impacts;
- Soil/Land Impact
- Atmospheric impact;
- Visual and noise impact;
- Heritage and archeological impacts;
- Tourism related impacts;

- Land use impacts; and
- Socio-economic Impacts

8. PLAN OF STUDY

The Plan of Study (PoS) for the Environmental Impact Assessment Phase has been prepared in order to meet the requirements of the EIA Regulations, Government Notice R982 (as amended) as outlined in Appendix 2, Section 2(i). The purpose of the PoS is to outline how DIGES Group will carry out the Environmental Impact Assessment for the proposed development. The PoS includes the following;

- ✓ Description of the proposed activity;
- ✓ Terms of Reference for the specialist studies to be undertaken;
- ✓ The methods for assessing the impacts; and
- ✓ An indication of when the Competent Authority will be consulted. A projected timeframe is also included.

9. CONCLUSION

A baseline survey was carried out at scoping phase to identify the potential biophysical and socio-economic impacts for the proposed area. Avi-fauna, Agricultural Potential, Biodiversity, Heritage, Socio-economic, Tourism, Visual, and Wetland Delineation specialist studies will be undertaken to assess the potential impacts identified at the scoping phase. These studies will form part of the Environmental Impact report. An Environmental Management Programme will be compiled as per Appendix 4 of Government Notice R982, to mitigate the identified negative impacts.

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LIST OF ABBREVIATIONS

APNR	Associated Private Nature Reserves
CARA	Conservation of Agricultural Resources Act
DEA	Department of Environmental Affairs
DEAT	Department of Environmental Affairs and Tourism
DSR	Draft Scoping Report
DWA	Department of Water Affairs
DWS	Department of Water and Sanitation
DME	Department of Minerals and Energy
EA	Environmental Authorization
EAP	Environmental Assessment Practitioner
ECA	Environment Conservation Act
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMPr	Environmental Management Programme
GDP	Gross Domestic Product
HA	Hectares
IAP	Interested and Affected Parties
IEM	Integrated Environmental Management
LED	Local Economic Development
MTS	Main Transmission Substation
NBA	National Biodiversity Assessment
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Act
PNR	Private Nature Reserve
PP	Public Participation
PPP	Public Participation Process
ROW	Right of Way
SAHRA	South African Heritage and Resources Agency
SANDF	South African National Defense Forces

SANS	South African National Standards
TDP	Transmission Development Plan
V	Voltage
WMA	Water Management Area

DEFINITIONS

- 1 **Affected environment:** Those parts of the socio-economic and biophysical environment impacted on by the development.
- 2 **Alien Vegetation:** Alien vegetation is defined as undesirable plant growth which shall include, but not be limited to; all declared category 1, 2 and 3 listed invader species as set out in the Conservation of Agricultural Resources Act (CARA) regulations. Other vegetation deemed to be alien shall be those plant species that show the potential to occupy in number, any area within the defined construction area and which are declared to be undesirable.
- 3 **Alternatives:** A possible course of action, in place of another that would meet the same purpose and need (of proposal). Alternatives can refer to any of the following but are not limited hereto: alternative sites for development, alternative layouts or alternative designs, alternative processes and materials. In Integrated Environmental Management, the so-called "no action" alternative may also require investigation in certain circumstances;
- 4 **Assessment:** The process of collecting, organizing, analyzing, interpreting and communicating data that is relevant to some decision.
- 5 **Bio-regional plan:** inform land-use planning and decision-making by a range of sectors whose policies and decisions impact on biodiversity.
- 6 **Conservation Areas:** are areas of land not formally protected by law but informally protected by the current owners and users; and managed at least partly for biodiversity conservation.
- 7 **Critical Biodiversity Areas (CBA1):** are areas that are
 - Irreplaceable;
 - required to meet biodiversity pattern and/or sites that are required to meet each ecological process targets; and
 - natural and near-natural sites including some degraded areas.
- 8 **Critical Biodiversity Areas (CBA2):** these are:
 - Best design selected sites;
 - Areas selected to meet biodiversity pattern and/or sites that are required to meet each ecological process targets;
 - Alternative sites may be available to meet targets; and

- natural and near-natural sites including some degraded areas, including areas modified by agriculture.
- 9 **Development:** The act of altering or modifying resources to obtain potential benefits.
 - 10 **Ecological Support Areas (ESA1):** are areas that are natural, near natural and degraded areas supporting CBAs by maintaining the ecological processes on which CBAs depend.
 - 11 **Ecological Support Areas (ESA2):** Areas with no natural habitat that is important for supporting ecological processes.
 - 12 **Environment:** The external circumstances, conditions and objects that affect the existence and development of individual, organism or group. These circumstances include biophysical, social, economic, historical, cultural and political aspects.
 - 13 **Environment Authorization:** A written statement from the Department of Environmental Affairs that records its approval of a planned undertaking and the conditions of such an approval.
 - 14 **Environmental impact:** The degree of change in environmental components resulting from the effects of an activity on the environment, whether desirable or undesirable. Impacts may be the direct consequence of an organization's activities or may be indirectly caused by them.
 - 15 **Environmental Impact Assessment:** A process of examining the environmental effects of a proposed development.
 - 16 **Environmental issue:** A concern felt by one or more parties about some existing, potential or perceived environmental impact.
 - 17 **Environmentally Sensitive Area:** An area designated in regional or local land use plans, or by a local, regional, provincial or national government body as being sensitive to disturbance or identified by an applicant as being sensitive for some reason.
 - 18 **Erosion:** The process by which material, such as rock or soil, is worn away or removed by wind or water.
 - 19 **Evaluation:** The process of weighing information, the act of making value judgments or ascribing values to data to reach a decision;
 - 20 **Hazardous substance:** Any substance that is of risk to health and safety, property or the environment. Hazardous substances have been classified under the SANS 10228-B-The identification and Classification of Dangerous Goods and Substances'.

- 21 **Heritage Site:** A site that contains either archaeological artefacts, graves, buildings older than 60 years, meteorological or geological fossils, etc.
- 22 **Integrated environmental management (IEM):** is a process of integrating environmental, Socio-economic and cultural factors in decision making to promote sustainable development. Principles underlying IEM provide for a democratic, participatory, holistic, sustainable, equitable and accountable approach.
- 23 **Landowner:** The individual or company that owns the land through which the servitude crosses.
- 24 **Mitigation:** the elimination, reduction or control of the adverse environmental effects of the project, and includes restitution for any damage to the environment caused by such effects through replacement, restoration, compensation or any other means.
- 25 **Monitoring Programme:** The program for observing the potential environmental effects of a project, resolving specific outstanding environmental issues, and determining the action required based on the result of these activities.
- 26 **National protected area** means-
- a) a special nature reserve;
 - b) a national park; or
 - c) a nature reserve or protected environment-
 - (i) managed by a national organ of state; or (ii) which falls under the jurisdiction of the Minister for any other reason.
- 27 **Nature reserve** means-
- (a) an area declared, or regarded as having been declared, in terms of section 23 of the National Environmental Management: Protected Areas Act, 2003, as a nature reserve; or
 - (b) an area which before or after the commencement of this Act was or is declared or designated in terms of provincial legislation for a purpose for which that area could in terms of section 23(2) of the National Environmental Management: Protected Areas Act, 2003, be declared as a nature reserve.
- 28 **No Natural Areas Remaining:** are areas without intact habitat remaining.
- 29 **Other Natural Areas:** are areas that still contain natural habitat but that are not required to meet biodiversity targets.
- 30 **Power line:** An overhead line of whatever voltage, erected for the conducting of electricity.
- 31 **Protected Area:** Protected environment means -

- (a) an area declared, or regarded as having been declared, in terms of section 28 of the National Environmental Management: Protected Areas Act, 2003, as a protected environment;
- (b) an area which before or after the commencement of this Act was or is declared or designated in terms of provincial legislation for a purpose for which that area could in terms of section 28(2) of the National Environmental Management: Protected Areas Act, 2003, be declared as a protected environment; or
- (c) an area which was a lake area in terms of the Lake Areas Development Act, 1975 (Act No. 39 of 1975), immediately before the repeal of that Act by section 90(1) of the National Environmental Management: Protected Areas Act, 2003,
- 32 **Private nature reserve** means privately owned land declared as a nature reserve under section 23 of the National Environmental Management: Protected Areas Act, 2003.
- 33 **Right of Way (ROW):** The strip of land acquired for which ESKOM has obtained the rights for construction and operation of the distribution line.
- 34 **Scoping:** The process of determining the key issues to be addressed in an environmental assessment. The main purpose of scoping is to focus the environmental assessment on a manageable number of important questions. Scoping should also ensure that only significant issues and reasonable alternatives are examined;
- 35 **Stakeholder:** A stakeholder is any group or individual that may be potentially affected by a proposed project. Stakeholders typically include elected officials, government and non-government agencies, environmental and other special interest groups, developers, educators, landowners and members of the public.
- 36 **Study Area:** The area within the spatial boundaries of the scope of the environmental and socio-economic effects assessment.
- 37 **Substation:** A network of switching, interrupting and voltage-transforming apparatus for transferring power from the electrical transmission system to the local electrical distribution system for utilization by electrical customers.
- 38 **Water body:** Means a body containing water and includes dams and wetlands, whether ephemeral or permanent.
- 39 **Water course:** Means any river, stream and natural drainage channel whether carrying water or not.

1. INTRODUCTION

1.1 Introduction

Eskom Holdings SOC Ltd (herein referred to as Eskom) intends to construct $\pm 110\text{km}$ 400kV power line from the existing Foskop Main Transmission Substation (MTS) near Phalaborwa to the existing Spencer MTS near Giyani within Mopani District, Limpopo Province. In addition, Spencer MTS will be upgraded by adding a 400/132kV transformation yard and 1 x500MVA, 400/132kV transformer. Reference is made to Figure 1-1 for locality of the project.

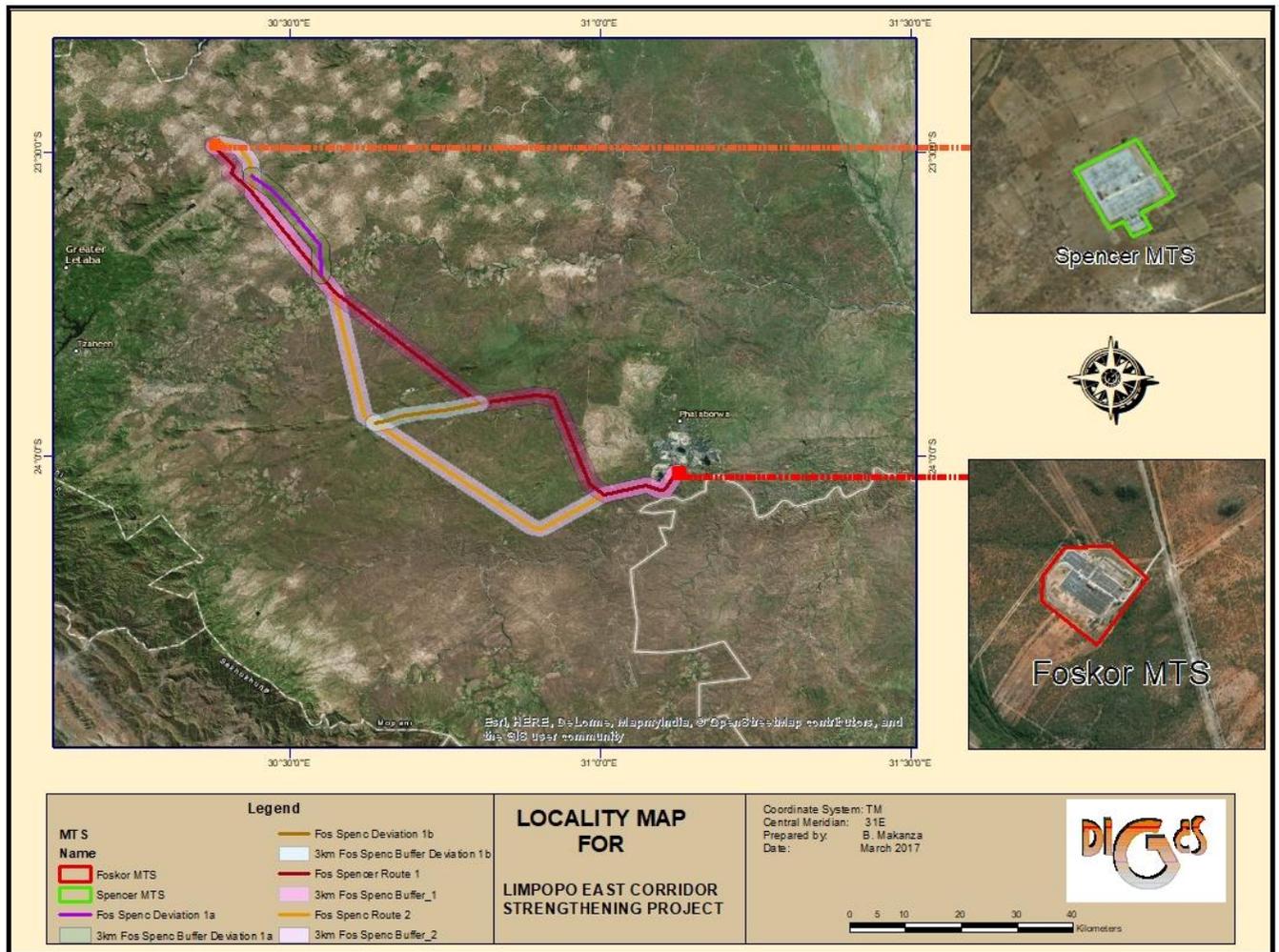


Figure 1-1: Locality Map

The proposed activities to be undertaken (together with the infrastructure to be provided) are listed as having detrimental impacts on the environment and as such requires that an Environmental Impact Assessment be undertaken prior to the commencement of the project. Eskom has therefore appointed DIGES Group (herein referred to as DIGES) to lodge an application with the Department of Environmental Affairs (DEA) for the proposed development in terms of Section 24 and 24D of the National Environmental Management Act (Act No.107 of 1998). The EIA will be undertaken to comply with the Environmental Impact Assessment Regulations (Government Notice R982) of December 2014 as amended on the 7th of April 2017.

1.2 Details of Environmental Impact Assessment Practitioner (EAP)

Section 13 of EIA Regulations, Government Notice No. R982 as amended clearly indicates that an Environment Assessment Practitioner (EAP) should be independent and have expertise in conducting Environmental Impact Assessments, including knowledge of the Act, and any guidelines that have relevance to the proposed activity.

DIGES Group is a black owned BBB-EE consultancy company established in 2004 that offers services in the geo-environmental sector. The company has successfully completed many Environmental Impact Assessments for different developments.

Declaration of Independence

DIGES Group is an independent consultant and hereby declare that it does not have any financial or other vested interest in the undertaking of the proposed activity, other than remuneration for the work performed in terms of the National Environmental Management Act (Act No. 107 of 1998). In addition, remuneration for services provided by DIGES is not subjected to or based on the approval of the proposed development by the Competent Authority.

The details for the project EAP and compiler of this report are given below as per Section 2(a) of Appendix 2 of the EIA Regulations R982 as amended.

Brenda Makanza (Pr. Sci. Nat)

- BSc (Hons) Environmental Science (NUST, 2004),
- Professional Diploma GIS (Universitat of Salzburg, 2015)
- Certificate GIS (University of Johannesburg, 2012)

A dedicated and passionate Environmentalist with valuable theoretical and experiential acumen in the areas of environmental conservation and administration. I have 12 years' experience gained through direct involvement in a number of conservation initiatives. Currently a Senior Environmental Consultant of DIGES Group responsible for leading, administrating and completing assessments on Environmental Impact Assessments, as well as overseeing studies, interpreting technical reports and appendices regarding the same.

I leverage academic skills gained through an honours level degree in Environmental Science & Health and Post Graduate Certificates in Integral Water Management and Geo-informatics; alongside the proficient ability to actively and valuably participate in the development, design and implementation of environmental / conservation management policies and consultation initiatives; thereby supporting the highest standards of Environmental Management and Sustainable Development, in all undertakings. Reference is made to the CV attached in Appendix A.

1.3 Background to EIA Study

An Environmental Impact Assessment (EIA) is a proactive and systematic process where both positive and negative potential environmental impacts associated with certain activities are assessed. Every Environmental Impact Assessment project has two objectives namely, process and content objectives. The process objectives are to ensure that the process is open, transparent and inclusive, supplies stakeholders with sufficient information, affords them ample opportunity to contribute and makes them feel that their contributions are valued. The content objectives of the project are in the form of "hard" information: facts based on scientific and technical study, statistics or technical data.

Section 24(4) of NEMA prescribes that the procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment must, *inter alia*, with respect to every application for environmental authorisation, ensure that the general objectives of Integrated Environmental Management (IEM) are considered. The EIA should include an investigation of the potential consequences or impacts of the alternatives to the activity on the environment and assessment of the significance of those potential consequences or impacts, including the option of not implementing the activity. Section 24(2) indicates that the Minister can publish a list of activities that may not commence without an environmental authorization. Three listing notices, Listing Notice 1, 2 and 3 were published in 2014 and amended on the 7th of April 2017 determine whether a Basic Assessment (Listing Notice 1 and 3) or Scoping and Environmental Impact Assessment (Listing Notice 2) should be undertaken.

1.3.1 Screening Phase

Screening is the first stage in the EIA process whereby the EAP and the applicant determines if an EIA is required for the project in terms of the EIA Regulations Government Notice R982 and its associated Listings. The screening process was carried out and it determined that based on the project activities, a scoping and EIA process was required as the construction of the 400kV power lines is listed in Listing Notice 2 as amended in April 2017. In addition, the substation extension/upgrade is listed in Listing Notice 1 whilst clearing more than 300m² of indigenous vegetation in CBA areas is listed in Listing Notice 3.

1.3.2 Scoping and Environmental Impact Assessment Phase

The second stage of the EIA process is the scoping phase which entails a baseline study and preliminary site survey to ascertain the biophysical conditions of the site and identify the anticipated negative and positive impacts of the development in relation to the environment. This phase also includes public and stakeholder participation. Guidance in relation to the scoping phase is provided in Regulation 21 of the EIA Regulations, Government Notice R982 of 2014 as amended.

1.3.2.1 Objectives of the Scoping Report

Based on the above description of the process, the main objectives of this Scoping Report are thus:

- To engage stakeholders at an early stage of the proposed development so that they may contribute their views and provide relevant information;
- To define the scope of the EIA which will accompany any planning application;
- To identify the potential significant and non-significant environmental effects of the proposed development; and
- To define the methodologies to be used in the EIA to assess these effects.

1.3.3 Environmental Impact Phase

The third phase entails the undertaking of an EIA as outlined in the Plan of Study included in the Scoping Report. As a means of determining the significance of the various impacts that can or may be associated with the power line and Spencer substation upgrade, a series of assessment criteria are used for each impact. These criteria include an examination of the nature, extent, duration, intensity and probability of the impact occurring, and assessing whether the impact will be positive or negative for the biophysical

and social environments at the site and surrounding areas. Mitigatory measures are compiled based on the alternatives that will have the least negative impact on the surrounding environment. These recommendations describe possible actions for the reduction of the significant negative environmental impacts identified in the assessment. They will also detail the management of the impact through monitoring and control, and the involvement of the I&APs in consideration of mitigating measures, where appropriate.

Figure 1-2 on page 7 shows the tasks to be performed during the scoping and EIA which are dictated by the Regulations published in Government Notice R982 under Sections 24 (5) and 44 of the National Environmental Management Act (Act No. 107 of 1998).

1.3.4 Structure and Content of the Scoping Report

1.3.4.1 Structure of the Report

To address the information required as set in Appendix 2 and to present it in a clear manner, the following structure or layout outlined below was used:

Section 1: Background – deals with background of the project including the objectives of this EIA and the process.

Section 2: Administrative, Legal and Policy Requirements – To facilitate the scoping assessment and understand the significance of the constructing and maintain the proposed development in the area, all relevant requirements from applicable laws, and provincial and local regulations are discussed and their relevance ascertained.

Section 3: Project description – locality, and technical details of the project, as well as need and desirability of the project.

Section 4: Alternatives evaluation – A description of the alternatives identified and being assessed.

Section 5: The receiving environment – a summary of the environment that will be potentially affected by the project activities.

Section 6: Public Consultation– a summary of the consultation process undertaken with stakeholders and Interested and Affected Parties (I&AP's), and the issues identified during this process.

Section 7: Alternatives- This section identifies the activity alternatives including the no-go option.

Section 8: Potential impacts and Determination of Significance – A discussion of the anticipated impacts during the construction and operational phase.

Section 9: Plan of Study: details the steps to be undertaken when carrying out the EIA and outlines the Terms of Reference for the identified specialist studies required.

Section 10: Conclusions and recommendations

Section 11: References

Appendices: Appendices relating to Scoping Phase are collated at the back of the document.

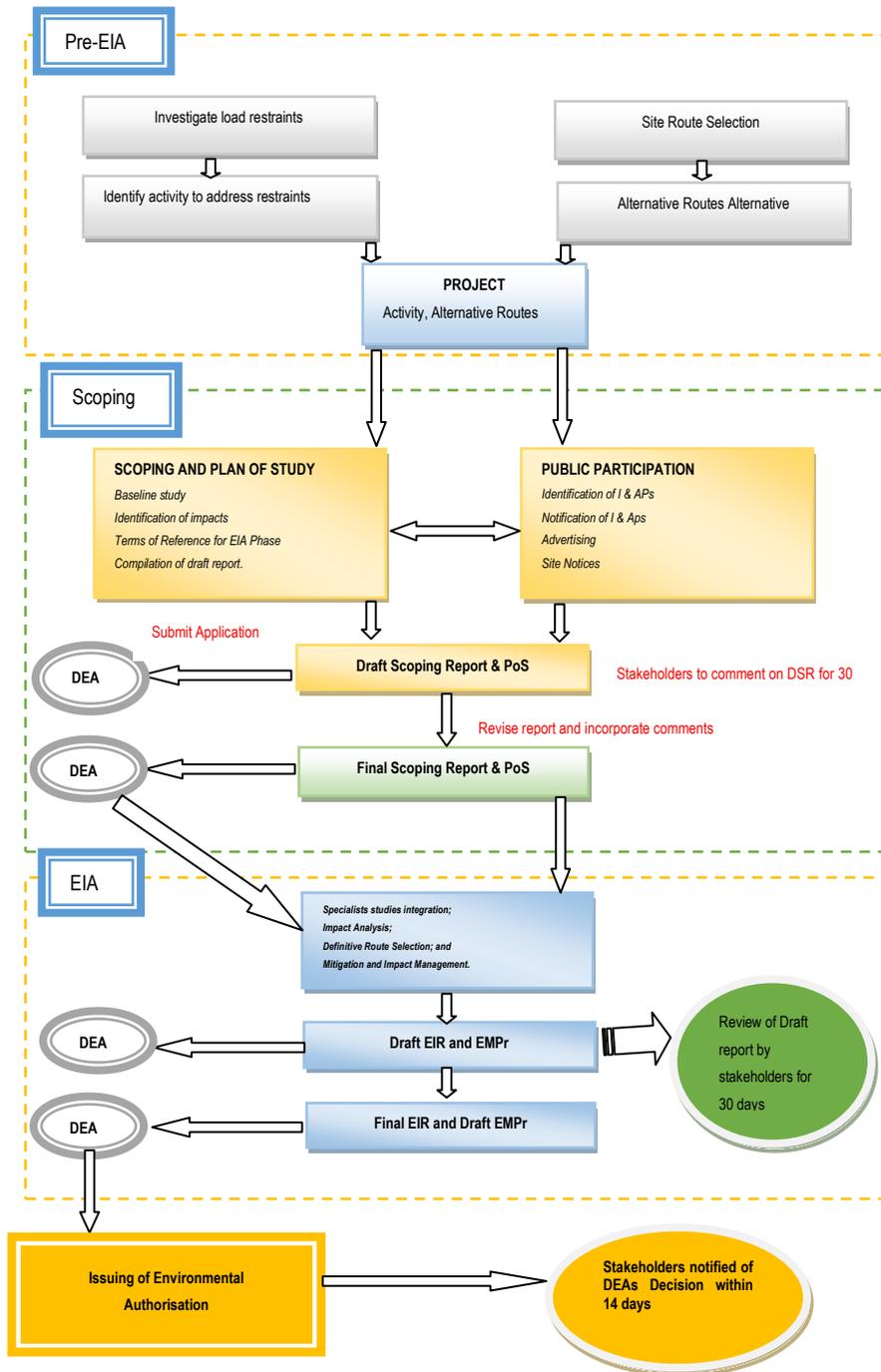


Figure 1-2: Summary of EIA Process

1.3.4.2 Content of the Scoping Report

The scoping report was compiled as per the guidelines indicated in Appendix 2 of the EIA Regulations, Government Notice R982 as amended. **Table 1-1** summarizes the information required and identifies where in the report the information can be found:

Table 1-1: Scoping Report

Information as Required in Appendix 2 of EIA Regulations R982	Relevant Section in the Report
2 (a)(i) details of the EAP who prepared the report; and	Page i
2 (a) (ii) details of the expertise of the EAP;	Section 1.2, Appendix A
2 (b) (i) the location of the activity, including the 21-digit Surveyor General code of each cadastral land parcel;	Section 3.2.3 and Appendix D-1b
2(b) (ii) the location of the activity where available, the physical address and farm name;	Section 3.2.3 and Appendix D-1b
2(c) (i) A plan which locates the proposed activity or activities applied for at an appropriate scale or if it is a linear activity, a description and co-ordinates of the corridor in which the proposed activity or activities is to be undertaken;	Section 1 and Appendix C-1
2(d) (i) a description of the proposed activity, including all listed and specified activities triggered and being applied for;	Section 2.2.1
2(d) (ii) a description of the activities to be undertaken including associated structures and infrastructure.	Section 3.4
2 (e) A description of policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to the activity and have been considered in the preparation of the scoping report; and	Section 2
2(f) Need and Desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	Section 3.1
2(h)(i) the process followed to reach the proposed preferred site including details of all alternatives considered.	Section 4
2(h)(ii) details of the public participation process undertaken at each of the sites in terms of regulation 44 of these Regulations, including copies of the supporting documents and inputs;	Section 6
2(h)(iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated into the scoping document, or the reasons for not including them;	Section 6 and Appendix D-6a and D-6b
2(h) (iv) the environmental attributes associated with the sites identified focusing on the geographical, physical, biological, social, economic and cultural aspects;	Section 5
2(h)(v) the impacts and risks identified including the nature, significance, consequence, extent, probability and duration of the impacts including the degree to which these impacts-; (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated.	Section 7, The significance, consequence, extent, probability will be fully assessed during the EIA Phase.
2(h)(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;	To be assessed during the EIA phase.

2(h)(vii) description of the advantages and disadvantages that the proposed activity and alternatives will have on the environment and on the community, that may be affected;	Section 4.3
2(h)(viii) the possible mitigation measure that could be applied and the level of residual risk;	To be discussed in the Environmental Impact report
2(h)(ix) the outcome of the site selection matrix;	To be discussed in the Environmental Impact report
2(h)(x) if no alternatives sites were investigation, the motivation for not considering	Not applicable
2(h)(xi) a concluding statement indicating the preferred alternatives including preferred location of the activity	Section 9
2(i)(i) a plan of study for undertaking the environmental impact assessment process to be undertaken on the preferred site, including a description of the alternatives to be considered and assessed, including the option of not proceeding with the activity;	Section 8
2(i)(ii) a description of the aspects to be assessed as part of the environmental impact assessment process;	Section 8.1
2(i)(iii) Aspects to be assessed by specialists;	Section 8.4.1
2(i)(iv) a description of the proposed method of assessing the environmental aspects including a description of the proposed method of assessing alternatives including alternatives to be assessed by specialists;	Section 8.5
2(i)(v) a description of the proposed method of assessing significance;	Section 8.5.1.7
2(i)(vi) an indication of the stages at which the competent authority will be consulted;	Section 8.9
2(i)(vii) particulars of the public participation process that will be conducted during the environmental impact assessment process; and	Section 8.8
2(i)(viii) a description of the tasks that will be undertaken as part of the environmental impact assessment process;	Section 8.1
2(i)(ix) Identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	To be identified during the EIA Phase
2(j) 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.	Section 9

1.3.5 Assumptions and Limitations

The following assumptions have been made during this study:

- It is assumed that the Applicant has provided adequate details with regards to the activities to be carried out and the processes to be followed during the construction and operation phase;
- The study team obtained its data on affected farm owners on Windeed-Deeds office and on-site visits undertaken by Potlako. It is assumed that this information is correct and has identified all the affected land-owners;
- Some areas were not easily accessed due to private land ownership;

- Information used to inform the assessment was limited to data and GIS coverage's available at a local, regional and national level at the time of the assessment;
- The field assessment was carried out in the summer season hence it does not consider seasonal variations; and
- It is also assumed that the public participation carried out is adequate and has identified all the Interested and Affected Parties.

1.4 *The process to date*

It should be noted that the approach adopted for the scoping study is not only limited to the scoping report but it goes beyond the identification of key issues for possible further investigation and assessment. Specialist reports and assessment of issues by determining significance ratings will be included in the Environmental Impact Report (EIR), thus providing additional information for decision-making.

In addition, the tasks to be performed during Scoping and Environmental Assessment are dictated by the Regulations published in Government Notice No. R.982 under Section 24 and 24D of the National Environmental Management Act (Act No. 107 of 1998).

The following general stages were followed as a basis for this assessment:

- a) ***Determination of the Current Environmental Baseline Conditions*** through review of existing information as well as field surveys to establish site specific issues and sensitivity. Literature relating to the project area was reviewed to comprehend the status quo of the project area and its surroundings. Topographic and thematic maps outlining the project area were also utilized. DIGES conducted several site inspections from November 2016 to February 2017. The first site inspection undertaken was sort of reconnaissance field survey where the different alternatives were briefly assessed. During the field surveys, most of the project area was covered with a vehicle where access routes existed. Photographs were taken to document the existing environmental conditions on site. **Reference is made to Appendix B-3;**
- b) ***Determination of Policy, Legal and Administrative Framework and requirements*** through identification of relevant legal documents, guidelines and planning procedures. These have been reviewed to ensure that necessary measures are included in the design and implementation of

the project. In particular, those measures which could have an implication on environmental resources were identified. Reference is made to Section 2 of this report. At project inception, the Background Information Document and newspaper adverts only indicated that activities 14 and 27 of Listing Notice 1 and activity 9 of Listing Notice 2 were being applied for. After numerous discussions with the biodiversity specialist, it was also concluded that activity 12e(ii) of Listing Notice 3 as amended should also be applied for as more than 300m² of vegetation within CBA areas would be cleared during construction. Reference is made to Appendix D-7a for the e-mails and notification letters sent to the registered IAP. In addition, taking into account the comments from the Competent Authority, activity 14 of Listing Notice 1 as amended was removed from the application as transformer oil is not classified as a dangerous good according to SANS 10234: supplement 2008 1.00. Reference is made to Appendix D-7c for the notification letters to Registered IAPs.

- c) **Public Participation:** An active approach was taken to identify potential Interested and Affected Parties. The proposed alternative routes were mapped and the affected farms were identified and an on-site survey was carried out to identify the land owners and their contact details. Where land owners were not identified on site, Windeed and the Department of Rural Development and Land Reform were consulted. Stakeholder Government Departments and affected Municipalities were also contacted to get the contact details of the relevant officials. See **Appendix D-1a and D-1b** for the list of stakeholders and land owners. Notification letters, Background Information Documents (BID) and newspaper adverts were written in English though the area is comprised of Tsonga, Northern Sotho, English and Afrikaans. All project information and public meetings were then carried out using the native languages of the different areas. The letters and Background Information Documents were submitted to stakeholders via e-mails and post. Reference is made to **Appendix D-2b** for the proof of notification.

Notices containing all information concerning the proposed development were placed on site to inform local people about the proposed project. Reference is made to **Appendix D-4** for site notice photos.

The project was advertised in the Mopani, Letaba, Hoedspruit, Phalaborwa Heralds and The Citizen from the 20th to the 24th of January 2017. Public meetings were then held from the 8th of

February to the 3rd of March 2017. See **Appendix D-2a, D-3a and D-6g** for the Background Information Document, newspaper adverts and Comments and Response report respectively.

The draft Scoping Report was submitted to IAPs for review for a period of 30 days from the 15th of May 2017 to the 15th of June 2017. Focus group meetings were then conducted from the 24th-25th of May 2017 to discuss the draft Scoping Report. Availability of the report and the dates of the meetings were advertised in the Mopani, Letaba, Hoedspruit, Phalaborwa Heralds and The Citizen on the 12th of May 2017. Reference is made to Appendix D-3b and Appendix D-5e for the adverts and the comments received respectively. In addition, the revised scoping report referred to as the Final Scoping Report was also submitted to the registered Interested and Affected Parties where two public meetings were undertaken with the game reserve owners and farmers on the 22nd of August 2017 to discuss the revisions. Reference is made to Appendix D-6c for the minutes of the meetings.

2. ADMINISTRATIVE, LEGAL AND POLICY REQUIREMENTS

Environmental laws are formulated for realizing sustainable development strategy, preventing adverse impacts on the environment from implementation of plans and construction projects, and promoting coordinative development of the economy, society and environment. Most of South Africa's environmental law and principles are regulated by legislation with the Constitution of the Republic of South Africa and the National Environmental Management Act (NEMA) being the cornerstone of environmental law. The following laws, principles and regulations have also been formulated to promote environmental sustainability including the interaction of the living and non-living environment which also have relevance to this project are discussed below:

2.1 *The Constitution of the Republic of South Africa*

Section 24 of the Constitution of South Africa guarantees basic human rights and provides guiding principles for society. The environmental rights in the constitution states:

“Everyone has the right –

- a) to an environment that is not harmful to their health or well-being; and
- b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that -
 - (i) prevent pollution and ecological degradation;
 - (ii) promote conservation;
 - (iii) Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”

The Bill of Rights in Chapter 2 of the Constitution entrenches the right to information, the right to freedom of expression, the right to participate in political activity, the right to administrative justice and fundamental science, cultural, legal, economic and environmental rights. In addition, the Constitution requires all legislature to facilitate public involvement in the legislative and other policy processes. Citizens have the right to engage in public initiatives and processes on an ongoing basis.

2.2 *National Environmental Management Act (Act No. 107 of 1998)*

The National Environmental Management Act (NEMA) aims to improve the quality of environmental decision-making by setting out principles for environmental management that apply to all government departments and organisations that may affect the environment. NEMA also creates a framework for facilitating the role of civil society in environmental governance (see below).

The Principles of National Environmental Management state that - (DEAT 1998b)

- Environmental management must place people and their needs at the forefront of its concern.
- Development must be socially, environmentally and economically sustainable.
- Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated.
- Environmental justice must be pursued.
- Equitable Services Access to environmental resources to meet basic human needs and ensure human well-being must be pursued.
- Responsibility for the environmental health and safety consequences of a project or activity must exist throughout its life cycle.
- The participation of all interested and affected parties in environmental governance must be promoted.
- Decisions must consider the interests; needs and values of all interested and affected parties.
- The social, economic and environmental impacts of activities, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.
- Decisions must be taken in an open and transparent manner, and Services Access to information must be provided in accordance with the law.
- The environment is held in public trust for the people, the beneficial use of which environmental resources must serve the public interest and the environment must be protected as the people's common heritage.
- The costs of remedying pollution, environmental degradation and consequent adverse health effects must be paid for by those responsible for harming the environment.

- Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.

2.2.1 Environmental Impact Assessment (EIA) Regulations

The Environmental Impact Assessment Regulations emanate from Section 24 (5) and 44 of NEMA and they set out the processes that must be followed to obtain an Environmental Authorization. Listing Notice 1 and Listing Notice 2) provide lists of activities that require a Basic Assessment and EIA respectively whilst Listing Notice 3 lists activities that would require authorization if carried out in a specified geographical area. The EIA Regulations and listings have been amended as of the 7th of April 2017. The proposed activities that Eskom intends to undertake are listed in Listing Notice 1, 2 and 3 which are detailed below:

Table 2-1: List of Activities for the Power line and Associated Spencer MTS works

Relevant Government Notice	Activity	Description	Applicability
R983 (R327)	27	The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation.	The expansion of the transformation yard at Spencer substation requires ±9 ha.
R984 (R325)	9	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 excluding the development of bypass infrastructure for the transmission and distribution of electricity.	Construction of ±110km, 400kV power line from Foskop substation to Spencer substation.
R985 (R324)	12e(ii)	The clearance of an area of 300 square metres or more of indigenous	Clearing of indigenous vegetation at towers within

		vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan in Limpopo within critical biodiversity areas identified in bioregional plans	CBA areas during construction
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It should be noted that at project inception, the Background Information Document and newspaper adverts only indicated that activities 14 and 27 of Listing Notice 1 and activity 9 of Listing Notice 2 were being applied for. After numerous discussions with the biodiversity specialist, it was also concluded that activity 12e(ii) of Listing Notice 3 as amended should also be applied for as more than 300m² of vegetation within CBA areas would be cleared during construction. Reference is made to Appendix D-7a for the e-mails and notification letters sent to the registered IAP. In addition, taking into account the comments from the Competent Authority (DEA), activity 14 of Listing Notice 1 as amended was removed from the application as transformer oil is not classified as a dangerous good according to SANS 10234: supplement 2008 1.00. To verify the classification of the oil, the Material Safety Data Sheets (MSDS) for the transformer oil used by Eskom was used. Reference is made to Appendix D-7c for the notification letters to Registered IAPs and the MSDS.

The following series of IEM Guidelines will be used during the entire EIA process:

- ❑ DEAT (2002), Scoping, Integrated Environmental Management, Information Series 2;
- ❑ DEAT (2002), Stakeholder Engagement, Integrated Environmental Management, Information Series 3;
- ❑ DEAT (2002), Specialists Studies, Integrated Environmental Management, Information Series 4;
- ❑ DEAT (2002), Impact Significance, Integrated Environmental Management, Information Series 5;
- ❑ DEAT (2002), Ecological Risk Assessment, Integrated Environmental Management, Information Series 6;
- ❑ DEAT (2004), Cumulative Effects Assessment, Integrated Environmental Management, Information Series 7; and

- DEAT (2004), Criteria for determining alternatives, Integrated Environmental Management, Information Series 11.

2.3 Other Relevant Legislation

In addition to the two laws indicated above, the following laws, regulations and documents in Table 2-2 also have relevance to the project:

Table 2-2: Legislative Framework

Name	Overview	Permits/Licenses
INTERNATIONAL		
Convention of Biological Diversity (CBD)	South Africa is a signatory to the CBD, which requests countries to: <ul style="list-style-type: none"> • Establish a system of protected areas to conserve biodiversity; • Develop guidelines for the selection, establishment and management of protected areas; and • Promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species. 	
Biosphere reserves: The Seville Strategy and the Statutory Framework of the World Network. UNESCO, Paris (UNESCO, 1996)	The primary objectives of biosphere reserves are the conservation of biological diversity; sustainable use and fair and equitable sharing of benefits arising from the utilization of genetic resources (in accordance with the Convention on Biological Diversity).	
NATIONAL		
Environmental Conservation Act (Act No. 73 of 1989)	This Act was superseded by NEMA as the primary environmental framework act. The purpose of the Act is to provide for effective protection and controlled utilisation of the environment.	
National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	This Act controls the management and conservation of South African biodiversity within the framework of NEMA. The Act lists species that are threatened or require protection to ensure their survival in the wild, while regulating the activities, which may involve such listed threatened or protected species and activities which may have a potential impact on their long-term survival. The Act has listed flora and fauna species.	A list has been published under Section 56 (1) of critically endangered, endangered, vulnerable and protected species and as such a permit is required prior to undertaking restricted activities in areas with the species.
National Spatial Biodiversity Assessment, 2004	The National Spatial Biodiversity Assessment (NSBA) classifies areas as worthy of protection based on its biophysical characteristics, which are ranked according to priority levels.	
National Forest Act (Act No.	This Act provides for the management, utilisation and protection of forests through the enforcement of	Protected and indigenous tree cutting permits in terms of the Section 15(1) of the Act. The

Name	Overview	Permits/Licenses
	<p>permitting requirements associated with the removal of protected tree species, as indicated in a list of protected trees</p>	<p>protected trees that shall not be cut are listed in Schedule A of Notice No. 1602 of 23 December 2016.</p>
<p>National Environmental Management: Protected Areas Act (Act No.57 of 2003)</p>	<p>The Act makes provision for the protection and conservation of ecologically viable areas that show the country's biodiversity, natural landscapes. It also takes into account the declaration of the various categories of protected areas and envisages a national register of protected areas, with a simplified classification system of Special Nature Reserves, National Parks, Nature Reserves and Protected Environments. In addition, the Act brings in the concept of biological diversity protection and ecosystem management.</p>	
<p>National Water Act (Act No 108 of 1997)</p>	<p>This Act aims to provide management of the national water resources to achieve sustainable use of water for the benefit of all water users. Section 21 states the water uses that require a licence or authorisation.</p>	<p>General Authorization is required from the Department of Water and Sanitation in terms of Section 39 of NWA for water use as defined in Section 21(c) and 21(i).</p>
<p>National Environmental Management: Waste Act (Act No. 59 of 2008)</p>	<p>In terms of the Waste Act; no person may commence, undertake or conduct a waste management activity except in accordance with:</p> <ul style="list-style-type: none"> ○ The requirements or standards determined in terms of the Waste Act for that activity; and ○ A waste management license issued in respect of that activity, if a license is required. 	<p>The waste produced during the construction and operation and storage thereof is below the minimum threshold specified in the listed activities Category A, B or C.</p>
<p>The National Environmental Management: Air Quality Act (Act No.39 of 2004)</p>	<p>The main objective of the Air Quality Act (NEMAQA) is the protection of the environment and human health, in a sustainable (economic, social and ecological) development framework, through reasonable measures of air pollution control.</p>	<p>Schedule of activities that require and atmospheric emission license has been published. The proposed power line and substation extension are not listed as having detrimental impacts on air quality.</p>
<p>The Hazardous Substance Act (Act No. 15 of 1973)</p>	<p>The Hazardous Substances Act (HAS, No. 15 of 1973) was promulgated to provide for the control of substances which may cause injury, ill-health or death. Substances are defined as hazardous if their inherent nature is: toxic, corrosive, irritant; strongly sensitising, flammable and pressure generating (under certain circumstances) which may injure cause ill-health, or death in humans.</p>	<p>Minimum requirements of dealing with hazardous wastes should be followed when dealing with hazardous substances.</p>
<p>Conservation of Agricultural Resources Act (Act No. 43 of 1983)</p>	<p>The Conservation of Agricultural Resources Act ([CARA] Act 43, 1983) provides for the:</p> <ul style="list-style-type: none"> ○ Protection of wetlands; and ○ Requires the removal of listed alien 	

Name	Overview	Permits/Licenses
	<p>invasive species.</p> <p>This Act also requires that any declared invader species on Eskom land must be controlled according to their declared invader status.</p>	
<p>The National Heritage Resources Act (Act No. 25 of 1999)</p>	<p><i>Section 34 (1)</i>: No person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the South African Heritage Resources Agency (SAHRA), or the responsible provincial resources authority.</p> <p><i>Section 35 (4)</i>: No person may, without a permit issued by the SAHRA or the responsible heritage resources authority, destroy or damage, excavate, alter or remove from its original position, or collect, any archaeological material or object.</p> <p><i>Section 36 (3)</i> No person may, without a permit issued by SAHRA or a provincial heritage authority, destroy, damage, alter, exhume or remove from its original position or otherwise disturb any grave or burial ground older than 60 years, which is situated outside a formal cemetery administered by a local authority.</p>	<p>Permits are required for any development that may affect heritage resources such as graves and old buildings. The need for permits can only be ascertained when the Heritage specialists undertakes a final walk-down after the project has been authorized.</p>
<p>Civil Aviation Act (Act No. 13 of 2009)</p>	<p>This Act provides for the establishment of a stand-alone authority mandated with controlling, promoting, regulating, supporting, developing, enforcing and continuously improving levels of safety and security throughout the civil aviation industry. All proposed developments or activities in South Africa that potentially could affect civil aviation must thus be assessed by SACAA in terms of the SA 71 CARs and South African Civil Aviation Technical Standards (SA CATS) to ensure aviation safety.</p>	<p>The Obstacle Evaluation Committee (OEC) which consists of members from both the SA CAA and South African Air Force (SAAF) fulfils the role of streamlining and coordinating the assessment and approvals of proposed developments or activities that have the potential to affect civil aviation, military aviation, or military areas of interest.</p>
<p>Promotion of Access to Information Act (Act No. 2 of 2000)</p>	<p>The Act maintains and protects South Africans' right to access any information held by the State and/or information held by another person that is needed to protect or exercise any rights. Access to information will be granted once certain requirements have been met. The Act also recognizes that the right of access to information may be limited if the limitations are reasonable in an open and democratic society.</p>	
<p>Promotion of Administrative Justice Act (Act No.3 Of 2000)</p>	<p>The Promotion of Administrative Justice Act (PAJA) aims to make the administration effective and accountable to people for its actions. It promotes South African citizens' right to just administration. Section 33 of the Constitution guarantees that administrative action will be reasonable, lawful and procedurally fair and it makes sure that people have</p>	

Name	Overview	Permits/Licenses
	the right to ask for written reasons when administrative action has a negative impact on them.	
Occupational Health and Safety Act 85 Of 1993	The act aims to provide for the health and safety of persons at work and for the health and safety of persons about the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or about the activities of persons at work.	
National Energy Act Of 2008 & Electricity Regulation Act	The purpose of the act is to ensure that diverse energy resources are available, in sustainable quantities and at an affordable price and to provide for integrated energy planning, increased generation and consumption of renewable energies, contingency energy planning, holding of strategic fuel stocks and carriers, provide appropriate energy infrastructure, data on energy demand, supply and generation and establish institutions responsible for energy research.	
White Paper on Energy Policy 1998	<p>The policy has five objectives for energy sector which are:</p> <ul style="list-style-type: none"> ○ increased access to affordable energy services; ○ improving energy governance; ○ stimulating economic development, managing energy related environmental impacts; ○ securing diversity through diversity; and ○ The need to provide alternative sources of energy including renewable. 	
Strategic Integrated Projects	<p>The South African Government adopted an Infrastructure Plan and from the spatial analysis of the country's needs carried out, 17 Strategic Integrated Projects (SIP) have been identified that cover a wide range of economic and social infrastructure. This project addresses one of the SIPs namely:</p> <p>SIP 10: Electricity transmission and distribution for all</p> <p>Expand the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development. Align the 10-year transmission plan, the services backlog, the national broadband roll-out and the freight rail line development to leverage off regulatory approvals, supply chain and project development capacity.</p>	

Name	Overview	Permits/Licenses
Spatial Planning and Land Use Management Act (Act No. 16 of 2013)	This act is a framework act for all spatial planning and land-use management legislation in South Africa. It seeks to promote consistency and uniformity in procedures and decision-making in this field.	
Provincial, Local and District Municipalities Documents		
<p>The following provincial and district plans and guidelines are applicable to the proposed project and as such the requirements in these documents are considered in this report:</p>		
<ul style="list-style-type: none"> ✓ Limpopo Environmental Management Act (Act No. 7 of 2003); ✓ Limpopo Spatial Development Plan; ✓ Limpopo Conservation Plan; ✓ Mopani District Spatial Development Framework; ✓ Draft Mopani District Bioregional Plan; ✓ Integrated Development Plan (Mopani, Phalaborwa, Greater Letaba, Greater Tzaneen and Maruleng). 		
Eskom Standards and Guidelines		
<ul style="list-style-type: none"> ✓ Chemical Spillage Assessment and reporting; ✓ Waste Management; ✓ Water Strategy; ✓ Water Management Policy; ✓ Vegetation management and maintenance within Eskom land servitudes and Right of Way. 		

3. PROJECT DESCRIPTION

3.1 Need and Desirability

3.1.1 Eskom's Mandate

ESKOM is mandated by the South African Government to ensure the provision of reliable and affordable power to South Africa. Electricity provision involves the following three phases shown in Figure 3-1:

- i. Generation is the process by which electricity is produced;
- ii. Transmission is the transportation of electricity that has been generated in power stations via high voltage, long distance power lines to local networks for distribution; and
- iii. Distribution is the actual delivery of electricity to end consumers.

The generation and transmission of electricity constitute electricity supply and this is largely the function of Eskom whilst the distribution function is shared between municipalities and Eskom.

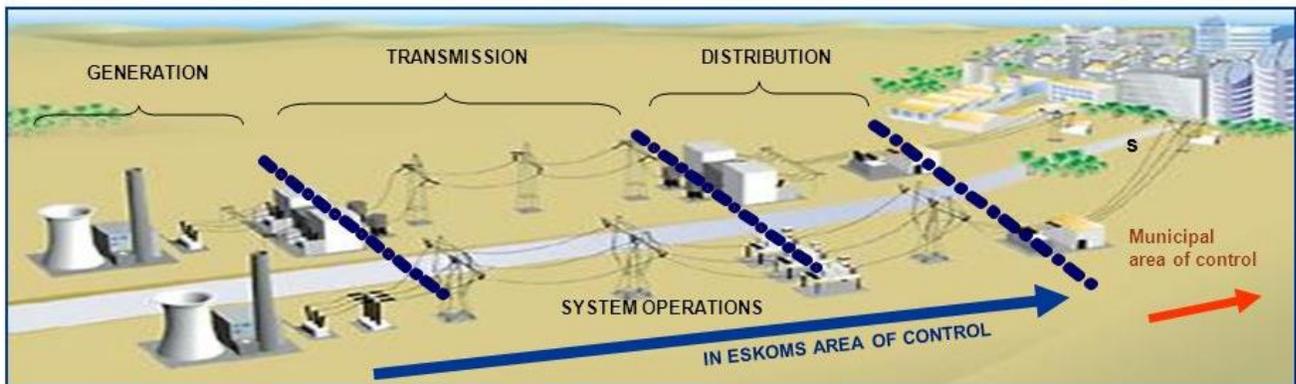


Figure 3-1: Electricity Provision in South Africa

3.1.2 Transmission System

The transmission system plays a vital role in the delivery of reliable, high quality electricity throughout South Africa by delivering electricity in bulk to load centres and very large end-users. The Transmission Grid is divided into seven grid boundaries that operate and maintain 275kV, 400kV and 765kV power lines and associated transmission substations where the power lines terminate. Reference is made to Figure 3-2 overleaf for the transmission power lines and substations within the seven grids.

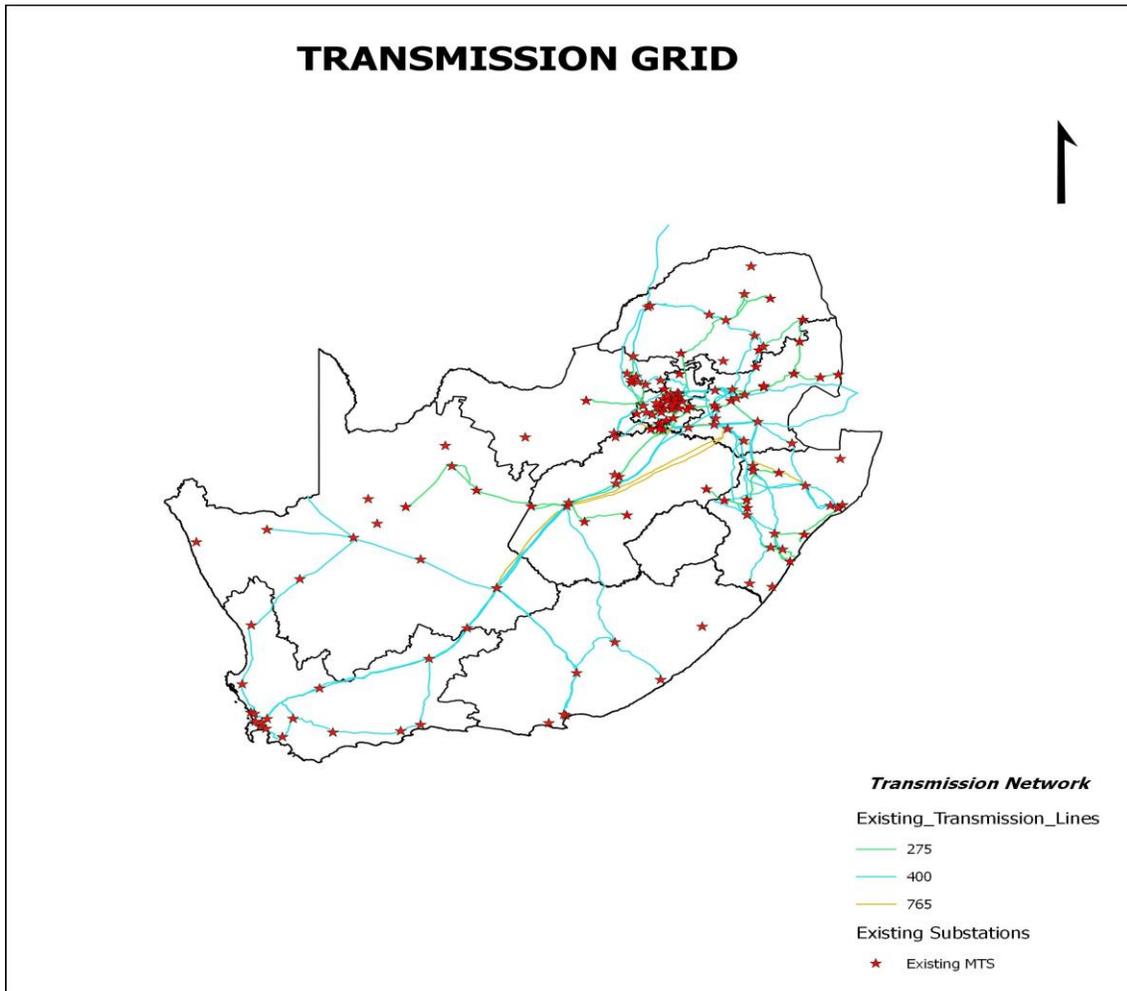


Figure 3-2: Transmission Network

3.1.2.1 Limpopo Customer Load Network (Polokwane CLN)

As the transmission system has expanded over the years, surplus capacity available on transmission lines always seems to be consumed as the system grows or as transmission users find more economical ways of meeting system demands. Transmission congestion results when an electricity transmission path cannot accommodate increased power flow. Although the reasons for congestion vary, the common consequence is that increased power flow on a transmission path is not possible without risking system reliability. To ensure grid capacity and integrate the generation predicted in the IRP, Eskom compiles a 10-year Transmission Development Plan (TDP) that is modified on an annual basis to accommodate changes in both generation and load requirements. The load profile undertaken by Eskom Holdings SOC

Ltd in 2015 for the Limpopo Transmission Network indicated that there is an expected growth within Limpopo CLN as shown in Table 3-1 below:

Table 3-1: Load Forecasts for Limpopo CLN

Transmission Supply Areas (CLNs)	Percentage Growth	2016	2020	2025
Polokwane	3.13	1506	1556	1871
Lephalale	5.45	866	1240	1383
Phalaborwa	7.61	1889	2543	3390

Source: Transmission Development Plan 2016-2025 (Limpopo Province)

To reinforce the province’s transmission system and ensure reliable supply of electricity, several projects have been planned which consists of extending 400kV and 275kV power lines and installation of additional transformers at existing substations. This report will focus on one of the projects, i.e the Limpopo East Strengthening Project.

3.1.2.2 Polokwane Customer Load Network

Mining operations, residential, agricultural and industrial activities in some parts of Limpopo Province are supplied by the Polokwane Customer Load Network (PCLN) which is comprised of 4 substations with Spencer 275/132kV substation being one of them. Spencer substation is located approximately 37km south west of Giyani and is currently fed by 275kV power lines from Tabor and Witkop substations located approximately 86km and 136km respectively. In addition, the substation is equipped with 2x250MVA, 275/132kV transformers. There are 132kV power lines which link into distribution substations within the area and that also interconnect Spencer and Foskor MTS with the distribution substations. The load profile undertaken for the Province showed that Spencer substation will be having a peak demand of 318MVA by 2018. Eskom Transmission Grid Planning therefore initiated a study to investigate possible alternatives and solutions to address the transformation constraints at Spencer MTS, as well as 275kV transmission network constraints on the network supplying Spencer MTS supply zone. The activities identified to address these constraints entailed the following:

- iii. Construct a 400kV power line from Foskor Substation to Spencer Substation with a length of approximately 110km.

- ii. Establish 400/132kV transformation yard and install 1 x 500MVA, 400/132kV transformer at Spencer Substation; and
- iv. Establish 400/275kV transformation at Foskor substation.

A separate project is currently underway to obtain the environmental authorization of the 400/275kV transformation at Foskor substation. This report will thus focus on the proposed construction of the 400kV power line from Foskor substation to Spencer substation and the upgrade of Spencer substation.

3.2 Project Activities

The proposed project addressed in this document, involves the construction and operation of the following infrastructure:

- ±110km, 400kV power line from Foskor MTS near Phalaborwa to Spencer MTS near Mohlabaneng village. Two alternative corridors and two deviations from these corridors have been identified and will be assessed. Though a 400kV power line requires a 55m wide servitude, this study will assess a 3000m wide corridor to cater for constraints which might be posed by the location of physical features and the final engineering designs. Reference is made to the Locality Map attached in Appendix C-1. The buffer in the maps indicate the corridors;
- 400/132kV transformation yard and 1 x 500MVA, 400/132kV transformer which will cater for the proposed 400kV power line coming from Foskor MTS. This extension will require a footprint area of ±9 ha. The final layout will be attached to the Final Environmental Impact Report. A preliminary layout is attached in Appendix B-1;
- A transformer oil holding dam with a capacity of 120m³. The oil dam is required to contain any spillage from the 1 x500MVA, 400/132kV transformer and to prevent pollution to the environment thereby ensuring compliance with Environmental Legislation. Reference is made to the drawing in Appendix B-2.

The proposed activities are listed in Listing Notice 1, 2 and 3 as having a detrimental impact to the environment hence require an Environmental Impact Assessment to be undertaken. The proposed activity to be undertaken (together with the infrastructure to be provided) is listed as activities 27 of Listing Notice 1 (Government Notice R983) and 9 of Listing Notice 2 (Government Notice R984) and Listing Notice 3 (Government Notice R985) dated 14 December 2014 as amended which reads as follows:

27 of R983: The clearance of an area of 1 hectares or more, but less than 20hectares of indigenous vegetation;

9 of R984: 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 excluding the development of bypass infrastructure for the transmission and distribution of electricity; and

12e(ii) of R985: The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan in Limpopo within critical biodiversity areas identified in bioregional plans.

3.3 Location

3.3.1 Regional Context of the Project

The proposed project is within Mopani District Municipality located in the north-eastern part of the Limpopo Province and bordered by Ehlanzeni District Municipality in the south, Greater Sekhukhune District Municipality in the south west, Capricorn District in the west and Vhembe District in the north west. The proposed power line alternatives will traverse across 4 local municipalities within the District Municipality namely Maruleng, Greater Tzaneen, Greater Letaba and Ba-Phalaborwa which are approximately 90km, 44km, 65km and 115km west of Polokwane respectively. The District can be accessed via R71, R81, R40, R526 and various district roads. Reference is made to Figure 3-3 for the regional context of the project:

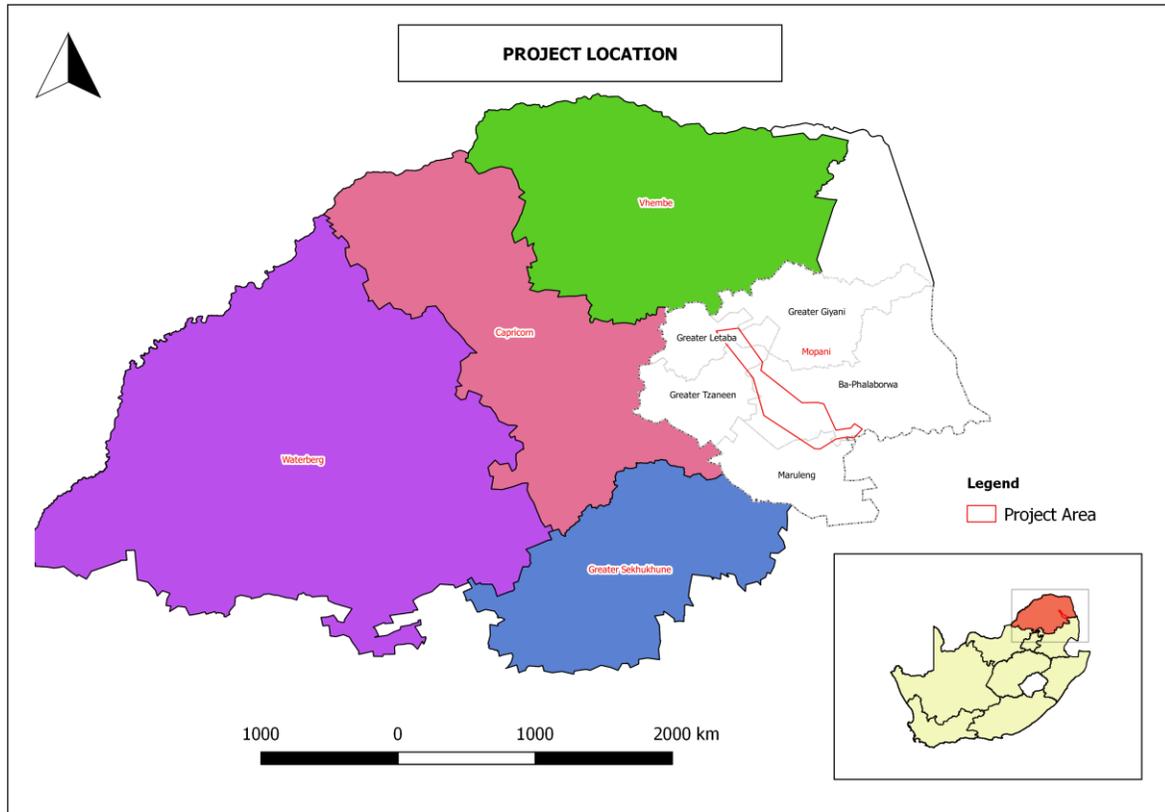


Figure 3-3: Regional Context of Project Area

3.3.2 Substation Locations

Foskor Main Transmission Substation is located on farm Loole 31LU at the following co-ordinates: **24°1'40.05" S, 31°07'37.41" E** within Foskor Mine which is approximately 9km south of Phalaborwa and 12km west of Kruger National Park. Foskor substation can be accessed via R40 and R71. Spencer substation is located 37km south west of Giyani, on farm Worcester 200LT at the following co-ordinates: **23°29'19.37" S, 30°22'51.58" E** and is near Mohlabaeng. The substation can be accessed via R81 road to Giyani. Reference is made to Figure 3-4 and 3-5 overleaf for the substations:



Figure 3-4: Spencer Substation



Figure 3-5: Foskor Substation

3.3.3 Land Ownership

The land-use within the project area is largely comprised of nature reserves, residential, mining, commercial and subsistence farming. The farms are in private ownership and communal land owned by

the Government and under the control of Traditional Authorities. Reference is made to Table 3-2 for the farm details and ownership:

Table 3-2: Farm Details and ownership

FARM NAME	PTN	SG 21 DIGITS		OWNER
Loole 31LU	0	T0LU00000000003100000	Mining	National Government
Wegsteek 30LU	Rem	T0LU00000000003000000	Mining	National Government
Sheila 10LU	Rem	T0LU00000000001000000	Mining	National Government
Sheila 10LU	1	T0LU0000000000100001	Public Service Infrastructure	Eskom Holdings Ltd
Rhoda 9KU	0	T0KU0000000000900000	Mining	National Government
Doreen 8KU	Rem	T0KU0000000000800000	Mining	National Government
Doreen 8KU	1	T0KU0000000000800001	Public Service Infrastructure	Transnet Ltd
Doreen 8KU	2	T0KU0000000000800002	Public Service Infrastructure	Transnet Ltd
Doreen 8KU	3	T0KU0000000000800003	Public Service Infrastructure	Transnet Ltd
Paul 7KU	Rem	T0KU0000000000700000	Mining	National Government
Paul 7KU	1	T0KU0000000000700001	Public Service Infrastructure	Transnet Ltd
Grietjie 6KU	107	T0KU0000000000600107	Private Nature Reserve	Burger, Pieter Andries
Grietjie 6KU	106	T0KU0000000000600106	Private Nature Reserve	Plast 1 Pty Ltd
Grietjie 6KU	105	T0KU0000000000600105	Private Nature Reserve	Brown, Trevor Anthony
Grietjie 6KU	104	T0KU0000000000600104	Private Nature Reserve	Lotter, Anita
Grietjie 6KU	118	T0KU0000000000600118	Private Nature	Olifants River Estate

FARM NAME	PTN	SG 21 DIGITS		OWNER
			Reserve	
Grietjie 6KU	96	T0KU00000000000600096	Private Nature Reserve	Arends, Richard
Grietjie 6KU	97	T0KU00000000000600097	Private Nature Reserve	Austin, Henry Struben
Grietjie 6KU	98	T0KU00000000000600098	Private Nature Reserve	Nieprins cc
Grietjie 6KU	95	T0KU00000000000600095	Private Nature Reserve	Mount Shilo Safari cc
Grietjie 6KU	94	T0KU00000000000600094	Private Nature Reserve	Mount Shilo Safari cc
Grietjie 6KU	93	T0KU00000000000600093	Private Nature Reserve	Kruger, Johannes Hendrik Trustees
Grietjie 6KU	81	T0KU00000000000600081	Private Nature Reserve	De Swardt, Guillaume
Grietjie 6KU	82	T0KU00000000000600082	Private Nature Reserve	Vroegop cc (Mupaya Lodge)
Grietjie 6KU	87	T0KU00000000000600087	Private Nature Reserve	Phalaborwa Hoedspruit Makelaar cc
Grietjie 6KU	86	T0KU00000000000600086	Private Nature Reserve	Schaap, Anna Sussanna
Grietjie 6KU	80	T0KU00000000000600080	Private Nature Reserve	Pretorius, Joachim Marthinus Wessel (Antonette Hays)
Grietjie 6KU	77	T0KU00000000000600077	Private Nature Reserve	37 Cherries-Glass Bead Studio & Guesthouse Pty Ltd
Grietjie 6KU	78	T0KU00000000000600078	Private Nature Reserve	Van Rooyen, Lindie
Grietjie 6KU	76	T0KU00000000000600079	Private Nature Reserve	Outbreak Beliggings 5 cc
Grietjie 6KU	75	T0KU00000000000600075	Private Nature Reserve	Ackermann, Ester
Grietjie 6KU	74	T0KU00000000000600074	Private Nature Reserve	Citadel Prop Holdings cc
Grietjie 6KU	44	T0KU00000000000600044	Private Nature Reserve	Jankowitz, Johannes Daniel

FARM NAME	PTN	SG 21 DIGITS		OWNER
Grietjie 6KU	41	T0KU00000000000600041	Private Nature Reserve	Micheleti, Guy Robert George, Fredrick
Grietjie 6KU	40	T0KU00000000000600040	Private Nature Reserve	Dhooge, Andries Christiaan Lanke, Walter Marie
Thankerton 144KT	2	T0KT00000000014400002	Agricultural Game Farm	Verticure cc
Thankerton 144KT	RE/3	T0KT00000000014400003	Agricultural Game Farm	Overvaal eiendomme Pty Ltd
Thankerton 144KT	6	T0KT00000000014400006	Public Service Infrastructure	South African National Roads Agency Ltd
Magdalena 154KT	0	T0KU00000000000600086	Game	Malevelyn Holding Pty Ltd (Olifants North Game Reserve)
Parson 155KT	43	T0KU00000000015500043	Agriculture (Vacant)	Grunert Inv Pty Ltd
Parson 155KT	44	T0KU00000000015500044	Agriculture (Vacant)	Grunert Inv Pty Ltd
Parson 155KT	45	T0KU00000000015500045	Agriculture (Vacant)	Grunert Inv Pty Ltd
Parson 155KT	46	T0KU00000000015500046	Agriculture (Vacant)	Grunert Inv Pty Ltd
Parson 155KT	47	T0KU00000000015500047	Agriculture (Vacant)	Grunert Inv Pty Ltd
Parson 155KT	48	T0KU00000000015500048	Agriculture (Vacant)	Grunert Inv Pty Ltd
Parson 155KT	49	T0KU00000000015500049	Agriculture (Vacant)	Loftell, Richard Patrick
Parson 155KT	50	T0KU00000000015500050	Agriculture (Vacant)	Loftell, Richard Patrick
Parson 155KT	79	T0KU00000000015500079	Agriculture (Vacant)	Loftell, Richard Patrick
Parson 155KT	80	T0KU00000000015500080	Agriculture (Vacant)	Loftell, Richard Patrick
Excellence 157KT	Rem	T0KT00000000015700000	Agricultural	Excellence Farm Pty Ltd
Hoofpyn 269KT	3	T0KT00000000026900003	Agricultural Game Farm	Inyaku Game Farm Pty Ltd
Morelag 5KU	0	T0KU00000000000500000	Agricultural	Ba-Phalaborwa Ba Maseke CPA
Morelag 5KU	1/3	T0KU00000000000500001 T0KU00000000000500003	Agricultural Game Farm	Banakome CPA
Morelag 5KU	2	T0KU00000000000500002	Mining	Freddies Prop PTB Pty Ltd
Try 153KT (now Amsterdam)	0	T0KU00000000015300000	Communal	National Government (Ba-Phalaborwa Ba Maseke CPA)
Punt 151KT	2/3/7/8	T0KT000000000151000002 T0KT000000000151000003 T0KT000000000151000007 T0KT000000000151000008	Agricultural Game Farm	Mashishimale CPA
Mashishimale 800LT	0	T0LT00000000080000000	Communal Land	Mashishimale Traditional Council
Croc-Ranch 835LT	0	T0LT00000000083500000	Communal Land	Mashishimale Traditional Council
Brook 772LT	Rem/1	T0LT00000000077200000 T0LT00000000077200001	Agricultural Game Farm	Mashishimale Traditional Council
Seaphole			Communal Land	Modjadji Traditional Authority

FARM NAME	PTN	SG 21 DIGITS		OWNER
Northampton 201LT	0	TOLT0000000002010000	Communal Land	Modjadji Traditional Authority
Worcester 200LT	0	TOLT0000000002000000	Communal Land	Modjadji Traditional Authority
Josephine 749LT	1	TOLT0000000007490001	Agricultural Game Farm	Piet Warren Plase Pty Ltd
Breakfast 773LT	Rem	TOLT0000000007730000	Communal Land	Mashishimale CPA
Breakfast 773LT	1	TOLT0000000007730001	Agricultural Game Farm	Majeje Traditional Authority
Landraad 774LT	Rem	TOLT0000000007740000	Agricultural Game Farm	Majeje Traditional Authority
Landraad 774LT	1	TOLT0000000007740000	Agricultural Game Farm	Mashishimale CPA
Voster 775LT	1	TOLT00000000077500001	Agricultural Game Farm	Selatus Pty Ltd
Voster 775LT	3	TOLT00000000077500003	Agricultural Game Farm	Gedeelte 3 van die plaas Voster Pty Ltd
B.V.B Ranch 776LT	7	TOLT0000000007760007	Agricultural Game Farm	Ryk Nagel Selati Familie Trust
B.V.B Ranch 776LT	9	TOLT0000000007760009	Agricultural Game Ranch	Joubert Phillip Joseph
B.V.B Ranch 776LT	10	TOLT0000000007760010	Agricultural Game Ranch	Joubert Phillip Joseph
B.V.B Ranch 776LT	12	TOLT0000000007760012	Agricultural Game Ranch	Lepelle Industrial & Mining Supplies cc
B.V.B Ranch 776LT	13	TOLT0000000007760013	Agricultural Game Ranch	
B.V.B Ranch 776LT	18	TOLT0000000007760018	Agricultural Game Ranch	J & L Fourie Trust
B.V.B Ranch 776LT	19	TOLT0000000007760019	Agricultural Game Ranch	J & L Fourie Trust
B.V.B Ranch 776LT	20	TOLT0000000007760020	Agricultural Game Ranch	Bezuidenhout Frederik Johannes
B.V.B Ranch 776LT	21	TOLT0000000007760021	Agricultural Game Ranch	Antenna Eiendomme Pty Ltd
B.V.B Ranch 776LT	22	TOLT0000000007760022	Agricultural Game Ranch	Noord Transvaalse Akediemiese Trust
B.V.B Ranch 776LT	23	TOLT0000000007760023	Agricultural Game Ranch	Antenna Eiendomme Pty Ltd
B.V.B Ranch 776LT	24	TOLT0000000007760024	Agricultural Game Ranch	Antenna Eiendomme Pty Ltd
B.V.B Ranch 776LT	25	TOLT0000000007760025	Agricultural Game Ranch	Antenna Eiendomme Pty Ltd
B.V.B Ranch 776LT	26	TOLT0000000007760026	Agricultural Game Ranch	Antenna Eiendomme Pty Ltd
B.V.B Ranch 776LT	27	TOLT0000000007760027	Agricultural Game Ranch	Antenna Eiendomme Pty Ltd

FARM NAME		PTN	SG 21 DIGITS		OWNER
B.V.B Ranch 776LT	28	TOLT00000000077600028	Agricultural Ranch	Game	Antenna Eiendomme Pty Ltd
B.V.B Ranch 776LT	29	TOLT00000000077600029	Agricultural Ranch	Game	Antenna Eiendomme Pty Ltd
B.V.B Ranch 776LT	29	TOLT00000000077600030	Agricultural Ranch	Game	Antenna Eiendomme Pty Ltd
B.V.B Ranch 776LT	31	TOLT00000000077600031	Agricultural Ranch	Game	Antenna eiendomme pty ltd
B.V.B Ranch 776LT	32	TOLT00000000077600032	Agricultural Ranch	Game	Bezuidenhout phillipus lourens
Begin 765LT	Rem	TOLT00000000076500000	Agricultural Game Farm		Sebakwe Trust
Begin 765LT	1	TOLT00000000076500001	Agricultural Game Farm		SANDF
Begin 765LT	3	TOLT00000000076500003	Agricultural Game Farm		Balepye CPA
Malati 764LT	0	TOLT00000000076400000	Agricultural Game Farm		LE Thom Pty Ltd
Volstruis 753LT	Rem/2/3	TOLT00000000075300000 TOLT00000000075300002 TOLT00000000075300003	Agricultural Game Farm		SANDF (Government of RSA)
Free State 763LT	Rem/2	TOLT00000000076300000 TOLT00000000076300002	Agricultural Game Farm		SANDF(Government of RSA)
Riverhead 755LT	Rem	TOLT00000000075500000	Agricultural Game Farm		Balepye CPA
Chester 754LT	Rem	TOLT00000000075400000	Agricultural Game Farm		Farm Chester cc
Chester 754LT	1	TOLT00000000075400001	Agricultural Game Farm		Morgenstern Familie Trust
Chester 754LT	2	TOLT00000000075400002	Agricultural Game Farm		Balepye CPA
Black Hill 740LT	Rem	TOLT00000000074000000	Agricultural Game Farm		Balepye CPA
La Cotte 736LT	Rem	TOLT00000000073600000	Agricultural		Xcelsior Letsitele Prop Pty Ltd
La Cotte 736LT	1	TOLT00000000073600001	Agricultural		Nouvelle-Lacott Pty Ltd
La Cotte 736LT	2	TOLT00000000073600002	Agricultural		R Pretorius & Kinders Pty Ltd
La Cotte 736LT	3	TOLT00000000073600003	Agricultural		R Pretorius & Kinders Pty Ltd
La Cotte 736LT	4	TOLT00000000073600004	Agricultural		R Pretorius & Kinders Pty Ltd
La Cotte 736LT	5	TOLT00000000073600005	Agricultural		CLB La Cotte Trust
Matuma 735LT	0/4/5/8/9 11	TOLT00000000073500000 TOLT00000000073500004 TOLT00000000073500005 TOLT00000000073500008 TOLT00000000073500009 TOLT00000000073500011	Agricultural		Xcelsior Letsitele Prop Pty Ltd
Matuma 735LT	1/2/6/10	TOLT00000000073500001 TOLT00000000073500002 TOLT00000000073500006 TOLT00000000073500010	Agricultural		Matuma Sitrus Eiendomme Pty Ltd
Matuma 735LT	3/7	TOLT00000000073500003	Agricultural		Dreanco Pty Ltd

FARM NAME	PTN	SG 21 DIGITS		OWNER
		T0LT0000000007350007		
Matuma 735LT	12	T0LT0000000007350012	Agricultural	Merite Pakkers Pty Ltd
Gunyula 730LT	Rem	T0LT0000000007300000	Agricultural	Grobler, Nicolaas
Gunyula 730LT	4	T0LT0000000007300004	Agricultural	Lallu Farming Enterprises cc
Gunyula 730LT	13	T0LT0000000007300013	Agricultural	Lallu Farming Enterprises cc
Gunyula 730LT	16	T0LT0000000007300016	Agricultural	Malle Mathoka Albert Mohalea
Gunyula 730LT	17	T0LT0000000007300017	Agricultural	Big Rock Construction 74 cc
Gunyula 730LT	18	T0LT0000000007300018	Agricultural	GK2N Projects Trust
Gunyula 730LT	19	T0LT0000000007300019	Agricultural	Last, Andre
Gunyula 730LT	20	T0LT0000000007300020	Agricultural	Last, Andre
Gunyula 730LT	21	T0LT0000000007300021	Agricultural	Last, Andre
Gunyula 730LT	22	T0LT0000000007300022	Agricultural	Last, Andre
Gunyula 730LT	23	T0LT0000000007300023	Agricultural	Last, Andre
Gunyula 730LT	24	T0LT0000000007300024	Agricultural	Last, Andre
Gunyula 730LT	26	T0LT0000000007300026	Agricultural	Mkhavele, Vukosi Autis
Gunyula 730LT	27	T0LT0000000007300027	Agricultural	Rikhotso, Jabulani Herold
Gunyula 730LT	28	T0LT0000000007300028	Agricultural	Rikhotso, Jabulani Herold
Gunyula 730LT	29	T0LT0000000007300029	Agricultural	Alfred Mashau
Gunyula 730LT	30	T0LT0000000007300030	Agricultural	Alfred Mashau
Gunyula 730LT	31	T0LT0000000007300031	Agricultural	Mashaba, John
Gunyula 730LT	32	T0LT0000000007300032	Agricultural	Wright, Candice Rochelle
Gunyula 730LT	33	T0LT0000000007300033	Agricultural	Mbuyane Frank Jesaya
Gunyula 730LT	34	T0LT0000000007300034	Agricultural	Williams, James Ronald
Gunyula 730LT	35	T0LT0000000007300035	Agricultural	Nxumalo, Mackekwa Edwell
Gunyula 730LT	36	T0LT0000000007300036	Agricultural	Tshehla, Edwin Thapedi
Gunyula 730LT	37	T0LT0000000007300037	Agricultural	Manabe, Nkateko Loraine
Gunyula 730LT	38	T0LT0000000007300038	Agricultural	Tshehla, Edwin Thapedi
Gunyula 730LT	39	T0LT0000000007300039	Agricultural	Mashao, Malesela Alfred
Gunyula 730LT	40	T0LT0000000007300040	Agricultural	Mkhvele, Vukosi Autis
Gunyula 730LT	41	T0LT0000000007300041	Agricultural	Fasen, Coenraad Hendrik
Gunyula 730LT	42	T0LT0000000007300042	Agricultural	Risaba, Ernest Mkansi
Gunyula 730LT	43	T0LT0000000007300043	Agricultural	Risaba, Ernest Mkansi
Gunyula 730LT	44	T0LT0000000007300044	Agricultural	Smith, Coenraad Jacobus
Gunyula 730LT	45	T0LT0000000007300045	Agricultural	Tshehla, Edwin Thapedi
Gunyula 730LT	46	T0LT0000000007300046	Agricultural	Jooste, Charlotte Catharina
Gunyula 730LT	47	T0LT0000000007300047	Agricultural	Bill, Godfrey Morgan
Gunyula 730LT	48	T0LT0000000007300048	Agricultural	Potgieter, Stephanus Johannes
Gunyula 730LT	49	T0LT0000000007300049	Agricultural	Mbiza, Tinyiko Nicolas
Gunyula 730LT	50	T0LT0000000007300050	Agricultural	Smith, Coenraad Jacobus
Gunyula 730LT	51	T0LT0000000007300051	Agricultural	Phosa, Sanny

FARM NAME	PTN	SG 21 DIGITS		OWNER
Gunyula 730LT	52	T0LT00000000073000052	Agricultural	Phosa, Sanny
Gunyula 730LT	53	T0LT00000000073000053	Agricultural	Risaba, Ernest Mkansi
Gunyula 730LT	54	T0LT00000000073000054	Agricultural	Lallu Farming Enterprises cc
Gunyula 730LT	55	T0LT00000000073000055	Agricultural	Lallu Farming Enterprises cc
Gunyula 730LT	56	T0LT00000000073000056	Agricultural	Risaba, Ernest Mkansi
Gunyula 730LT	57	T0LT00000000073000057	Agricultural	Risaba, Ernest Mkansi
Gunyula 730LT	58	T0LT00000000073000058	Agricultural	Risaba, Ernest Mkansi
Gunyula 730LT	59	T0LT00000000073000059	Agricultural	Erasmus, Carel Petrus Johannes
Gunyula 730LT	60	T0LT00000000073000060	Agricultural	Erasmus, Carel Petrus Johannes
Gunyula 730LT	61	T0LT00000000073000061	Agricultural	Erasmus, Carel Petrus Johannes
Gunyula 730LT	62	T0LT00000000073000062	Agricultural	Erasmus, Carel Petrus Johannes
Gunyula 730LT	63	T0LT00000000073000063	Agricultural	Erasmus, Carel Petrus Johannes
Gunyula 730LT	65	T0LT00000000073000065	Agricultural	Erasmus, Carel Petrus Johannes
Gunyula 730LT	66	T0LT00000000073000066	Agricultural	Erasmus, Carel Petrus Johannes
Gunyula 730LT	67	T0LT00000000073000067	Agricultural	Erasmus, Carel Petrus Johannes
Gunyula 730LT	68	T0LT00000000073000068	Agricultural	Risaba, Ernest Mkansi
Gunyula 730LT	69	T0LT00000000073000069	Agricultural	Risaba, Ernest Mkansi
Gunyula 730LT	70	T0LT00000000073000070	Agricultural	Risaba, Ernest Mkansi
Gunyula 730LT	71	T0LT00000000073000071	Agricultural	Risaba, Ernest Mkansi
Gunyula 730LT	72	T0LT00000000073000072	Agricultural	Risaba, Ernest Mkansi
Gunyula 730LT	73	T0LT00000000073000073	Agricultural	Wolvaardt, Jurie Francois
La Parisa 729 LT	Rem	T0KU00000000072900000	Agricultural	Gubitz Boerdery Pty Ltd
La Parisa 729LT	1	T0KU00000000072900001	Agricultural	Lompies Kwekerye Pty Ltd
Radoo 682LT	0	T0LT00000000068200000	Communal	Nyavana Traditional Authority
Sirulurul 427LT	1/2	T0LT000000000742700001 T0LT000000000742700001	Communal	Modjadji Traditional Authority
Makuba 425LT	0	T0LT00000000042500000	Communal	Modjadji Traditional Authority
Senobela 362LT	0	T0LT00000000036200000	Communal	Modjadji Traditional Authority
Kromriviersfontein 360LT	0	T0LT00000000036000000	Communal	Modjadji Traditional Authority
Square 750KT	Rem	T0LT00000000075000000	Communal	Big Rock Ranch Pty Ltd
Square 750KT	1	T0LT00000000075000001	Communal	Archie Beesplaas cc
Archie 156KT	Rem	T0KT00000000015600000	Lodge	Baphalaborwa Ba Maseke

FARM NAME	PTN	SG 21 DIGITS		OWNER
				CPA
Archie 169KT	Rem/1	T0KT00000000016900000	Agricultural Game Farm	Scaterfield Game Ranch Pty Ltd
Archie 169KT	1	T0KT00000000016900001	Agricultural Game Farm	Royal Square Inv. 448 cc
Lillie 148KT	Rem	T0KT00000000014800000	Agricultural Game Farm	Lillie Ranch Pty Ltd
Lillie 148KT	1	T0KT00000000014800001	Agricultural Game Farm	Scaterfield Game Ranch Pty Ltd
Lillie 148KT	2	T0KT00000000014800002	Agricultural Game Farm	Twin City Letaba Ranch Pty Ltd
Lillie 148KT	3	T0KT00000000014800003	Agricultural Game Farm	Royal Square Inv. 448 cc
Lekkergoed 158KT	9/23/29/50	T0KT00000000015800009 T0KT00000000015800023 T0KT00000000015800029 T0KT00000000015800050	Game	Limpopo Leopard Rock Nature Reserve
Lekkergoed 158KT	15	T0KT00000000015800015	Agricultural Game Farm	Troutwater Trust
Transport 145KT	1	0KT00000000017200001	Agricultural Game Farm	Overvaal Eiendomme Pty Ltd
Transport 172KT	0	T0KT00000000017200000	Agricultural Game Farm	Seriso 485 Pty Ltd
Hoed 146KT	0	T0KT00000000014600000	Agricultural Game Farm	HL Hall & Sons Prop Pty Ltd
Danie 789LT	1	T0LT00000000078900001	Agricultural Game Farm	Pedal Trading 168 Pty Ltd
Arundel 788LT	Rem	T0LT00000000078800000	Agricultural Game Farm	HL Hall & Sons Prop Pty Ltd
Arundel 788LT	3	T0LT00000000078800003	Agricultural Game Farm	Pieter Ernst Familie Trust
Arundel 788LT	4	T0LT00000000078800004	Agricultural Game Farm	Nyala Lodge Share Block Pty Ltd
Arundel 788LT	7	T0LT00000000078800007	Agricultural Game Farm	Big Five Game Co Pty Ltd
Willie 787LT	Rem/5	T0LT00000000078700000 T0LT00000000078700005	Agricultural Game Farm	Dunn, Henry Brown
Willie 787LT	2	T0LT00000000078700002	Agricultural Game Farm	Angetu Prop Pty Ltd
Willie 787LT	3	T0LT00000000078700003	Agricultural Game Farm	Osmers, Charles Nicolaas Joubert
Willie 787LT	6	T0LT00000000078700006	Agricultural Game Farm	Klipspringer Lodge cc
Willie 787LT	10	T0LT00000000078700010	Agricultural Game Farm	Elphinstone, Rachel Johanna Emmarentia
Farrell 781LT	1	T0LT00000000078100001	Mining	Northern District Council
Farrell 781LT	Rem/5	T0LT00000000078100005	Gravelotte Town	Northern District Council
Farrell 781LT	6	T0LT00000000078100006	Agricultural Game Farm	Piet Warren Plase
Farrell 781LT	7	T0LT00000000078100007	Mining	Modjadjji Manufacturing Pty Ltd
Farrell 781LT	8	T0LT00000000078100008	Agricultural Game Farm	PP Mare Boerdery Pty Ltd
Farrell 781LT	10	T0LT00000000078100010	Agricultural Game Farm	Northern District Council
Claimland 780LT	Rem/1	T0LT00000000078000000 T0LT00000000078000001	Agricultural	PP Mare Boerdery Pty Ltd

FARM NAME	PTN	SG 21 DIGITS		OWNER
Claimland 780LT	2	TOLT0000000007800002	Mining	National Government
Claimland 780LT	4	TOLT0000000007800004	Agricultural	Piet Warren Plase Pty Ltd
Claimland 780LT	5	TOLT0000000007800005	Mining	Consolidated Murchison Ltd
Mon Desir 782LT	Rem/1	TOLT0000000007820000 TOLT0000000007820001	Agricultural Game Farm	Gravelotte Iron Ore Company Pty Ltd
Mon Desir 782LT	2	TOLT0000000007820002	Agricultural	Pieter Oosthuizen Landgoed Pty Ltd
Solomons Mine 762LT	Rem/3/4	TOLT0000000007620000 TOLT0000000007620003 TOLT0000000007620004	Agricultural Game Farm	Gravelotte Iron Ore Company Pty Ltd
Quagga 759LT	Rem/2	TOLT0000000007590000 TOLT0000000007590002	Agricultural Game Farm	Gravelotte Iron Ore Company Pty Ltd
The Beacon 769LT	0	TOLT0000000007690000	Agricultural Game Farm	Balapye CPA
Eden 757LT	Rem/2	TOLT0000000007570000 TOLT0000000007570002	Agricultural Game Farm	Balapye CPA
Henley 734LT	2	TOLT0000000007340002	Agricultural	Kidson, Dina Johanna
Henley 734LT	5	TOLT0000000007340005	Agricultural	Labuschagne, Pieter Willem
Henley 734LT	7	TOLT0000000007340007	Agricultural	Last, Andre
Henley 734LT	8	TOLT0000000007340008	Agricultural	David Maswanganyi Family Trust
Henley 734LT	9	TOLT0000000007340009	Agricultural	David Maswanganyi Family Trust
Henley 734LT	10	TOLT0000000007340010	Agricultural	Alida & Basie Jacobs Family Trust
Henley 734LT	11	TOLT0000000007340011	Agricultural	Ntimbane, Gaza Edney
Henley 734LT	12	TOLT0000000007340012	Agricultural	Mathebula, Mishell
Henley 734LT	13	TOLT0000000007340013	Agricultural	National Government
Henley 734LT	14	TOLT0000000007340014	Agricultural	National Government
Henley 734LT	15	TOLT0000000007340015	Agricultural	Dos Santos, Antonio Sardinha
Henley 734LT	16	TOLT0000000007340016	Agricultural	Zeni, Robert
Henley 734LT	17	TOLT0000000007340017	Agricultural	Zeni, Robert
Henley 734LT	18	TOLT0000000007340018	Agricultural	Heydenrych, Alida Cornelia
Henley 734LT	19	TOLT0000000007340019	Agricultural	Alcro Trust
Henley 734LT	20	TOLT0000000007340020	Agricultural	Alcro Trust
Henley 734LT	21	TOLT0000000007340021	Agricultural	Alcro Trust
Henley 734LT	22	TOLT0000000007340022	Agricultural	Jacques Burger Family Trust
Henley 734LT	23	TOLT0000000007340023	Agricultural	Jacques Burger Family Trust
Henley 734LT	24	TOLT0000000007340024	Agricultural	Jacques Burger Family Trust
Henley 734LT	25	TOLT0000000007340025	Agricultural	Jacques Burger Family Trust
Henley 734LT	26	TOLT0000000007340026	Agricultural	Labuschagne, Saskia Jean
Henley 734LT	27	TOLT0000000007340027	Agricultural	Jacques Burger Family Trust

FARM NAME	PTN	SG 21 DIGITS		OWNER
Henley 734LT	28	TOLT00000000073400028	Agricultural	Jacques Burger
Henley 734LT	30	TOLT00000000073400030	Agricultural	Strathearn Mervyn Gerrity Dubaj
Henley 734LT	34	TOLT00000000073400034	Agricultural	Van Heerden Family Trust
Henley 734LT	35	TOLT00000000073400035	Agricultural	Botha, Antonie Johannes Carolus

3.4 Technical Details of the Project

3.4.1 Requirements for the 400kV Power line

3.4.1.1 Line Height and Servitude width

The statutory minimum ground clearance for a 400kV overhead line is 8.1m. The line must be designed to afford this clearance in ALL circumstances. The overall height of the line is also dependent on several criteria, including geographical location, topography, height above sea level, span length and conductor type. Though a 3km buffer is being assessed, the required servitude width for a 400kV power line is 55m.

3.4.1.2 Span Length

The span length also depends on the same criteria as line height. The distance between supports (span length) will vary from 300 to 400m, with an average span of 350m between supports.

3.4.1.3 Service Access Roads

Services Access for construction traffic will be required and maintained to all sites during the construction phase. The width of the access roads will be less than 5.5m. Services Access arrangements for maintenance and fault repairs will have to be arranged with the relevant land owners prior to the implementation of the project.

3.4.2 Power line Infrastructure

An overhead power line is comprised of tower structures and conductors with associated hardware discussed below:

3.4.2.1 Tower Structures and Conductors

Transmission towers are utilized to suspend high voltage overhead power lines and each transmission tower must be constructed to support the level imposed on it by conductors. Although the power line towers that will be utilized for this project have not been decided, three tower structures below are generally used for 400kV power lines.

□ Cross Rope Suspension Tower

The towers are supported by stays or guys to stabilize the towers. This tower is easy to assemble and the structure requires less galvanized steel than the guyed V tower making it lighter. Forces from the earth-wires, tower guys, and conductors are transferred only to the two mast peaks, thus eliminating direct bending moments in the structure and resulting in cost savings in the order of 50% per tower. The tower has an average height of 36m and requires a servitude of 55m. See Figure 3-6 for the tower structure.

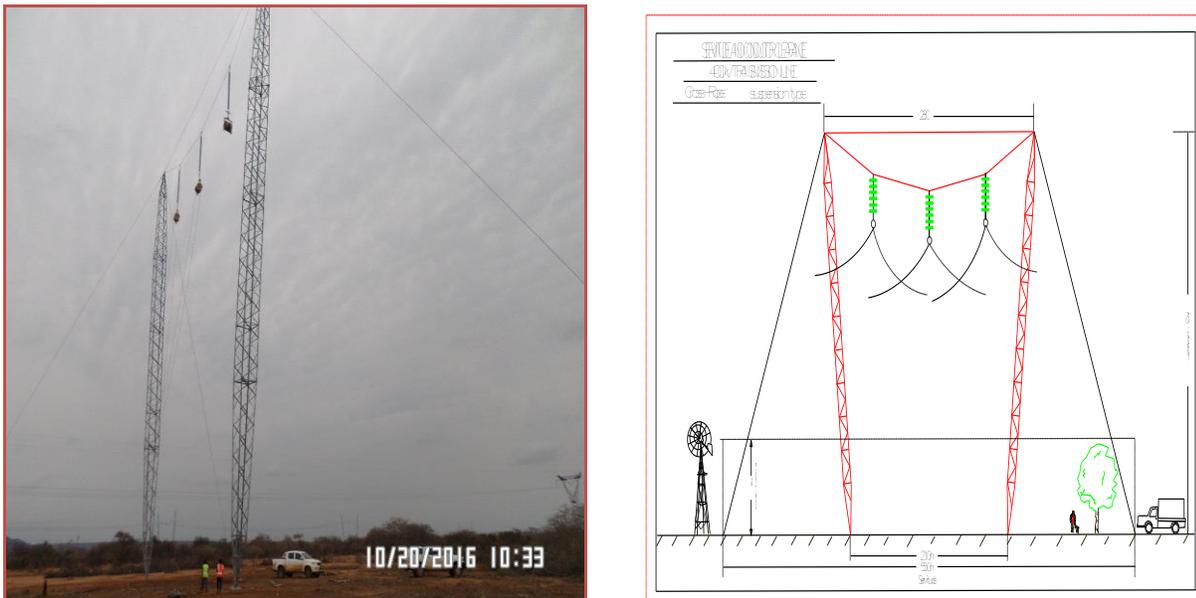


Figure 3-6: Cross Rope Suspension Tower

□ Guyed Suspension Tower

The tower has one large foundation and four guys therefore four smaller foundations. They provide the best protection from lightning impulses due to ground wire and cross arm configuration. Tower cross bar helps with the live maintenance. The towers have an average height of 33m. See Figure 3-7:

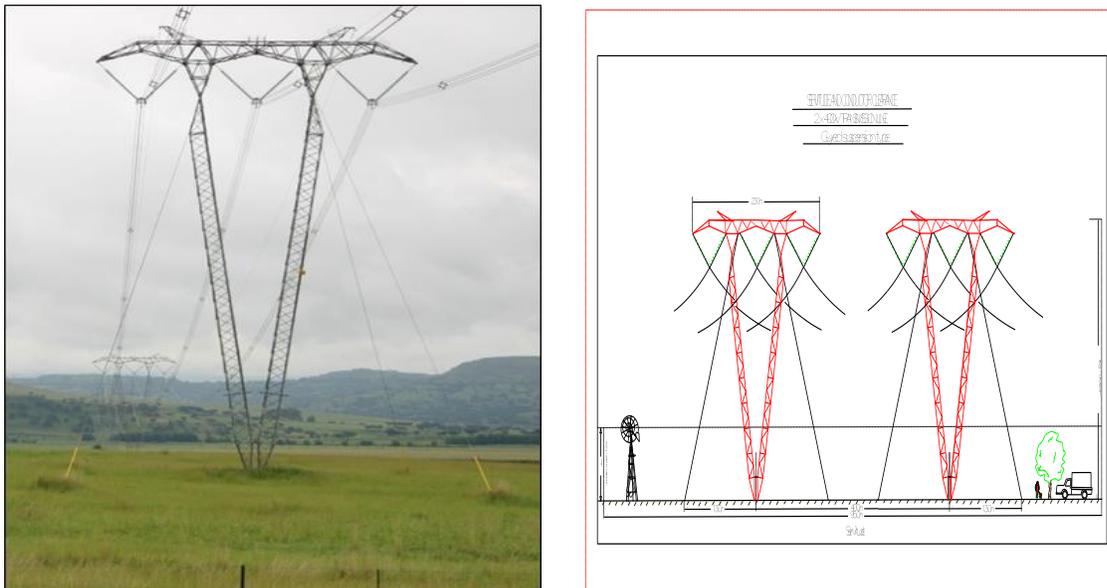


Figure 3-7: Guyed Suspension Tower

□ **Self-Supporting Tower**

This is a typical Eskom designed self-supporting tower and utilizes a V assembly to allow for compaction of the phases. The structure is optimized to carry 190KN glass insulators which support quad zebra conductors. Commonly used before the cheaper guyed and cross rope structures were designed. Reference is made to Figure 3-8 below for the tower.

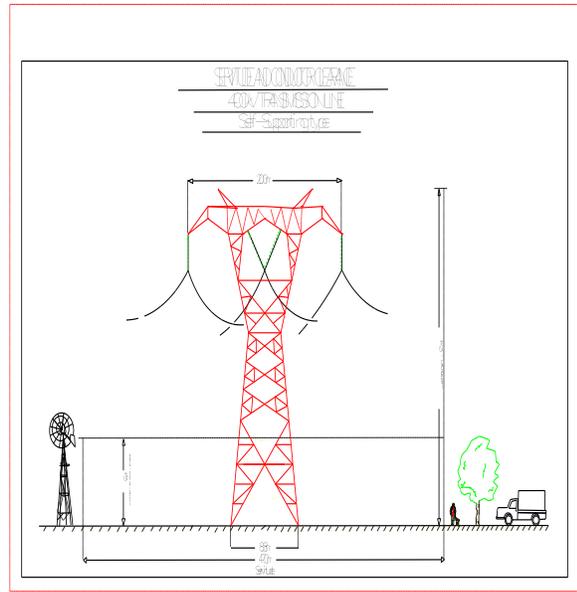


Figure 3-8: Self-Supporting Tower

3.4.3 Electric and Magnetic Fields (EMF)

3.4.3.1 Electric Fields

Power line electric fields are produced by the presence of electric charges and therefore the Voltage (V) applied to a conductor of a power line. Generally, the voltage on a system is stable and therefore the electric field under the line remains relatively constant. Tower geometry and conductor height affects the electric field at ground level. Electric fields decrease with an increase in distance from the conductor. Overhead power lines are designed to meet a maximum electric field level of 10 kV/m within the servitude and directly below the line. This level falls to lower levels and must meet the level of 5 kV/m allowed for public exposure at the servitude boundary.

3.4.3.2 Magnetic Fields

Magnetic fields are produced by the current flowing on the conductor of a power line. The current on a system may vary depending on the load supplied by the system. As the load changes, the magnetic field will change. Tower geometry and conductor height affects the magnetic field at ground level. Magnetic fields decrease with an increase in distance from the conductor. Overhead power lines are designed to meet a maximum magnetic field level of 200 μ T allowed for public exposure at the servitude boundary.

Reference is made to **Appendix B-4** for a detailed study carried out by Empetus CC with regards to the effects of EMF on humans, plants and animals.

3.4.4 Overhead Line Corona, Noise and Corona Discharge

Corona noise is found on transmission lines where higher voltages exist and it is more active during the increased humidity conditions provided by light rain. A large number of corona discharges are caused by water drops collecting on the conductors. In dry conditions, the conductors usually operate below the corona inception level, and less corona sources are present. Corona noise comprises of two sound components: one is random crackling noise and the other is hum noise of buzzing. The random sound has a wide frequency band because the sounds caused by corona discharge occur randomly and the corona hum noise results from the electric field surrounding the conductors. The level of operational noise from overhead lines will vary depending upon the environmental conditions, the locality and several other factors including the distance to ground and voltage.

3.5 Pre-construction and Construction Phase

The construction phase of the project is expected to take up to 24 months with a project lifespan of 40 years or more. The main works for the construction of the 400kV power lines and substation include the following:

3.5.1 Pre-Construction

3.5.1.1 Land Negotiation

After an Environmental Authorization has been issued the following tasks will be undertaken:

- a) Selection of a route where the 400kV power line will traverse within the environmentally authorized corridor, i.e, the 55m servitude width required for the power line will be selected within the 3000m corridor assessed;
- b) Negotiate servitude on private and publicly owned land; and
- c) Identification of landowner conditions and requirements.

3.5.1.2 Right of Way Surveying

Prior to construction of the overhead power line, a precise ground survey is carried out to determine the ground profile along the centre of the power line route and for 27.5m on either side where the ground

profile slopes across the power line route. This is to ensure that the location selected for towers and stays and their relationship with each other comply with the technical limits laid down for maximum span lengths, maximum sums of adjacent spans and safe clearance to live conductors in the final siting of pole. Further consideration is given to detailed environmental effects. Where the route of the line passes over or near trees that could infringe safe clearances to 'live' conductors, the trees must be felled or pruned prior to the construction of the line.

3.5.1.3 Soil sampling

Geotechnical investigations will be carried out at substation and tower positions to determine the type of foundation required. The holes will be filled in after soil sampling is completed.

3.5.1.4 Structure Stacking

A survey crew will peg the substation location and the power line corridor.

3.5.1.5 Clearing



Figure 3-9: Example of clearing at tower sites

The Right of Way (ROW) must be cleared to allow for construction and operation activities of substation and power line. The land-owner and the local community will be notified prior to construction clearing. Reference is made to Figure 3-9 above for an example of servitude clearance.

3.5.1.6 Access Road Construction

Temporary access routes are capable of accommodating construction plant, material and workers required for the construction of each tower and the installation of conductors. Where there is no existing Services Access available or where ground conditions prevent normal Services Access, temporary Services Access routes may have to be constructed.

3.5.2 Construction Phase

Overhead power line construction follows a standard sequence of activities mentioned below:

3.5.2.1 Construction Camp

The establishment of the construction camp will involve the clearing of vegetation, fencing of camp and the construction of workshops and the store rooms as well as temporary site offices. The location of the camps will ensure accessibility to the construction sites. Reference is made to Figure 3-10:



Figure 3-10: Example of Construction/Storage Camp

3.5.2.2 Foundation Installation

A work crew will excavate the foundations for the towers. See Figure 3-11. The foundation is influenced by the terrain encountered as well as the underlying geotechnical condition. The actual size and type of foundation to be installed will depend on the soil bearing capacity and can be excavated manually or by using machines. The foundations will be back filled, stabilized through compaction and capped with concrete.



Figure 3-11: Example of excavated pits

3.5.2.3 Erecting structures and stringing Conductors

The Right of Way corridor may be used as an area for temporary storage and handling for equipment and materials related to construction. See Figure 3-12. Steel components of structures may be delivered and placed on the ground near foundation sites. Once foundations are in place, the following work will be carried out:

- (i) Erection of the structures within the Right of Way;
- (ii) The steel components of the tower will be assembled using a crane and then lifted onto the foundations;
- (iii) Insulators and attachment hardware will be installed and stringing sheaves attached to the insulators; and
- (iv) The conductors will be strung by attaching the conductor to a steel line and pulled through each structure's stringing sheaves under tension to keep the conductors well off the ground.



Figure 3-12: Laydown Areas

3.5.3 Substation Construction

To cater for the proposed 400kV power line, Spencer substation needs to be extended/ upgraded to establish the 400/132kV transformation yard and the 1x500MVA, 400/132kV transformer. In addition, a transformer oil holding dam with a capacity of 120m³ will also be constructed. The area required for this extension is approximately ±9 hectares and the layout for the substation extension will be appended to the Final Environmental Impact Report. The proposed upgrade/ extension works will entail the following activities:

- Cut and fill grading;
- Placement and compaction of structure fill to serve as a foundation for equipment;
- Grading to maintain drainage patterns;
- Installation of equipment and structure foundations;
- Construction of bund walls, oil drainage pipes and oil holding dam;
- Construction of formal drainage and storm-water control measures;
- Installation of structures and equipment;
- Connection of the new infrastructure to the existing network; and
- Erect a fence around the perimeter of the substation.

3.6 Bulk Services and Infrastructure

3.6.1 Water

This report has not quantified an expected volume of water required for the construction and operational phases of this project. Should water from nearby surface water sources be required, then a formal application for a water use license is needed. More background information and analysis on surrounding water resources will be included in the wetland report.

3.6.2 Sewerage

Sewerage generation is anticipated during the construction phase due to the presence of the workforce contracted for the project. Consequently, the use of portable chemical toilets is suggested, which will be serviced periodically. During the operational phase, negligible amount of sewerage will be generated for which a septic tank will be provided. However, such a mechanism requires adequate maintenance to prevent leakages.

3.6.3 Storm water

Storm-water measures will be implemented to suite the terrain. The measures to be implemented will be detailed in the Environmental Impact report.

3.6.4 Solid waste

It is anticipated that solid waste will be produced mostly in the construction phase such as litter, packaging materials such as plastics, carton boxes, paper, beverages and stockpiles. This type of waste will not pose any threat to the proposed project and will not require a Waste Management License.

3.7 Operation and Maintenance of the Power line

During the operation phase, ESKOM shall perform the following activities;

- i. Vegetation maintenance within the servitude/ ROW and access roads. This will ensure that vegetation does not interfere with human safety, transmission line conductors, towers and impede access to the transmission line for maintenance crews;
- ii. Access road maintenance to ensure that the roads are in good condition for all weather access by maintenance crews; and
- iii. Transmission power lines and substation maintenance which will include routine checks and system upgrade and repairs.

3.7.1 Land Use and Power line Operation

Literature studies have shown that farming and associated infrastructure such as irrigation systems and support structures can be practiced under 400kv powerlines provided that all the safe working clearances, crop height restrictions and building restrictions are properly followed. However, there is also a need for the land-owner to have an agreement with Eskom with regards to the activities that can be carried out underneath the servitude. Various research undertaken has also concluded that the Electric Magnetic Field (EMF) associated with the power line has little or no impact on the farming activities. Reference is made to Appendix B-4 for the EMF report. The following activities are generally allowed:

- ❑ **Livestock grazing:** Bush clearing in the servitude will have little impact on the grazing potential of the land because most of the vegetation can be re-established under servitude. Overhead power lines do not affect the behavior of livestock health; therefore, they can continue to feed underneath powerline once the cleared vegetation become revegetated; and
- ❑ Overhead power lines do not affect the growth of any crops and other low-growing vegetation. Tree height should not exceed the minimum height restriction as specified in the

3.8 Decommissioning Phase

During the decommissioning phase, the removal of the power lines and substation will be the reversal of the construction phase and rehabilitation of the ROW. The process of dismantling and removal of the line includes:

- Lowering the overhead conductors and earth wires to the ground and removing them from the site and selling them as scrap;
- Removing insulators and line hardware from structures at the site and disposing them at a registered local authority waste facility;
- Dismantling the towers and cutting them into pieces small enough to be handled and transported from the site;
- Demolition of foundations and disposing the concrete at a registered landfill site; and
- Backfilling and compaction of the excavation with suitable material.

4. ALTERNATIVES

This chapter identifies and describes the alternative infrastructure options and motivation for site and site selection for the proposed project. In terms of the NEMA EIA Regulations GNR982, one of the criteria to be considered by the Competent Authority when considering an application is “*any feasible and reasonable alternatives to the activity which is the subject of the application and any feasible and reasonable modifications or changes to the activity that may minimise harm to the environment*”. Alternatives are defined in the Regulations as “*different means of meeting the general purpose and requirements of the activity*”. It is therefore necessary to provide a description of the need and desirability of the proposed activity and any identified alternatives to the proposed activity that are feasible and reasonable, including the advantages and disadvantages that the proposed activity or alternatives will have on the environment and on the community, that may be affected by the activity.

The “*feasibility*” and “*reasonability*” of an alternative will therefore be measured against the general purpose, requirements and need of the activity and how it impacts on the environment and on the community that may be affected by the activity. It is therefore vital that the identification, investigation and assessment of alternatives address the issues/impacts of a proposed development.

4.1 Location Alternatives

‘These are considered for the entire proposal or for a component of a proposal with the latter sometimes being considered under site layout alternatives. A distinction should also be drawn between alternative locations that are geographically quite separate and alternative locations that are in close proximity. Alternative locations in the same geographic area are often referred to as alternative sites.’ DEAT, 2004.

4.1.1 Route/ Corridor Selection Criteria

Prior to identifying the power line alternatives, the applicant undertook a desktop evaluation to assess and note the key challenges within the proposed area. To construct and operate a 400kV power line from Foskop MTS to Spencer MTS, Eskom identified and evaluated two corridor alternatives at a broader scale to identify the preferred corridor. Criteria were selected from the biophysical, technical and social aspects to ensure representation of the different project proponents. Though these two corridors **may** be suitable

for a transmission power line, it should be noted that they are yet to be thoroughly assessed. The identified corridors represent opportunities to rule in and out other possible transmission line corridors that require further evaluation when they are presented to the public for discussion and input. Corridors that are not identified at this phase may still be added later.

The three aspects considered by Eskom to identify their preferred corridor are discussed below:

4.1.1.1 Biophysical Criteria

- ❑ **Biodiversity:** The construction and maintenance of transmission line through intact environments may result in alteration and disruption to the habitat including impacts to fauna and avian species and an increased risk of forest fires. The avoidance of the corridor passing through sensitive environmental resource areas such as nature reserves and intact environments is desired hence this criterion was weighted of high significance;
- ❑ **Land Capability:** This was considered in the context of agricultural potential, i.e. the loss of agricultural area due to the Right of Way. This was given a moderate weighting since some agricultural activities are allowed within the ROW if the minimum vertical and horizontal distances set out by Eskom are kept.
- ❑ **River Crossings:** the spanning of power lines across rivers may result in sedimentation and water pollution hence crossing of rivers should be minimised.
- ❑ **Current Land-use:** the intensity of the current site use and the associated value of that use was considered especially in a conservation and agricultural context as the area is largely comprised of game reserves and agricultural farms. This also included an indication of the possible economic losses and the likelihood of land owner objection should the power line traverse across their properties.

4.1.1.2 Technical Criteria

- ❑ **Existing Right of Way (ROW):** The potential location of the 400kV corridor along existing ROWs where linear uses are already established such as transmission and distribution lines, roads and railroads is a primary routing consideration. The co- location of linear services within existing corridors is strongly desired;

- ❑ **Engineering:** the terrain and location of the transmission line corridor and constructability issues must be considered for new and existing ROW since both may have a significant bearing on cost and effects on environmental resources. Among the constructability factors considered is the ability to avoid or minimize the location of structures along steep slopes or embankments, in areas of rock outcroppings, or within environmentally sensitive areas such as wetlands. This aspect was given a moderate significance.
- ❑ **Length of the Corridor:** The distances of the corridors between the two MTS was also considered as longer distances imply greater capital, larger areas of surface disturbance and greater likelihood of nature reserves, roads and river crossings.
- ❑ **Future expansion of Network:** The future expansion of the transmission network was considered at a regional level. The distances between the line and the future network was considered as it would have a bearing on costs.

4.1.1.3 Social Criteria

- ❑ **Visibility:** the visibility of the power line to local receptors and tourists was considered in the context of the current visual environment and in relation to the receptors. This aspect was weighted as being of high significance as a larger percentage of the area is in pristine condition;
- ❑ **Proximity to Receptors:** The proximity of the site to the nearest receptor population defined in terms of the likely extent of impacts such as noise, visual and air quality impacts. The proximity was estimated as the approximate distance to the closest average receptor. A single structure was not considered as an average receptor.
- ❑ **Heritage:** this entails the existence of archaeological objects that may be impacted by the construction of the power lines which may result in increasing the time frame and costs of the project. At this stage, this aspect was an unlikely differential aspect since it required site assessment.

To ascertain the preferred corridors an assessment of the identified routes was done as per Table 4-1. Reference is made to Section 4.1.6.

The following two alternatives with the deviations identified are discussed in the next sub-sections:

4.1.2 Power line Corridor 1

Start: 24°01'40.05" S, 31°07'37.41" E

Mid-point: 23°51'31.28" S, 30°44'11.68" E

End: 23°29'19.37" S, 30°22'51.58" E

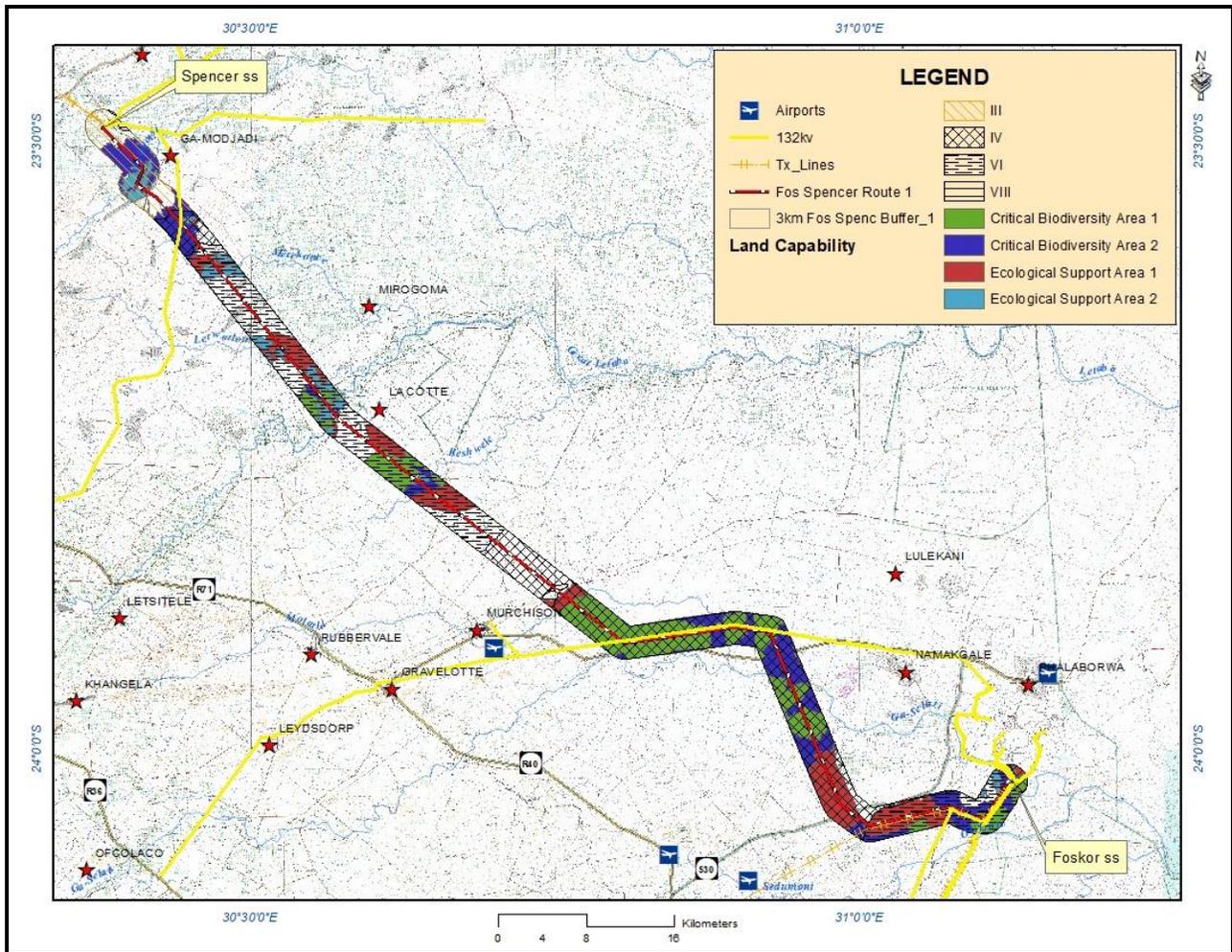


Figure 4-1: Corridor Alternative 1

The corridor will traverse across four Local Municipalities within Mopani District Municipality namely: Maruleng, Ba-Phalaborwa, Greater Tzaneen and Greater Letaba. Route alternative 1 is 112km within a 3 000m wide corridor. Reference is made to Figure 4-1 for corridor alternative 1. For ease of reference T1, T2, T3 and T4 will be used to refer to the turn points:

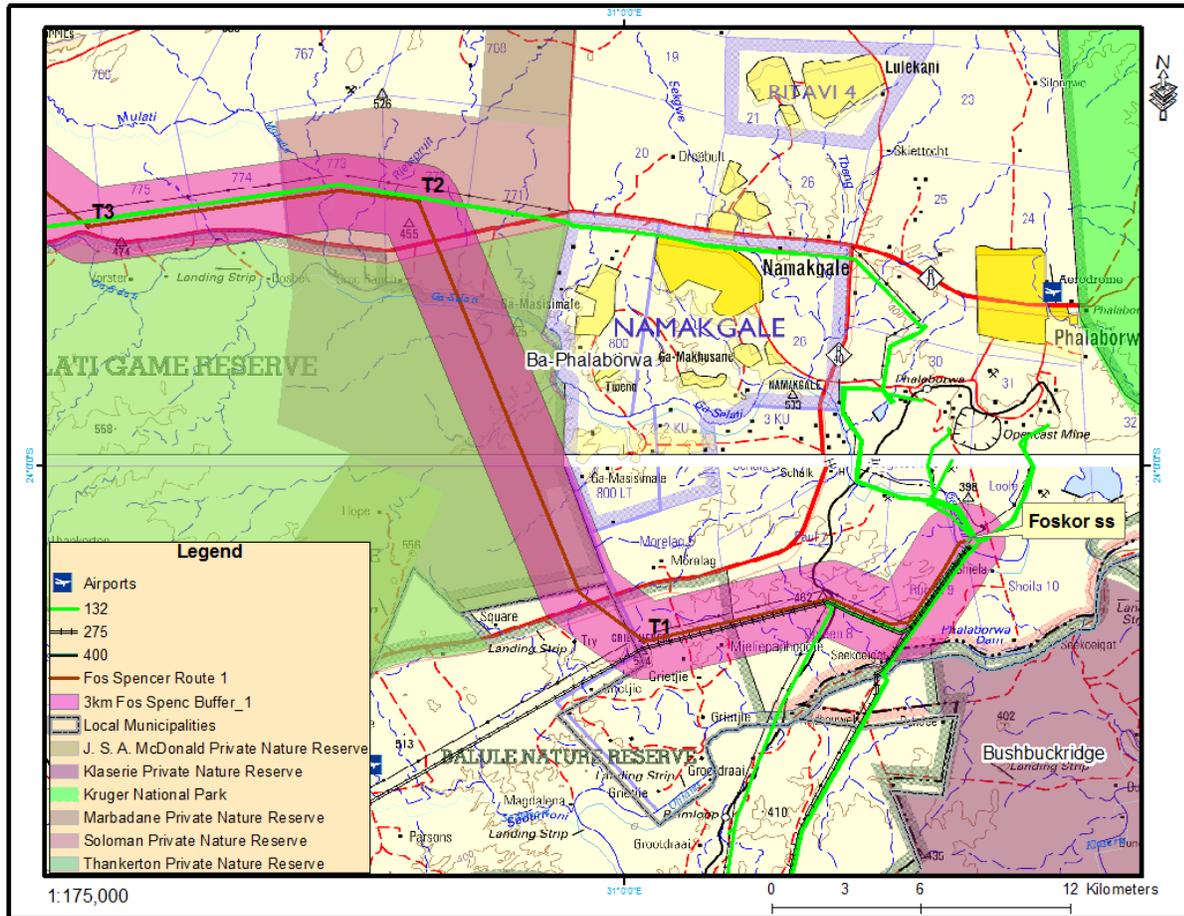


Figure 4-2: First Section of the corridor from Foskor Substation

- The corridor starts at Foskor Main Transmission Substation on farm Loole 31LU within Foskor mine running in a south westerly direction parallel to the existing 275kV power line towards T1. Reference is made to Figure 4-2 above. This area is predominantly characterized of mining activities, nature reserves and game farming. The vegetation is mainly comprised of woodland and grassland and the capability of the land is non-arable. According to the Limpopo Conservation Plan (LCP v2), the area is classified as CBA1, CBA2, ESA1 and ESA2;
- At turn point T1, the corridor will swing to the north-west crossing R40/R530, Selati Game Reserve, Tribal Lands, i.e., at the outskirts of settlements, Ga-Mashishimale and Makwareng, Ga-Selati River and R71 to turn point T2. The area is characterized of woodland and grassland and classified as a Critical Biodiversity Area with the following classifications: CBA1, CBA2 and ESA1;

- At turn point T2, the corridor will turn and traverse in a westerly direction crossing Molatle River and running parallel to the existing Gravelotte-Foskor 132kV power line for 10.5km to turn point T3. A larger section of the corridor is within a Critical Biodiversity Area (CBA1) that has several drainage lines and is comprised of woodland and grassland;

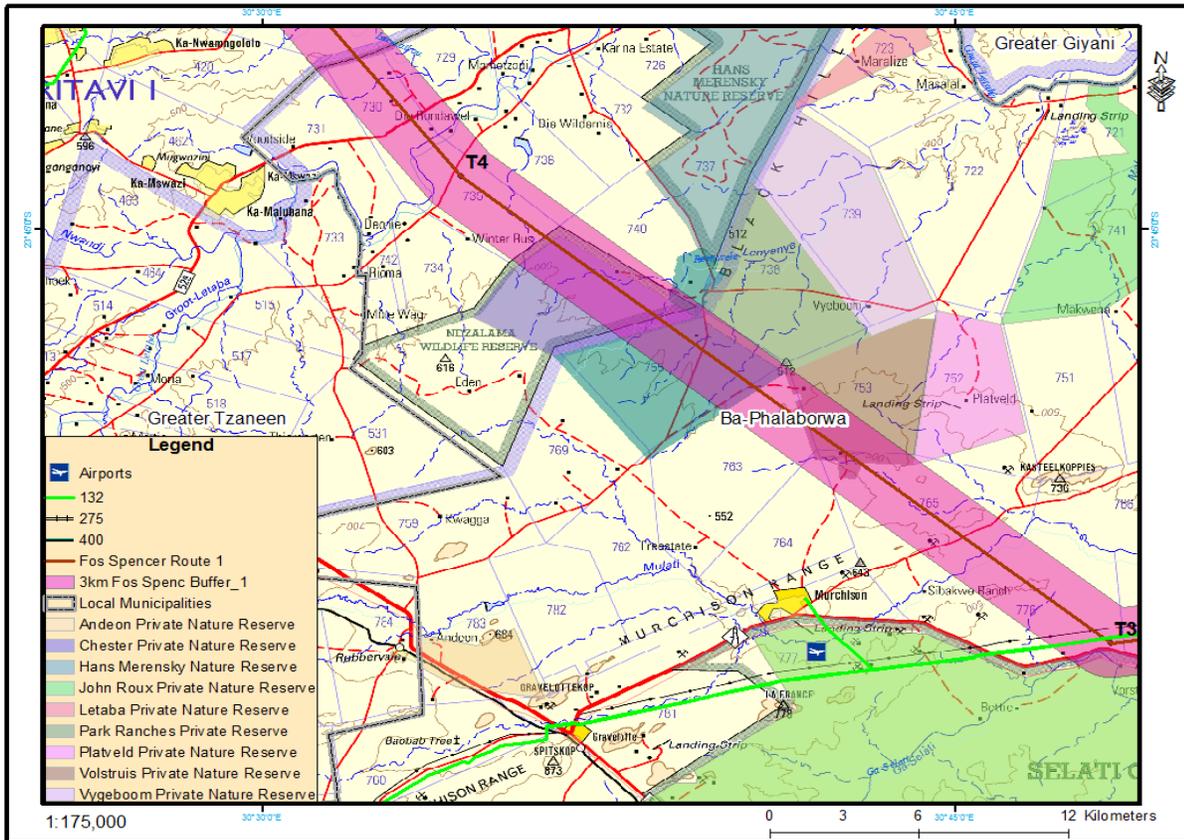


Figure 4-3: Turn Point T3 to T4

- The corridor swings to the north-west from T3 to T4 traversing across woodland, grassland, Ndzalama Wildlife Reserve, R71 road, Molatle and Reshwele Rivers. See Figure 4-3. The corridor will traverse across Portion1 of Begin765LT, Remainder, Portion 1 and 2 of Volstruis 753LT, remainder and portion 2 of Free State 763LT which is currently under the custodianship of the South African National Defense Forces (SANDF). These farms are currently being used for training purposes by SANDF; and

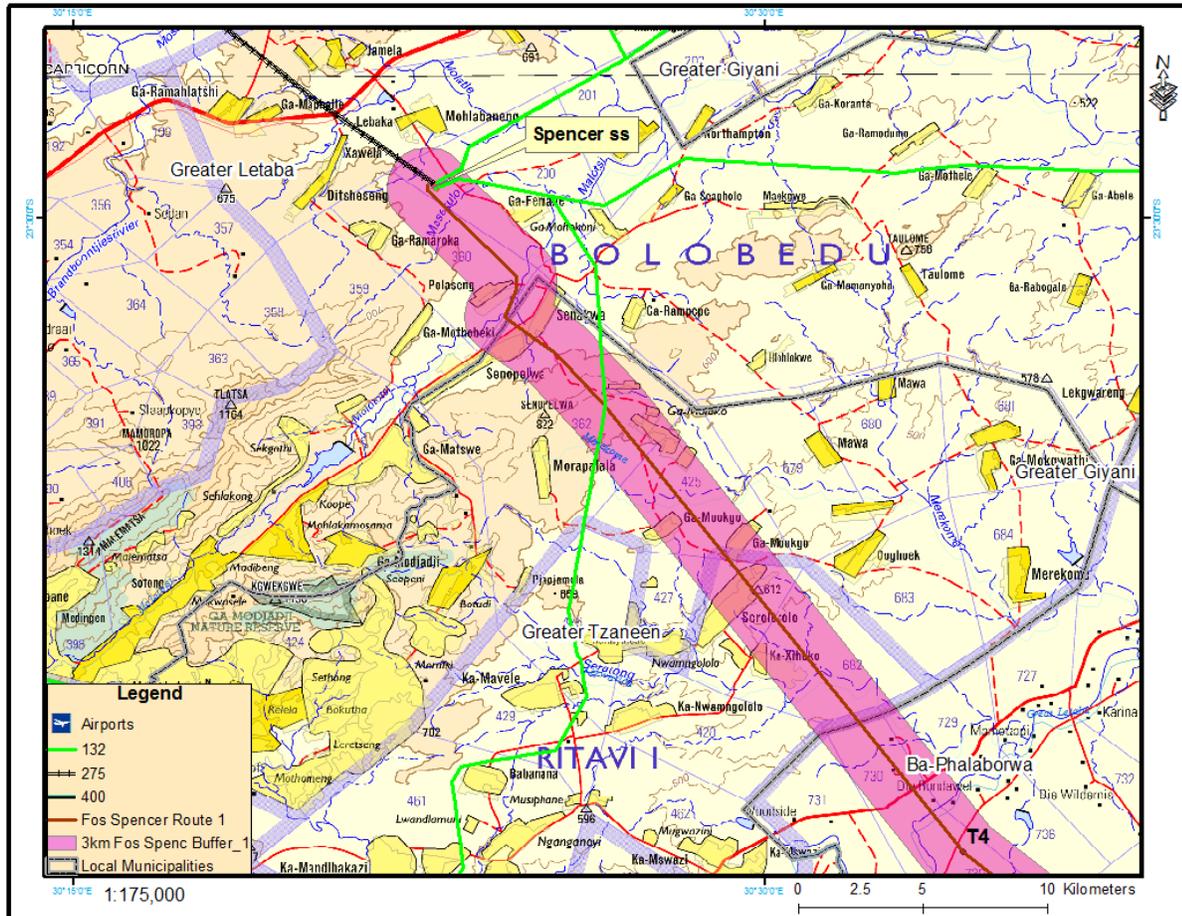


Figure 4-4: Last section of the corridor to Spencer substation

- At turn point T4, the corridor will run in a north-westerly direction towards Spencer Substation traversing across commercial agricultural holdings that are concentrated around the Greater Letaba River and settlements practicing subsistence cultivation. The corridor will traverse across two non-perennial and a perennial river: Lerwatlou, Merekome and Molototsi respectively. Sections of the corridors fall within built up areas, i.e., in Xihoko, Ga-Mawa, Senakwe, Polaseng and Ga-Moloko. The area surrounding Spencer substation is predominantly characterized of open bushland, subsistence farming and residential areas. Reference is made to Figure 4-4.

4.1.3 Power line Corridor Alternative 2

Start: 24°01'40.05" S, 31°07'37.41" E

Mid-point: 23°56'56.52" S, 30°38'31.67" E

End: 23°29'19.37" S, 30°22'51.58" E

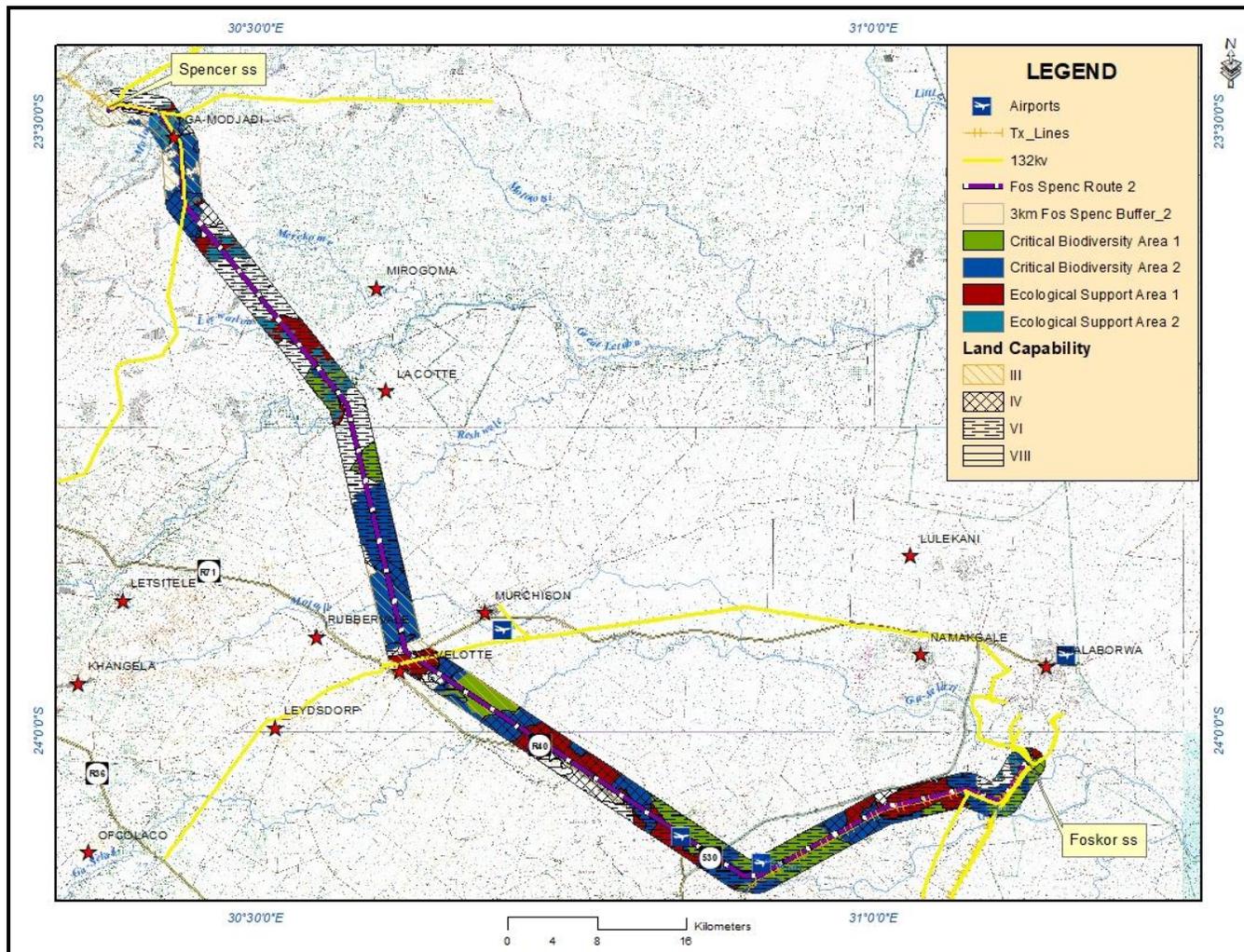


Figure 4-5: Corridor Alternative 2

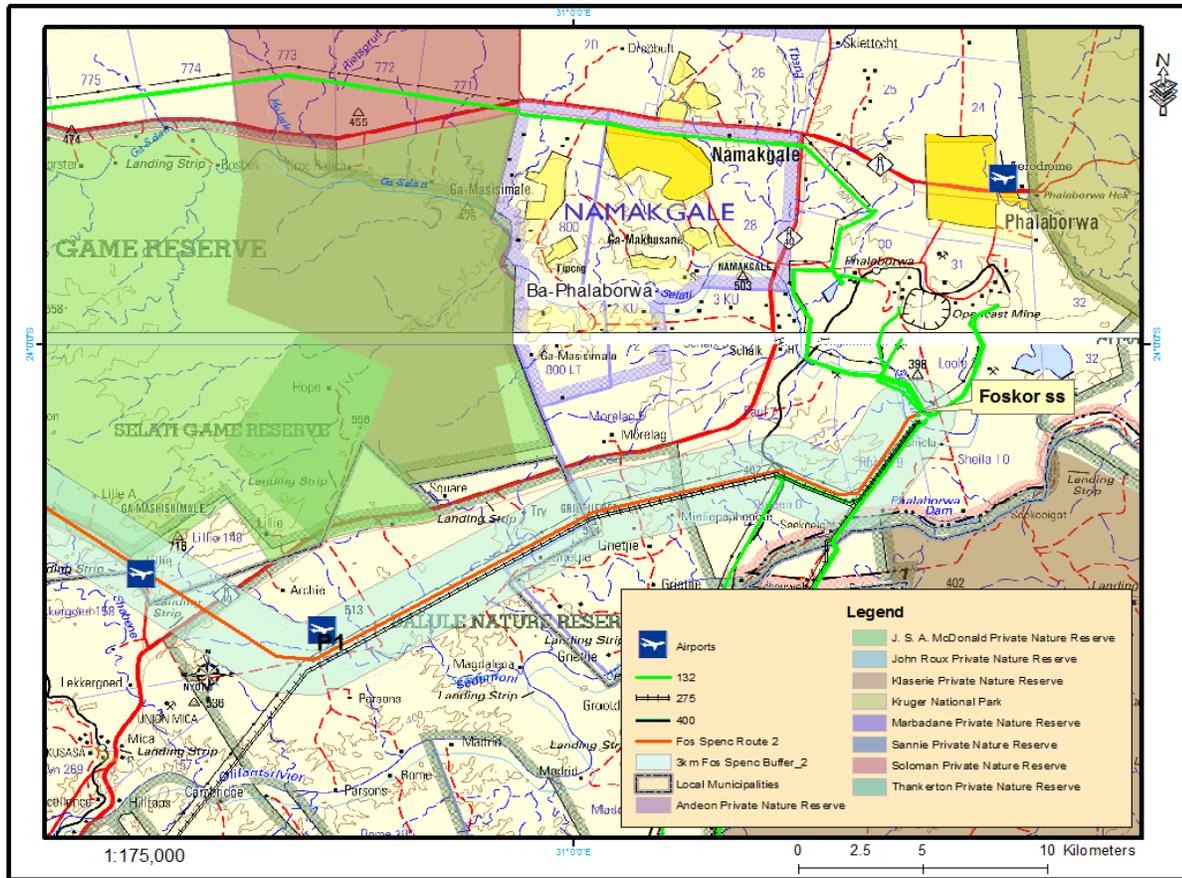


Figure 4-6: First Section of the Corridor from Foskopos substation

- This alternative was referred to as Alternative 3 during the initial phase of public participation. Due to suggestions made during the meetings, the alternative is now being referred to as alternative 2. The proposed corridor alternative traverse areas that are similar to Alternative 1 and in some sections, will follow the same route. Reference is made to Figure 4-5 to 4-7 and 4-9 for the locality of the corridor. Route alternative 2 is 121km in length within a 3000m width corridor. Where corridor alternative 1 turns at T1 to run in a northerly direction, corridor alternative 2 will continue to run parallel to the 275kV for a further 12km cutting across Balule Nature Reserve towards P2. The area traversed is largely natural with mining occurring near the substation;
- At P1, the corridor crosses R40 cutting across Archie farm 156KT and Lillie 148KT and landing strips located within the farm, traversing in the southern-south east border of Selati Game Reserve. The corridor will run parallel to R526, traversing across Ga-Selati River, irregular plains,

intact vegetation and R71 towards P2. Rocky outcrops and low hills can also be observed within the corridor;

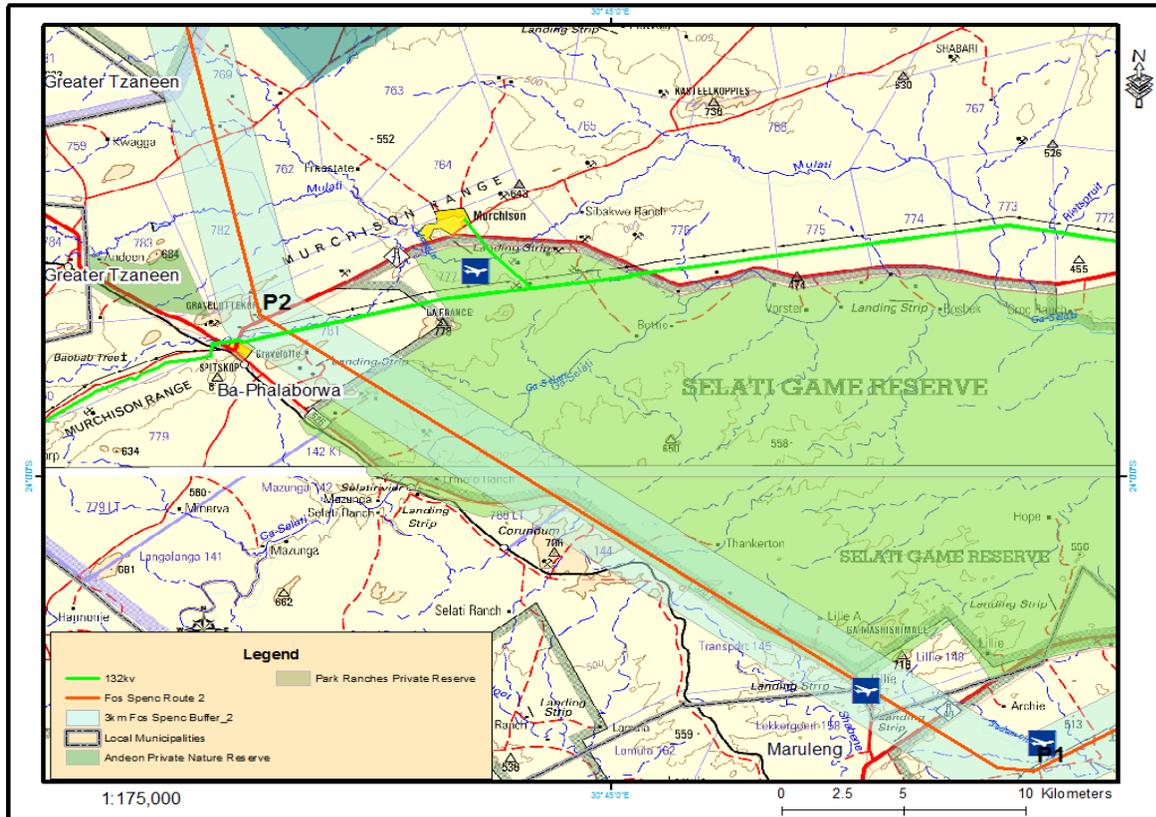


Figure 4-7: Turn points P1-P2

- At P2, the corridor turns in a northerly direction traversing at the outskirts of Gravelotte with Consolidated Murchison Mine and the airport in the north east. The corridor will traverse across Reshwele River and intact woodland towards P3 where it joins the corridor for Alternative 1 until P4 at Ga-Moloko; and
- At Ga-Moloko the corridor will swing to the north-east running parallel to an existing 132kV power line until Spencer substation. Reference is made to Figure 4-8. This section of the corridor will traverse at the outskirts and through villages, cultivated fields and cross the perennial Molototsi river running parallel to its tributary.



Figure 4-8: The corridor will run parallel the 132kV line

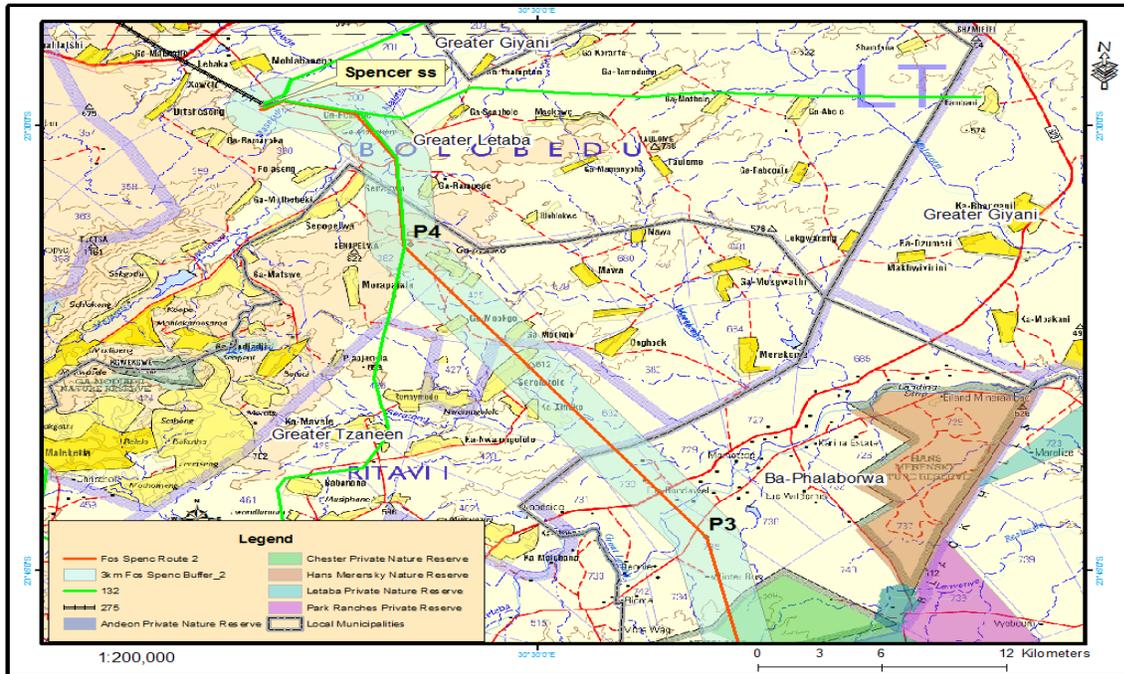


Figure 4-9: Last Section of Corridor to Spencer Substation

4.1.4 Foskor-Spencer Deviation 1a (Corridor 1 and 2)

- Start: 23°42'13.36" S, 30°33'04.21" E
- Mid-point: 23°36'38.60" S, 30°30'54.98" E
- End: 23°32'19.77" S, 30°26'22.41" E

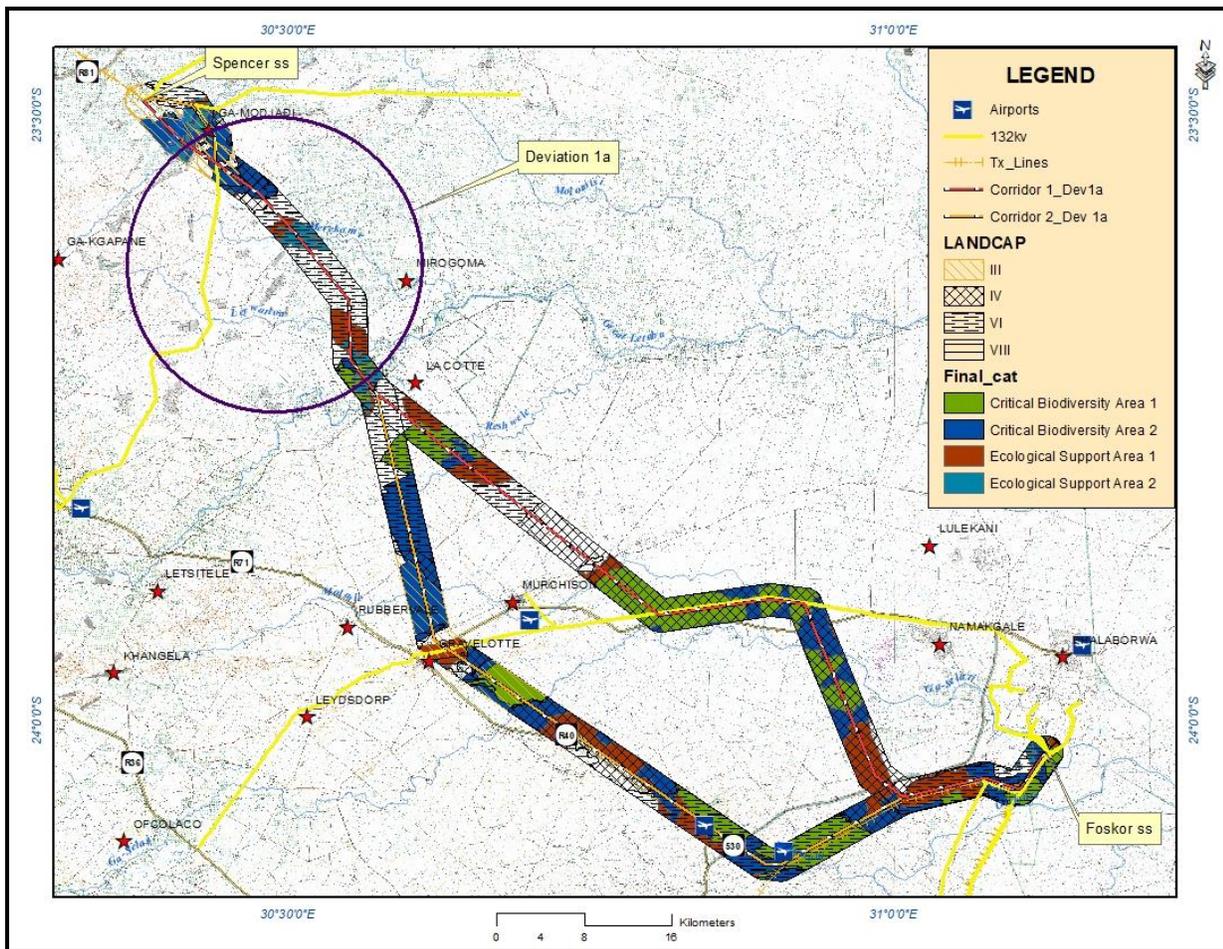


Figure 4-10: Corridor 1 and 2 with deviation 1a

The deviation was previously referred to as alternative 2 but due to suggestions given during the meetings, it is now referred to as a deviation from the two alternatives. To avoid some inaccessible areas within the built up areas, deviation 1a was proposed. Reference is made to Figure 4-10 for where deviation 1a joins either alternative 1 or 2. The deviation is 23km with a 3000m corridor starting from corridor alternative 1 and 2 at the agricultural plots north of Groot-Letaba River and running for 5.6km in a north-easterly direction.

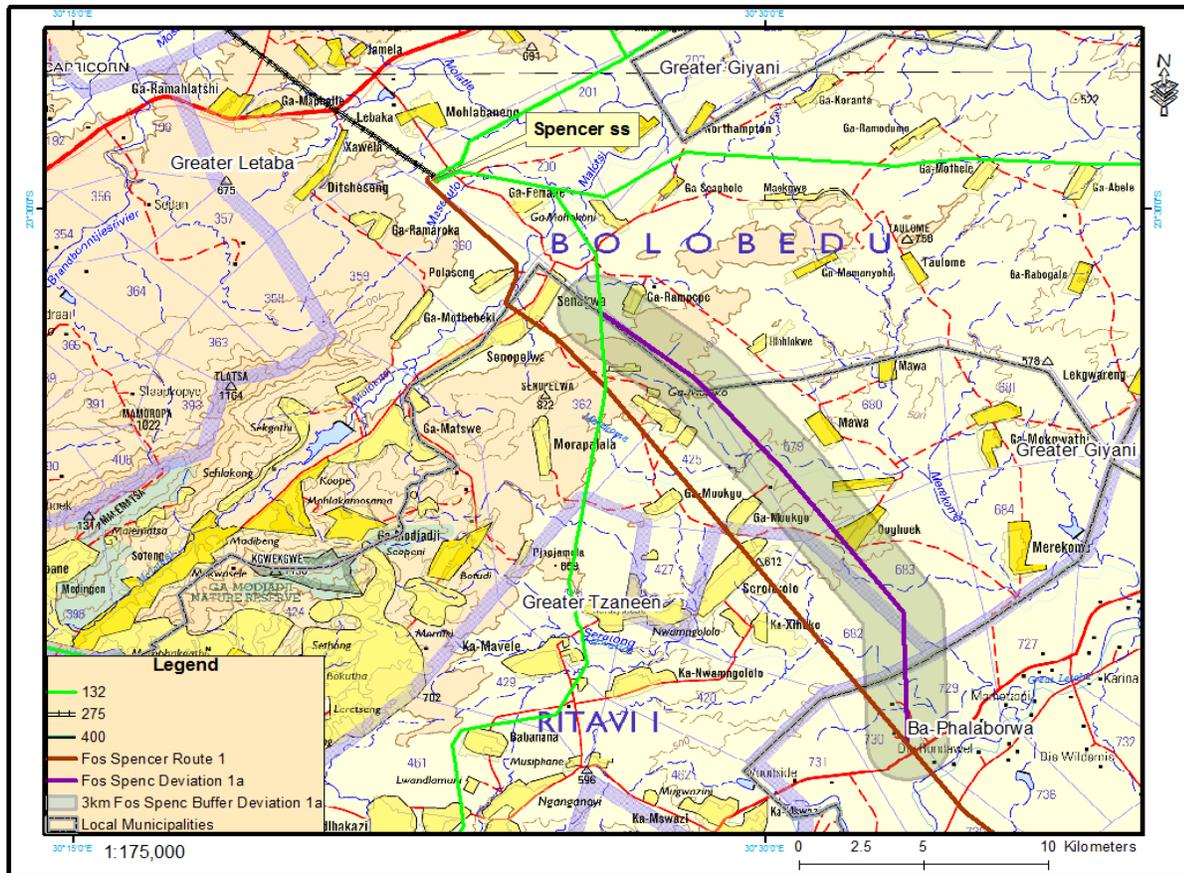


Figure 4-11: Locality of the Deviated Corridor

This part of the deviation corridor will cross the Lerwatlou River and traverse across the open woodland and bushland. The corridor will then swing to the north- west traversing through and at the outskirts of villages such as Ga-Mawa, Ooghoek, Gamela, Rampede for 17km towards corridor alternatives 1 and 2. It will also cross shrubland, cultivated fields, Merecome River and its tributaries. Reference is made to the map above (Figure 4-11) and to Figure for Corridor Alternatives 1 and 2 when the deviation corridor is used.

4.1.5 Foskor-Spencer Deviation 1b (Combination of Corridor Alternative 1 and 2)

Start: 24°01'40.05" S, 31°07'37.41" E

Mid-point: 23°56'21.25" S, 30°39'54.11" E

End: 23°29'19.37" S, 30°22'51.58" E

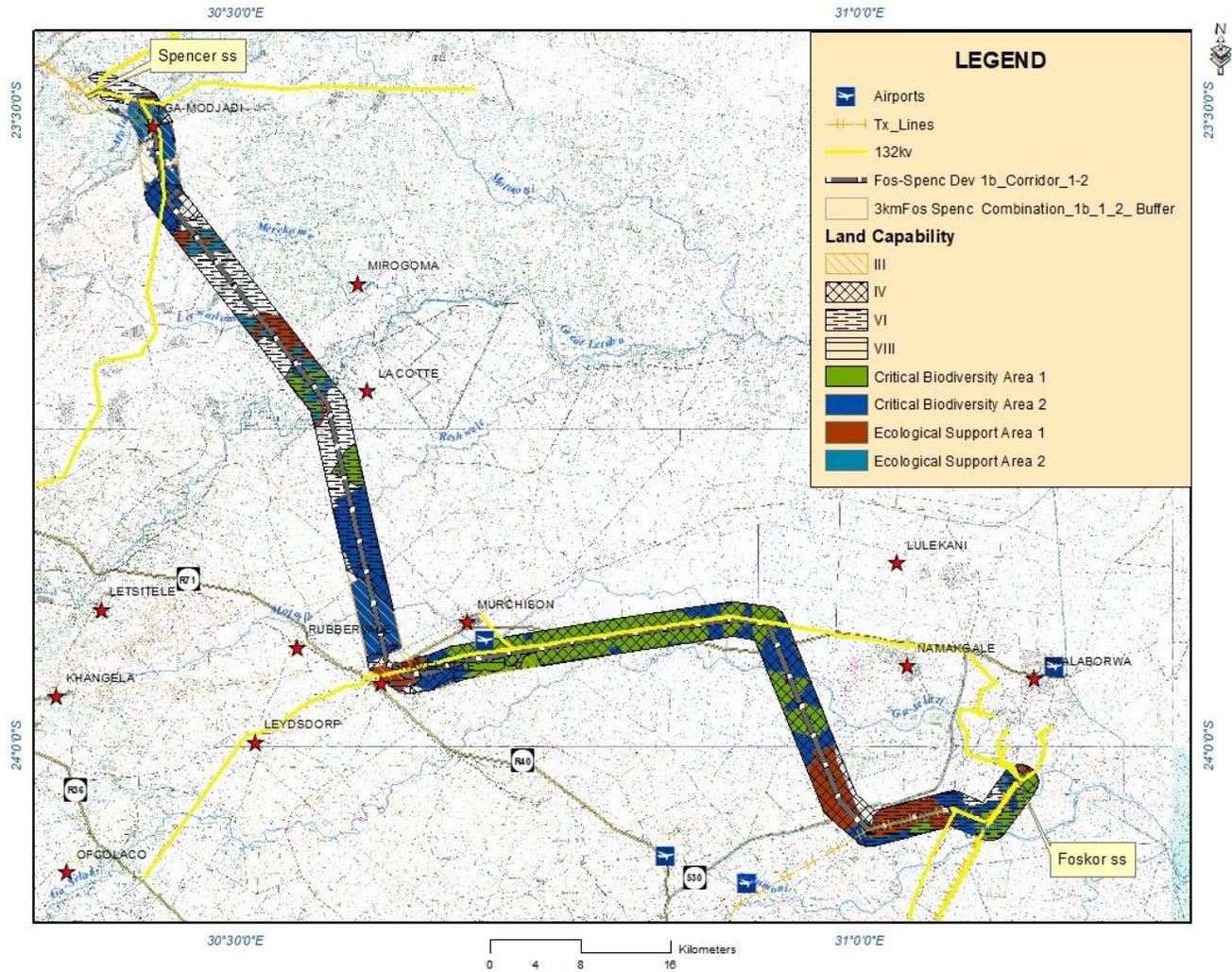


Figure 4-12: Combination of Alternative 1, 2 and Deviation 1b

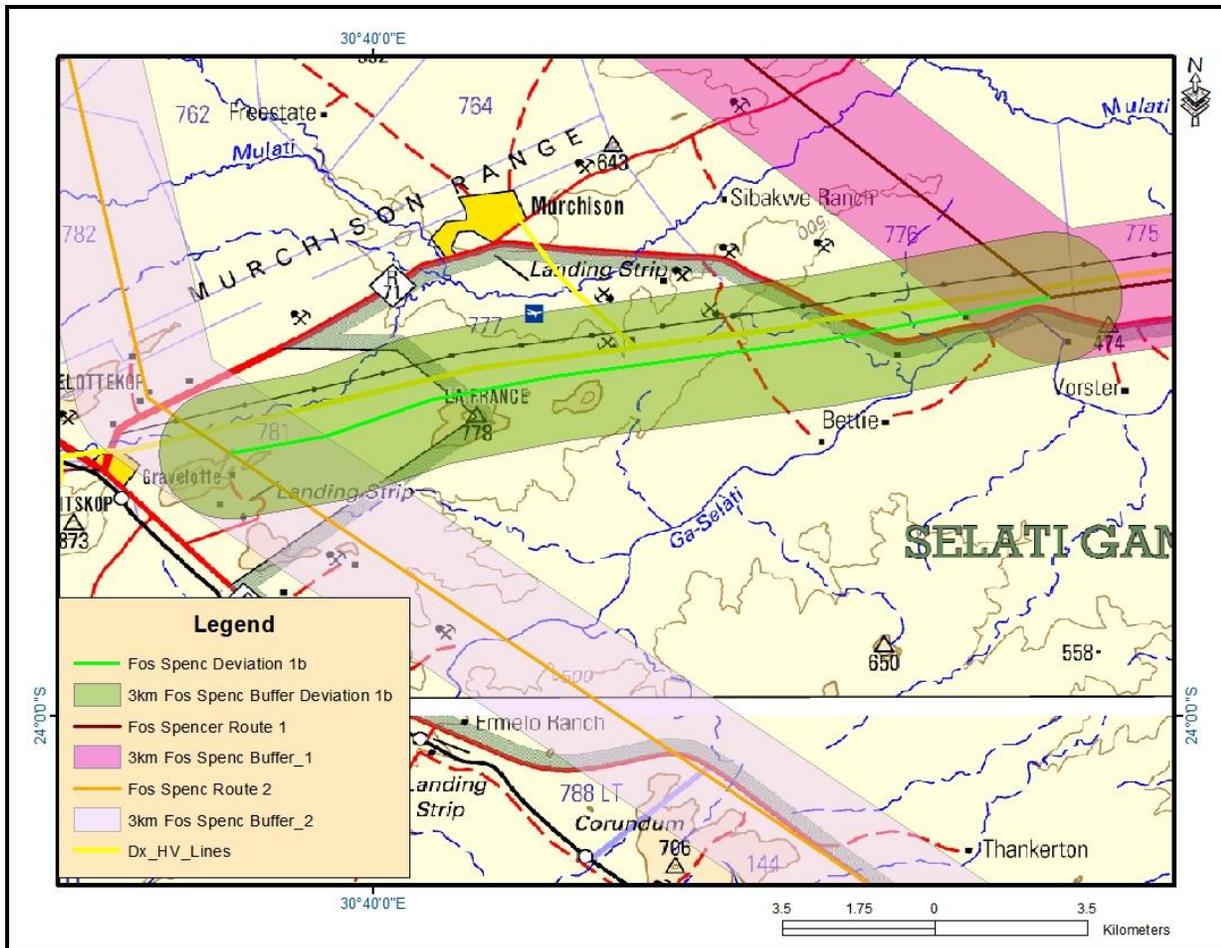


Figure 4-13: Locality of Deviation 1b

This deviation was proposed as an option during the public participation meetings to avoid the area being utilised by Department of Defence. The use of this deviation combines both Corridor Alternatives 1 and 2 and the length of the corridor is 125.53km. Reference is made to Figure 4-12 for the route.

Instead of Corridor Alternative 1 proceeding to T4 as described in the section 4.1.2, the corridor will deviate at T3 (BVB Ranch) running westwards parallel to the existing 132kV power line towards corridor alternative 2. The deviation will cross the north-western border of Selati Game Reserve in an area that is characterised of plains with open low hills and ridges whilst the area towards corridor alternative 2 is generally denuded due to its proximity to Gravelotte. At Gravelotte the corridor will follow Corridor Alternative 2 towards Reshwele River where it will join Corridor Alternative 1 and continue to follow Corridor Alternative 2.

4.1.6 Preferred Corridor Selection

To determine the preferred alternative with regards to the two alternatives and factoring in the inclusion of the deviations, the criteria discussed in Section 4.1.1.1 to 4.1.1.3 were assigned weights from 1-3 in terms of environmental importance and the anticipated impacts where 1 was assigned to criteria of low significance and 3 for a criteria with high significance. For example, due to the pristine nature of the environment near Foskor substation and the nature reserves, biodiversity was deemed as a highly significant criteria whilst river crossings are assigned a weight of 1 since the impacts expected when power lines span across rivers are low. The table below shows how the site scores and the weights were assigned for each criterion:

Table 4-1: Weighting and Site Scoring against Criteria

Site Selection Criteria	Site Scoring Against Criteria			Weight
	<i>Low (1)</i>	<i>Medium (2)</i>	<i>High (3)</i>	
Bio-physical				
Biodiversity	Impacted Area	Area of Low sensitivity	Area of conservation importance	3
Land Capability	No potential	Low potential for Agriculture	Agricultural areas/high agricultural potential	2
River Crossing	No		Yes	1
Current Land-Use	No use	Moderate use	Intensively used	2
Technical				
Existing ROW	>40% of corridor runs parallel existing corridor	<40% of corridor runs parallel existing corridor	No	1
Engineering	No constraints	With constraints that can be addressed	Not suitable	2
Future Expansion of Network	Close Proximity (Within 50km radius)		Far (>50km radius)	1
Social				
Visibility	Low visibility in project area	Low visibility in natural areas and high visibility in project area	High visibility in natural areas	3

Proximity to receptors	Within 5000m-2500m	Within 2500-500m	500m	3
Heritage	-	-	-	

To compute the total score of each corridor, the site score of each criterion was multiplied by the criterion weighting to get a weighted site score. All weighted site scores for a corridor were added to get the total score per corridor. The corridor with the lowest total site score will be the most preferred.

Based on the above table, environmental datasets were overlaid to get the areas the power line will traverse across. The length of the power line traversing across the different datasets or environment was measured and expressed as a percentage of the overall power line route. For example, the length of power line route alternative 1 traversing across nature reserves was measured and expressed as a percentage of the total length of alternative power line 1. Table 4-2 assigns site scores based on the percentages calculated and the implications of such on the identified criteria. The following datasets were used to make a comparison of the alternative corridors/routes:

- i. Limpopo Conservation Plan version 2. The source of data is Limpopo Department of Economic Development Environment and Tourism;
- ii. Land capability;
- iii. Protected and Conservation Areas. The source of data is DEA: South Africa Protected Areas Database_2017_Q2; and
- iv. Existing power lines. The source of data is Eskom.

It should be noted that deviation 1a was not included in the selection of the preferred route, as this deviation has relatively the same environment with alternative 1, 2 and a combination of 1,2 and deviation 1b and as such the implications posed by assessing the alternative are the same.

Table 4-2: Site Scores against Criteria

Site Criteria	Site Score		
	Alternative 1	Alternative 2	Deviation 1b in combination with Alternative 1 and 2
Biodiversity	High (3)	High (3)	High (3)
Comments	45% of the power line route traverses across nature reserves whilst 76% traverses across Critical Biodiversity areas (CBA1, CBA2, ESA1, ESA2)	48% of the power line route traverses across nature reserves whilst 86% traverses across Critical Biodiversity areas (CBA1, CBA2, ESA1, ESA2)	39% of the power line route traverses across nature reserves whilst 86% traverses across Critical Biodiversity areas (CBA1, CBA2, ESA1, ESA2)
Land capability	Medium (2)	Medium (2)	Medium (2)
Comments	Sections of the power line traverse across commercial and subsistence farms.	Sections of the power line traverse across commercial and subsistence farms.	Sections of the power line traverse across commercial and subsistence farms.
River Crossings	Medium (2)	Medium (2)	Medium (2)
Comments	The power line crosses several ephemeral and perennial rivers. However, linear projects are regarded to have less impacts when it comes to wetland degradation.	The power line crosses several ephemeral and perennial rivers. However, linear projects are regarded to have less impacts when it comes to wetland degradation.	The power line crosses several ephemeral and perennial rivers. However, linear projects are regarded to have less impacts when it comes to wetland degradation.
Current Land-use	Medium (2)	High (3)	Medium (2)

Comments	Based on the activities carried out within the area and surrounding environment indicate that the power line construction and operation will have an impact on tourism. This will result in objections from land owners.	Based on the activities carried out within the area and surrounding environment indicate that the power line construction and operation will have an impact on tourism. This will result in objections from land owners. In addition, there are landing strips within the corridor.	This alternative has the same implications as Alternative 1 and 2. However, it avoids the farms utilised for training activities by the Department of Defence.
Existing Right Of Way	Medium (2)	Medium (2)	Low (1)
Comments	24% of the power line route runs parallel to the existing 132kV and 275kV power lines.	32% of the power line route runs parallel to the existing 132kV and 275kV power lines.	46% of the power line route runs parallel to existing 132kV and 275kV power lines.
Engineering	Low (1)	Low (1)	Low (1)
Comments	Some sections of the route are characterised by ridges which can be addressed during the final power line design.	Some sections of the route are characterised by ridges which can be addressed during the power line design.	Some sections of the route are characterised by ridges which can be addressed which can be addressed during the power line design.
Future Expansion of Network	Low (1)	Low (1)	Low (1)
Comments	The power line route is within 50km radius from Tzaneen.	The power line route is within 44km radius from Tzaneen.	The power line route is within 50km radius from Tzaneen.
Visibility	Medium (2)	High (3)	Medium (2)

Comments	Due to the pristine nature of most of the project and surrounding area. The height of the towers will render them visible.	Due to the pristine nature of most of the project and surrounding area. The height of the towers will render them visible.	Due to the pristine nature of most of the project and surrounding area. The height of the towers will render them visible.
Proximity of receptors	High (3)	High (3)	High (3)
Comments	The power line will traverse across natural areas where tourism activities are undertaken. It will also cross within 500m of built up areas near Spencer Substation.	The power line will traverse across natural areas where tourism activities are undertaken. It will also cross within 500m of built up areas near Spencer Substation.	The power line will traverse across natural areas where tourism activities are undertaken. It will also cross within 500m of built up areas near Spencer Substation.

Table 4-3: Total Site Scorings for each alternatives

Site Selection Criteria	Corridor Alternative 1			Corridor Alternative 2		Deviation 1b (Combination of Corridor 1 and 2)	
	Weight	Site Score	Total	Site Score	Total	Site Score	Total
Biodiversity	3	3	9	3	9	3	9
Land Capability	2	2	4	2	4	2	4
River Crossing	1	2	2	2	2	2	2
Current Land-Use	2	2	4	3	6	2	4
Existing ROW	1	2	2	2	2	1	1
Engineering	2	1	2	1	2	1	2
Future Expansion of Network	1	1	1	1	1	1	1
Visibility	3	2	6	3	6	2	6
Proximity to receptors	3	3	9	3	9	3	9
Heritage	-	-				-	
Total			39		41		38

Prior to the inclusion of deviation 1b, corridor alternative 1 was the preferred alternative. Assessing deviation 1 and how it would connect to the two alternatives resulted in having a combination of alternative 1, 2 and deviation 1b as the preferred route.

4.1.7 Substation Extension

Spencer substation is located within Greater Letaba Local Municipality near Mohlabaeng at the following co-ordinates: **23°29'19.37" S, 30°22'51.58" E**. The substation can be accessed via the D3180 which branches from R81 road to Giyani. The site is relatively flat characterised of scattered vegetation in the north east, cultivated areas various villages surround the substation. Drainage lines are located 500-675m north west and south of the substation. In addition, transmission and distribution power lines come in and out of the substation. The layout of the extension which will cater for the 400/132kV transformation yard, 1x500MVA, 400/132kV transformer and the oil holding dam will be finalised during the Environmental Impact Assessment Phase. Due to the nature of the proposed activities, no alternative sites will be assessed since it is an existing substation. Reference is made to the figure below for the preliminary layout.

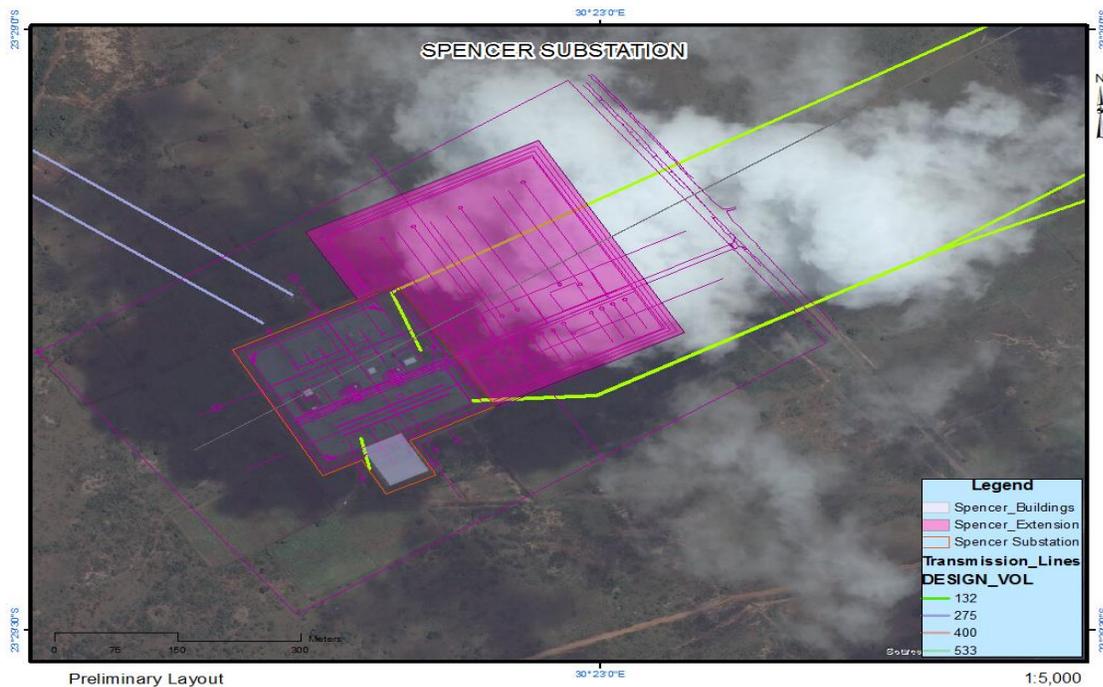


Figure 4-14: Substation Layout

4.1.8 No-Go Action Alternatives

The description of the baseline or existing environment or status quo is essential to all environmental assessments, and should be focussed on the key characteristics of, and values or importance attached to the environment. The baseline, or 'no-go' option, as well as all other relevant alternatives must be

described, assessed and evaluated at the same scale and level of detail that enables adequate comparison with the proposed project. DEAT, 2004

This option would entail not strengthening the existing network in order to test the robustness of the Network. This option will entail the following network restraints:

- Risk of load shedding from 2018 onwards; and
- Further constraint on the Spencer 275/132kV transformation.

The no-go alternative also means that the environment does not change, i.e., the land upon which the power line would traverse would primarily be used for agriculture, mining, conservation and residential unless a different development is undertaken. The impacts identified in Section 7 both positive and negative would not occur.

4.1.9 Access Routes

Access to the power line route will be from the existing village access roads and the existing tracks within the nature reserves. Where no access exists near to the power line route, access tracks will be created which will suite the nature of the terrain and the activities undertaken within the area. These tracks will not be upgraded to roads as they will be rehabilitated after construction.

4.2 Activity Alternatives

According to DEAT, 2004, consideration of activity alternatives entails the change in nature of the proposed activity to meet the same need. No go alternative can also be assessed under these alternatives. These are sometimes referred to as project alternatives, although the term activity can be used in a broad sense to embrace policies, plans, and programmes as well projects. Consideration of such alternatives requires a change in the nature of the proposed activity. (DEAT: 2004d)

Eskom ascertained that to strengthen the Limpopo East Corridor, power had to be transmitted from Foskor MTS to the existing Spencer MTS. Power can be transmitted by either overhead power lines or underground power lines. The advantages and disadvantages for installing either the underground or the overhead power lines are discussed below and these are mainly related to magnetic fields, engineering and costs.

I. Magnetic field levels

- ❑ Underground cables produce no external electric field due to the shielding effect of the ground / covering above and to the sides of the cable;
- ❑ Due to the smaller distance to the buried cable they can have a much higher maximum magnetic field levels directly above the cable compared to overhead power lines;
- ❑ The magnetic field of the cable is also more localized compared to that of an overhead power line; and
- ❑ Where cables are buried in a tunnel, the magnetic field at the surface is much reduced and may be lower than an equivalent overhead line and often lower than background fields from other sources.

II. Engineering

- ❑ 400 kV cables present inherently huge capacitances. This behavior cause voltage deviations which limits manageable application to relatively short distances. The integration of these characteristics in the existing electricity network may lead to transient over-voltages and resonance effects, jeopardising system reliability;
- ❑ Fault rate is lower for underground cables than overhead power lines but cable fault location is more challenging;
- ❑ Repair time for underground cables is more than 20 times longer compared to overhead lines. This causes longer outage periods; and
- ❑ Decommissioning of underground cables systems is more challenging and expensive.

III. Costing

- ❑ 400 kV AC underground cables are between 12 and 17 times more costly solution than the overhead power line

Based on these aspects, underground cables were not considered as a viable option for strengthening the network.

4.3 Scheduling Alternatives

'These are sometimes known as sequencing or phasing alternatives. In this case, an activity may comprise a number of components, which can be scheduled in a different order or at different times and as such produce different impacts.' DEAT, 2004

Scheduling alternatives will be discussed in the Environmental Impact Report and the Environmental Management Programme, when the extent and severity of the expected impacts are addressed.

5. THE RECEIVING ENVIRONMENT

5.1 Climate

The project area falls within the summer rainfall area, receiving most of its rainfall in the summer months. Average minimum temperatures range from approximately 7.9-15.3°C in summer to 5.5-10.4°C in winter. Reference is made to Table 5-1 and 5-2 for the minimum temperatures and average annual rainfall. Table 5-1 shows that the average minimum temperature between the years are similar whilst average yearly rainfall range from 291 to 575mm from 2014 to 2016 with a 49% decrease recorded in 2015. Relative humidity is lowest during winter and spring and highest during summer and autumn.

Table 5-1: Average Monthly minimum temperature (°C)

Months	Average Monthly Temperature (°C)	
	2015	2016
January	14.8	14.3
February	15.1	14.0
March	15.3	12.3
April	11.4	11.5
May	7.8	10.4
June	7.8	4.7
July	5.5	6.2
August	5.9	6.0
September	10.6	7.8
October	7.9	12.1
November	14.2	10.8
December	14.8	15.7

Source: rp5.co.za (Hoedspruit Airport Station)

Table 5-2: Average Annual Rainfall, 2014-2016

Year	Average annual rainfall (mm)
2016	401
2015	291
2014	575

Source: *rp5.co.za (Hoedspruit Airport station)*

The predominant wind direction recorded at the airport is from the East North-East (ENE). Wind speeds are generally slow to moderate with wind speeds exceeding 5m/s recorded infrequently.

5.2 Soils

Areas are classified into land types based on their slope, soil type and depth and underlying geology. The project area is characterized with slopes ranging from 0-9% and there are red yellow apedal and glen rosa and/ mispah soils dominated by swelling clays. The clay content in this area is between 15% and 35%. An investigation will be carried out during the Environmental impact to assess the agricultural potential of the area. The report will be attached to the EIR.

5.3 Surface Water Resources

The proposed project area is located in the Olifants Water Management Area (WMA 2) which includes the Olifants, Letaba and Shingwedzi systems. The spatial extent of the area includes tertiary drainage regions B72 and B81. In addition to the numerous seasonal tributaries and wetlands traversed across by the power lines, three prominent rivers will also be traversed, i.e., Olifants, Groot Letaba and Ga-Selati Rivers. Table 5-3 below shows the rivers crossed by the proposed power line corridors.

Table 5-3: Prominent Rivers within the Project Area

Name	Class
Olifants River	Perennial
Ga-Selati River	Perennial
Great Letaba/ Groot Letaba	Perennial
Molototsi	Perennial
Sedumoni	Non-Perennial
Molatle	Non-Perennial

Name	Class
Reshwele	Non-Perennial
Lerwatlou	Non-Perennial
Merekome	Non-Perennial



Figure 5-1: Merekome River



Figure 5-2: Dam near Xihoko

The Letaba River catchment is drained by the Groot Letaba River and its major tributaries are the Klein-Letaba, Middle Letaba, Letsitele and Molototsi River whilst the Olifants River catchment is a sub

catchment of the Limpopo Basin and is the largest tributary of the Limpopo River. According to the Department of Water Affairs (2013), Olifants WMA is a highly utilised and regulated catchment and like many other WMAs in South Africa, its water resources are becoming more stressed due to an accelerated rate of development and the scarcity of water resources. The map below shows the Olifants WMA as well as the area affected by the proposed development.

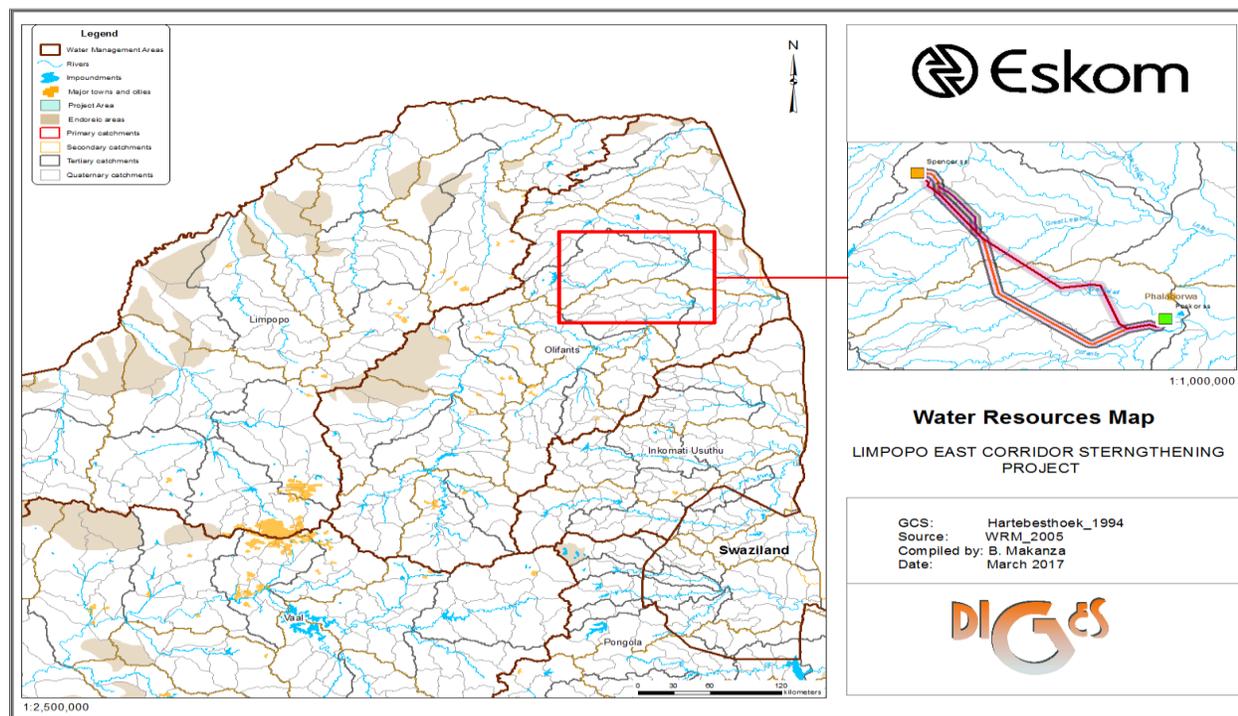


Figure 5-3: Olifants Water Management Area

A Wetland Report will be attached to the Environmental Impact Report

5.4 Ground water

Groundwater forms part of the four sources of water available within the Local Municipalities. Some villages and mining industries make use of ground water as their water source. The project area is characterized of a minor aquifer with a depth of approximately 20-30m. The groundwater zone is low to moderate yielding formation except where fractured. The water bearing fractures are principally restricted to a shallow zone below groundwater level.

5.5 Geological conditions

5.5.1 Lithostratigraphy

The Goudplaats Gneiss and Makhutswi Gneiss underlie most of the project area, with a smaller contribution from the ultramafic metavolcanics (rocks rich in chlorite, amphibole, talc and serpentine) and meta-sediments of the Giyani Greenstone Belt. Soils are red-yellow apedal, freely drained, but also shallow. Gravelotte and surrounding areas is underlain by varied geology which is largely composed of schist and amphibolite of the Gravelotte and Giyani Groups, with a few quartzitic and granitic hills. Miscellaneous, often shallow, soils with Glenrosa and Mispah forms common. Land types are mainly Ib, Fa, Ae and Fb.

5.6 Topography

Due to the length of the proposed power line corridors, the terrain the alternative power line corridors traverse across differ and they are characterised by:

- i. Irregular plains with low ridges: this terrain was observed in areas surrounding Foskor and Selati Game Reserve;
- ii. Plains with open low hills: this terrain was observed in areas surrounding Spencer substation;
- iii. Open low mountains;
- iv. High hills; in areas surrounding Murchison and Gravelotte near Alternative 2;
- v. Level plains with some relief in in areas surrounding Murchison and Gravelotte near Alternative 2; and
- vi. Plains with open high hills in areas surrounding Spencer Substation

Surrounding elevations range from approximately 200-1000 metres above mean sea level with the proposed sites situated at approximately 330- 620 metres above sea level.

5.7 Flora & Fauna

5.7.1 Flora

The threat of an ecosystem status defines the degree to which an ecosystem is still intact or has lost some of its vital aspects of its structure, function or composition. The proposed power line traverses across five vegetation types of the savanna type, two of which have been listed as threatened in terms of the Environmental Management Act (NEM:BA). A detailed Biodiversity Report will be attached to the Environmental Impact Report.

The vegetation within the project area is discussed below. Reference is also made to the Vegetation Map attached overleaf:

A. Tsende Mopaneveld (SVmp5)

This vegetation type is distributed around the Hans Merensky Nature Reserve in the west to the vicinity of Letaba Rest Camp in the east. The vegetation is classified as least threatened characterized of a medium to high shrub dominated savanna with scattered trees and a dense field layer. Tree and shrub species include *Acacia nigrescens* and *Sclerocarya birrea* subsp. *caffra*; *Colophospermum mopane*, *Combretum apiculatum*, *Combretum hereroense*, *Dichrostachys cinerea*, *Euclea divinorum* and *Grewia bicolor* (tall shrubs), amongst others. The field layer comprises *Clerodendrum ternatum*, *Indigofera schimperii*, *Bothriochloa radicans*, *Digitaria eriantha* subsp. *pentzii*, *Heteropogon contortus* and *Panicum maximum* (grasses). The vegetation type is endemic and well protected.

B. Lowveld Rugged Mopaneveld (SVmp6)

This vegetation type is distributed in the Limpopo and Mpumalanga Provinces. In the project area, it is distributed around the Foskop substation, parts of Balule Private Nature and Selati Game Reserve. The vegetation is usually characterized of dense shrubs with occasional trees and a sparse ground layer. Woody plants can become particularly dense where fire is excluded by very rocky terrain, such as in the vicinity of the Olifants River. Trees and shrubs found in this vegetation type include: *Acacia nigrescens*, *Sclerocarya birrea* subsp. *Caffra*, *Colophospermum mopane*, *Combretum apiculatum*, *Terminalia prunioides*, *Acacia exuvialis*, *A. nilotica* and *Boscia albitrunca*. It is classified as least threatened with a target conservation status of 19%. 34% is statutorily conserved in the Kruger National Park whilst an additional 5% conserved in private reserves such as Klaserie, Letaba Ranch and Selati Game Reserve. Approximately 20% is already transformed mainly by cultivation and some urban and built-up areas.

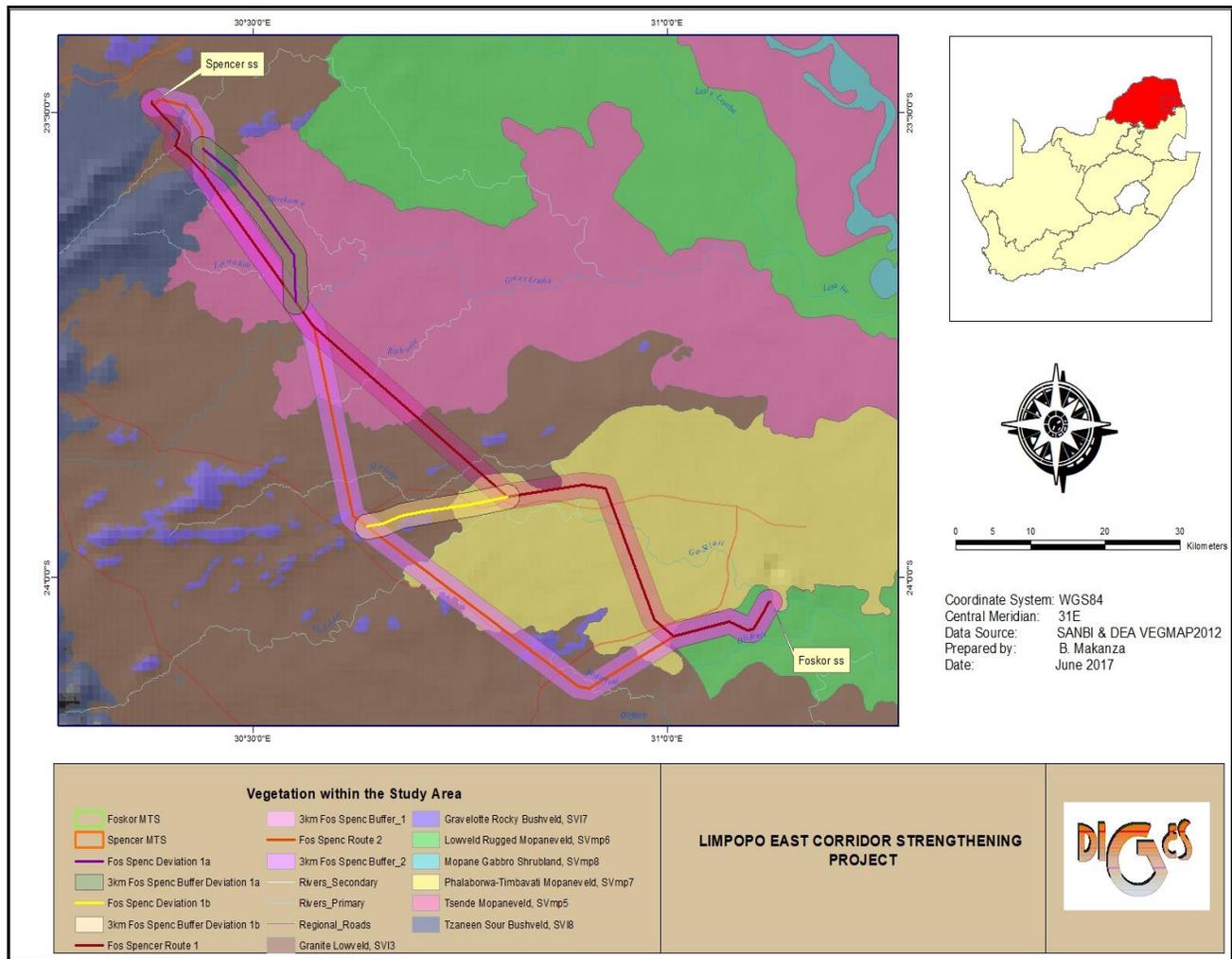


Figure 5-4: Vegetation types within the project area

C. Phalaborwa-Timbavati Mopaneveld (SVmp7)

This vegetation is distributed in Limpopo and Mpumalanga Provinces and occurs south of the Olifants River between Amalgated Private Nature Reserves and Kruger National Park at an altitude between 300-600m. The vegetation is characterized of open tree savanna on undulating plains with the sandy uplands dominated by *Combretum apiculatum*, *Terminalia sericea* and *Colophospermum mopane* trees, with *T. sericea*. This type is classified as least threatened with a target for conservation set at 19%. Vegetation type is largely protected in Kruger National Park and the Private Nature Reserves. Approximately 5% has

been transformed, mainly by development of human settlements as well as by mining. Reference is made to Figure 5-5 below for the vegetation near Selati Game Reserve.



Figure 5-5: Vegetation in some areas near Selati Game Reserve

D. Granite Lowveld (SVI3)

The vegetation type is distributed in Limpopo and Mpumalanga Provinces, Swaziland and marginally also KwaZulu-Natal. In the project area, it can be found in areas surrounding Murchison and Spencer Substation. Vegetation is characterized of dense thicket to open savanna with *Acacia nigrescens*, *Dichrostachys cinerea*, *Grewia bicolor* in the woody layer. The dense herbaceous layer contains the dominant *Digitaria eriantha*, *Panicum maximum* and *Aristida congesta*. The vegetation type is classified as vulnerable with a target for conservation set at 19%. 17% is statutorily conserved in the Kruger National Park. Approximately the same amount conserved in private reserves mainly the Selati, Klaserie, Timbavati, Mala Mala, Sabi Sand and Manyeleti Reserves. More than 20% is already transformed, mainly by cultivation and by settlement development.

E. Gravelotte Rocky Bushveld (SVI7)

The vegetation is found in Limpopo Province around the Murchison Range in the Gravelotte area including surrounding mountains and hills including Ga-Mashishimale. It is characterized of open deciduous to semideciduous woodland on rocky slopes and inselbergs, contrasting strongly with the

surrounding plains. *Encephlartos dyerianus* is endemic to this area. The vegetation type is least threatened with a target for conservation at 19%. 7% is conserved in a small proportion of the area in the northern part of the Selati Game Reserve. Approximately 15% is transformed due to cultivation and some development of settlements.



Figure 5-6:Vegetated areas near Spencer Substation

F. Tzaneen Sour Bushveld (SVI8)

The vegetation type is found near the Spencer substation and is characterized of deciduous, tall open bushveld with a well-developed, tall grass layer, occurring on low to high mountains with undulating plains mainly at the base of and on the lower to middle slopes of the northeastern escarpment. Scattered alien plants associated with this type include *Solanum mauritianum*, *Melia azedarach* and *Caesalpinia decapetala*. The conservation status is endangered with a target for conservation set at 19%. The vegetation on site has been transformed mainly by settlements and cultivation.

5.7.2 Fauna

Various nature reserves are scattered across the project area and these are characterized of natural and near natural habitats for fauna species. More than 55 mammal species have been recorded including lion, rhino, elephant and sable. The mammal species of conservation concern will be listed in the Biodiversity Report to be attached to the Environmental Impact Report.

5.7.3 *Avi-fauna*

The proposed project area is characterised by natural and near natural environment consisting of open woodland, shrub land and grassland habitat potential for hosting a variety of avi-faunal species. The presence of rivers, drainage lines and dams also offers habitat for breeding and foraging wetland associated species. A Avi-fauna Impact assessment will be carried out and the report will be attached to the Environmental Impact Report.

5.8 *Critical Biodiversity Areas*

The current Systematic Biodiversity Plan for the province is the Limpopo Conservation Plan (version 2) whose purpose is to inform land-use planning and development on a provincial scale and to aid in natural resource management. One of the outputs is a map of Critical Biodiversity Areas (CBA's) and Ecological Support Areas (ESA's) which are classified into different categories based on biodiversity characteristics, spatial configuration and requirement for meeting targets for biodiversity pattern and ecological processes. Table 5-4 describes the different classes and their coverages thereof within the District Municipality. Figure 5-7 shows the different classes traversed by the proposed corridors:

Table 5-4: CBA Categories

CBA MAP CATEGORY	DESCRIPTION	% COVERAGE
Protected Areas	Declared and formally protected areas under the Protected Areas Act, such as National Parks, legally declared Nature Reserves, World Heritage Sites and Protected Environments	30.8
Critical Biodiversity Area (CBA1)	are sites that are required to meet each ecosystem's biodiversity targets	18.7
Critical Biodiversity Area (CBA2)	The selected sites are the ones that best achieve targets of the systematic biodiversity plan though their areas that might achieve these targets.	13.6
Ecological Support Area (ESA1)	Areas that are important for maintaining the ecological processes on which CBAs depend. These are largely natural areas.	9.50
Ecological Support Area (ESA2)	These areas are no longer intact but potentially retain significant importance from a process perspective.	8.40
Other Natural Areas	areas that still contain natural habitat but that are not required to meet biodiversity targets.	11.9
No Natural Areas	These are areas without intact habitat remaining.	7.3

The table above shows that protected areas and CBA1 areas constitute a larger percentage of the area in the District Municipality. The Nature Reserves traversed by the power line corridors are classified as CBA1 areas whilst the areas near the Spencer substation are classified as Other Natural Areas and No Natural Areas. This is due to the human activities such as settlements and substance farming.

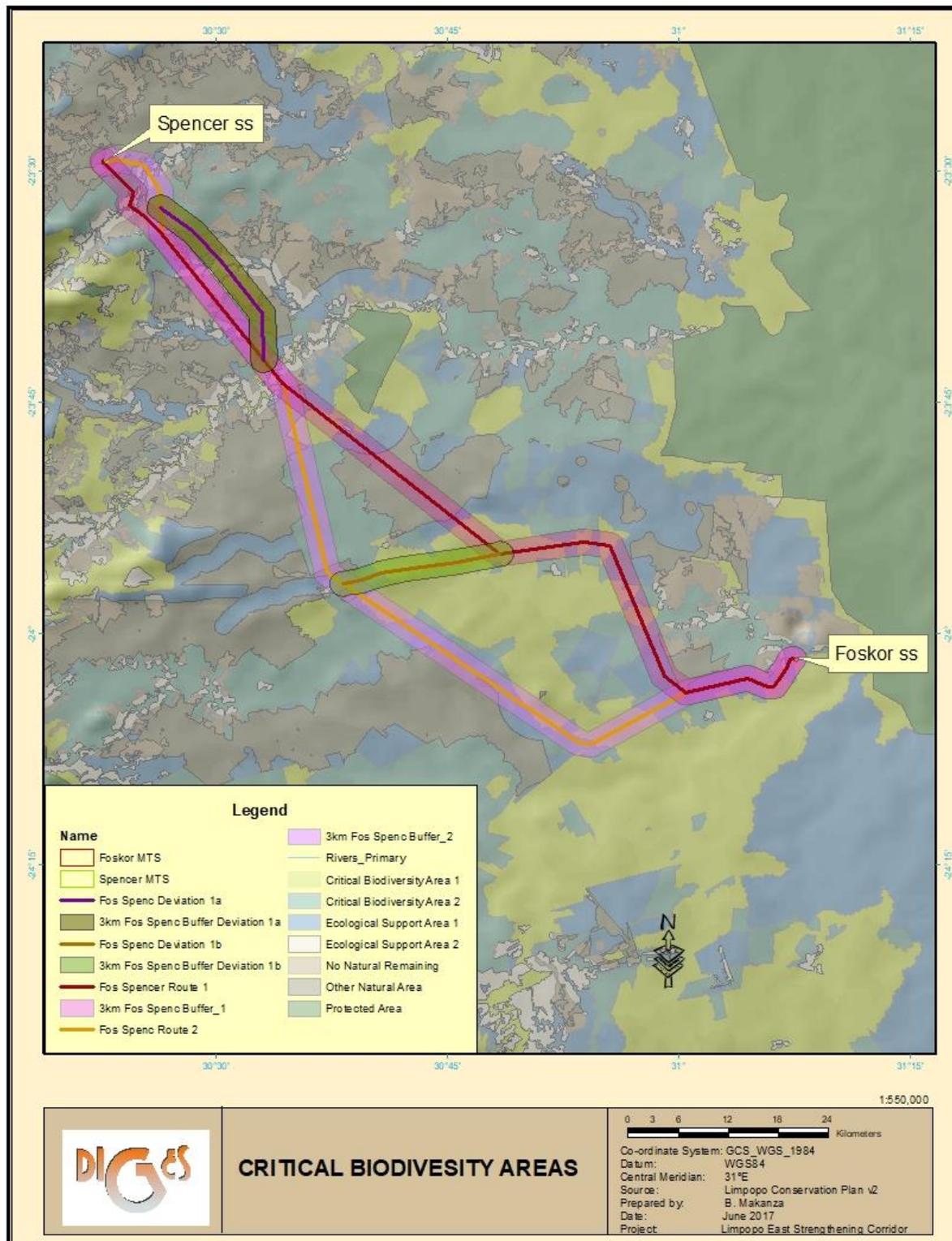


Figure 5-7: CBA Areas within Project Area

5.8.1 Protected and Nature Reserves

According to the Draft Mopani Bioregional Plan, protected areas including a portion of the Kruger National Park (KNP) cover 31.7% of Mopani District and private reserves cover an additional 10.2%. The Associated Private Nature Reserves (APNR) represents the bulk of the Private Nature Reserves (PNR) that are within the project area. The APNR is comprised of:

- a) Timbavati Private Nature Reserve;
- b) Umbabat Private Nature Reserve;
- c) Klaserie Private Nature Reserve; and
- d) Balule Private Nature Reserve

These areas are not formally protected by law but are considered to be conservation areas which also represent part of the Kruger to Canyons Biosphere Region. The proposed project area traverses across the Balule Private Nature Reserve and other nature reserves. The table below and the Figure 5-8 lists and show the Nature Reserves within and in close proximity to the corridors.

Table 5-5: Protected and Conservation Areas within and near the Project Area

Name	Management Authority	Distance from Corridors
Protected Areas		
Kruger National Park	SANParks	- 7.5km east of corridors
Letaba Ranch Nature Reserve	LEDET	- 9km north east of Alternative 1; - 14km north east of Alternative 2.
Hans Merensky Nature Reserve	LEDET	- 2km north east of Alternative 1; - 8km north east of Alternative 2.
Conservation Areas		
Amalgated Private Nature Reserves	Private	- Corridor will traverse across some portions of Grietjie.
Selati Game Ranch	Private	- Corridors will traverse across the nature reserves.
Solomon Private Nature Reserve	Private	- Alternative 1 traverses across it; - 9km North East of Alternative 2
J.S.A. Macdonald Private Nature Reserve	Private	- < 5km from both corridors
Marbadane Nature Reserve	Private	- 2.8km North East of Alternative 1; - 23.6km North East of Alternative 2.
Thankerton Private Nature Reserve	Private	- 10km South West of Alternative 1; - Alternative 2 crosses the reserve.

Name	Management Authority	Distance from Corridors
Mazunga Private Nature Reserve	Private	<ul style="list-style-type: none"> - 15.6km South West of Alternative 1; - < 2km from Alternative 2.
Andeon Private Nature Reserve	Private	<ul style="list-style-type: none"> - 13km South West of Alternative 1; - < 1km from Alternative 2
Sannie Private Nature Reserve	Private	-
Volstruis Nature Reserve	Private	<ul style="list-style-type: none"> - Alternative 1 traverses across it; - 10km North East of Alternative 2
Parks Ranches Nature Reserve	Private	- Alternative 1 crosses at the border
John Roux Nature Reserve	Private	- 6.5km North East of Alternative 1
Chester Nature Reserve	Private	- Both corridors traverse across the reserve.
Ndzalama Private Nature Reserve	Private	<ul style="list-style-type: none"> - Alternative 1 traverses across the reserve; - <500m North East of reserve.
Vyeboom Private Nature Reserve	Private	<ul style="list-style-type: none"> - 4.5km North East of Alternative 1; - 12km North East of Alternative 2.
Platveld Private Nature Reserve	Private	<ul style="list-style-type: none"> - <500m from Alternative 1; - 14km from Alternative 2.

5.9 Land use

Land cover data indicates that 86% of the Mopani District is in a natural or near-natural state and this is largely due to the conservation and protected areas that are within the District Municipality. (Draft Mopani District Bioregional Plan, 2016) The alternative power line corridors will traverse these areas as shown in Figure 5-9. The land cover within the protected and conservation area is characterized of woodland, open bushland, thicket or dense bushland and grassland. Foskor substation and some sections of the power line corridors traverse across mining areas in Phalaborwa and Gravelotte. Rural settlements are located in areas surrounding Spencer substation and subsistence agriculture and grazing also occurs close to the settlements. Commercial agriculture is also concentrated along the Groot Letaba River.

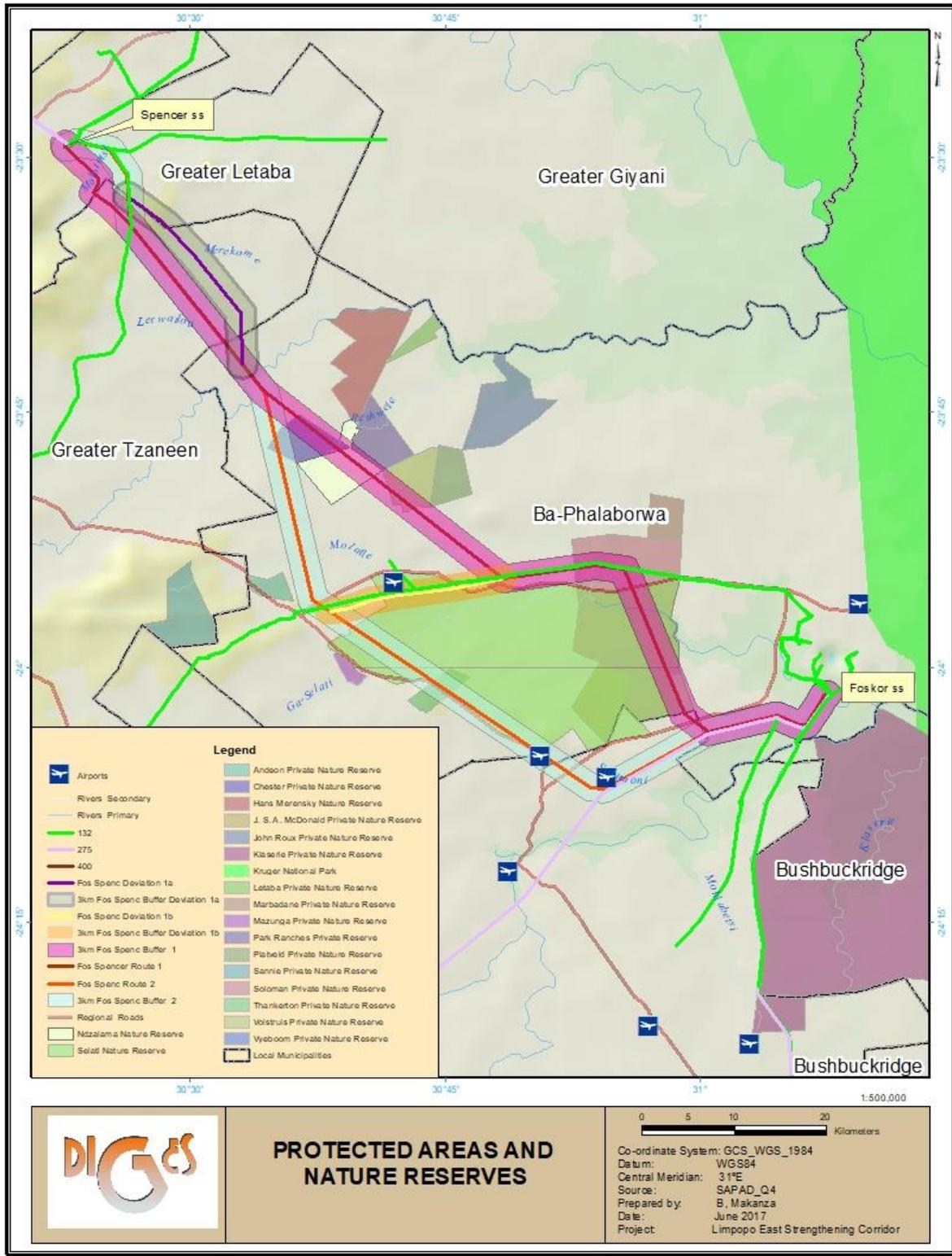


Figure 5-8: Protected areas and nature reserves within project area

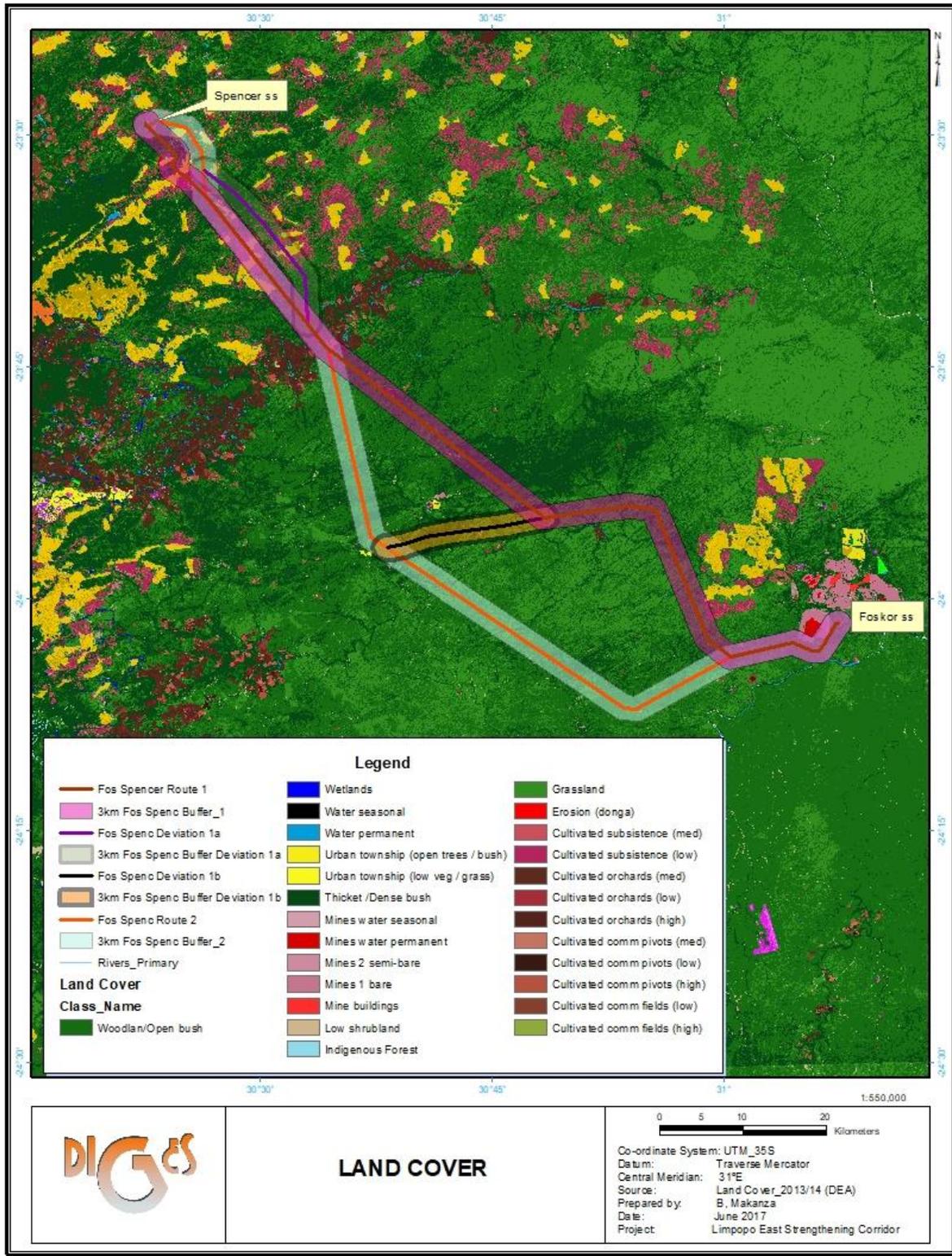


Figure 5-9: Land cover within project area

5.10 Archaeological and palaeontological attributes

According to the National Heritage Resources Act, 1999 (Act No.2 of 1999) objects that may be affected include the burial sites, buildings of more than 60 years of age, special geological features (fossil prints and bushman rock art) and paleontological objects. Clearing the area may result in the discovery of such objects. Construction of the service access roads, the proposed substation extension and power lines could potentially impact on heritage sites. A detailed heritage study will be included in the EIA report.

5.11 Visual Environment

The visual character of the environments through which the corridor alternatives would pass is quite varied, characterised by rural settlements, cultivated, mining and conservation areas. Areas close to the two substations, Foskor and Spencer are characterised of power lines of different voltages. These power lines traverse the area for distances between 5- 10km. A visual impact report will be attached to the EIR.

5.12 Air Quality

Several activities associated with transmission line construction can cause particulate matter and gases to enter the atmosphere and degrade air quality. Particulate matter originates from smoke from open burning of waste vegetation as well as from dust generated by construction activities. Gaseous hydrocarbons and oxides of sulfur and nitrogen are emitted from vehicle exhaust and open burning. The impact that these air pollutants have on sensitive persons or crops depends on topographic and meteorological factors, as well as the amount of each pollutant emitted. The air quality in areas surrounding Foskor substation is generally poor due to the mining activities undertaken in the area. The topography of the area also contributes to poor air quality by trapping air pollutants in the atmosphere under stable atmospheric conditions. The main impacts on air quality result from pollution and dust emissions from mining, agricultural, domestic and industrial activities.

5.13 Socio-Economic Environment

According to Tony Barbour, 2007, there is a need to understand the social environment and communities affected by the proposed development in order to ensure that positive benefits associated with the project are enhanced and the negative impacts are avoided or mitigated. There is therefore a need to collect baseline data on the current social environment and historical social trends. This section therefore covers the socio-economic profile of the area at a local and regional level. Desktop review of the Mopani District Municipality, Greater Letaba, Greater Tzaneen, Ba-Phalaborwa and Maureing Local Municipalities Integrated Development Plans and documents pertaining to the project area were consulted.

5.13.1 Population Demographics

According to Census 2011, Mopani District's population accounts for 20.1% of the Province's population whilst Greater Tzaneen Local Municipality has the highest population within the district accounting for 35.7%. Table 5-6 show the total land area and population per municipality within the District Municipality.

Table 5-6: Population and Municipal Land Coverages

Municipalities	Population	% of District Population	Land Area	% of District Land Area
Greater Tzaneen	390 095	35.7	3 242.6km ²	16.2
*Greater Giyani	244 217	22.4	4 171.6km ²	20.8
Greater Letaba	212 701	19.5	1 890.9km ²	9.4
Ba-Phalaborwa	150 637	13.8	7 461.6km ²	37.3
Maruleng	94 857	8.7	3 244.3km ²	16.3
Mopani District	1 092 507	100	20 011 km²	100

Source: Mopani District IDP (2016/17 version 1)

*Local Municipality is not within the project area

Ba-Phalaborwa accounts for 13.8% of the District's population though it occupies the largest area within the District. This can be attributed to the nature reserves that are within the Local Municipality which occupy large tracts of land. Greater Letaba Local Municipality is largely rural accounting for 94.3% respectively per the Local Municipality's population whilst Ba-Phalaborwa has the highest urban and

farming population accounting for 51% and 12.8% respectively. (Source: Mopani District Municipality IDP 2016/17 version 1)

The percentage growth of population for Ba-Phalaborwa has increased immensely by 14.9% from 2001 to 2011. This growth is higher than the District Municipality and it can be attributed to the mining and conservation activities being undertaken in Phalaborwa and Gravelotte. Greater Letaba Local Municipality population decreased by 3.4% and this can be attributed to out-migration.

5.13.2 Gender

In almost all local municipalities there are more females than males. This is significant in Greater Letaba Municipality which is primarily rural in nature. This could be attributed to low levels of education intensified by the out migration by men seeking jobs elsewhere. Ba-Phalaborwa has comparable balance in numbers between females and males, however with more males than females work within the economically active age group.

5.13.3 Language

According to Mopani District Municipality 2016/17 IDP, the most dominant languages are Northern Sotho and Tsonga accounting for 46% and 44% respectively of the total district's population. Afrikaans and English account for 2% and 1.3% respectively.

5.13.4 Level of Education

Education is very important in one's life. It creates a range of options which a person can choose from and it also opens doors to better opportunities and great achievements. The District Municipality has a low level of education accounting for 40% of the adult population being regarded as functionally illiterate. Approximately 13,7% have only completed some form of primary education whilst 6.5% has completed some form of higher education. (Mopani District IDP version 1)

5.13.5 Employment Profile

The farming sector is the second largest employer within the District Municipality employing 25.9% of the District population. In Ba-Phalaborwa, mining is the second largest employer accounting for 19.5% of the

population. 39% of the economically active population in the District are unemployed, 60% of which are women. The unemployment rate is higher in Greater Tzaneen accounting for 42% of the district's unemployed population.

5.13.6 Households by Dwelling Type

There are four broad types of settlements within the District Municipality which are distinguished primarily by the availability of services and the security of tenure. The settlements are described as follows:

i. Formal Urban Settlements

These have a formal layout, are serviced with a full range of municipal services and the settlement households can obtain security of tenure. These include areas such as Phalaborwa, Gravelotte,

ii. Tribal Settlements

Large areas of land in the District, mainly Greater Letaba Municipality are owned by the National Government of South Africa and former Lebowa and Gazankulu Government with tribal and community authorities as custodians. These traditional authorities play a very important role in terms of their traditional culture and therefore also have a major influence in the manner in which land is made available to individuals for settlement, as well as the use for economic purposes.

iii. Rural Settlements

These are settlements that are similar in nature to the tribal settlements regarding the residential densities and functions, but they are not located on tribal land.

5.13.7 Access to Services

Access to social and economic services enables people to participate fully in the economy and their communities. When services such as water, energy and transport are available to people, they can spend more time doing profitable work, and communication establishes a vital link between people and the outside world.

- **Energy**

Eskom provides electricity for lighting to most of the communities within the Mopani District Municipalities. The most frequent use of electricity in Ba-Phalaborwa Local Municipality and Greater Letaba Local Municipality is lighting accounting for 90.8 % electricity for lighting.

- **Water**

Mopani District Municipality is the Water Service Authority (WSA) and is responsible for bulk water supply and sanitation facilities within the local municipalities. The municipalities are responsible for water reticulation in agreement with the district municipality.

- **Toilet facilities**

The towns and their extensions have well developed sanitation systems whilst most rural areas do not due to their dispersed nature which makes it difficult to provide services. Most dwellings in the rural areas use pit latrines or have no sanitation facilities at all.

- **Refuse removal and Waste Disposal**

Most of waste management services by municipalities are prioritized in urban areas (townships & towns) and most of rural communities in the Mopani District Municipality do not have access to waste removal services by their local municipalities. This results to residents in rural areas dispose waste on their own, often to illegal dumping occurring. According to Census 2011, Ba-Phalaborwa Municipality has the highest percentage (48.8%) of refuse removal per week whilst Maruleng Local Municipality only accounts for 5.9% of refuse removal per week.

There are only two local Municipalities, Greater Tzaneen and Maruleng with legal landfill sites whilst Greater Letaba transports its waste to Greater Tzaneen.

5.13.8 Economic Activity

The mining sector is the largest contributor of the Mopani District Municipality's Gross Domestic Product (GDP) constituting 30% whilst agriculture is the most important sector in Greater Tzaneen, Greater Letaba and Maruleng Local Municipalities. Mining is concentrated in Ba-Phalaborwa Local Municipality

where it contributes approximately 80% of the Local Municipality's GDP and employs more than 2 000 people and an additional 450 contractors. Agriculture is predominant in Tzaneen, Maruleng and Letaba where ZZ2 dominates the industry in terms of output and the major focus is on sub-tropical fruit. These two industries focus is to produce for exportation. According to Mopani District Municipality's IDP, Greater Letaba currently makes the least contribution to the District's GDP.

5.13.9 Tourism

Tourism is deemed to be an engine that drives growth and development in areas and is often seen as a mechanism for local communities to capitalize on assets such as the natural environment and cultural heritage. In Mopani District Municipality, it also plays an important role. The indigenous forests, biospheres, nature reserves, wetlands, endangered species as well as Kruger National Park offer several opportunities for tourism. These include opportunities for eco-tourism, as well as tourism associated with the variety of historical and cultural interests found within the district. Mopani District is also considered the home of the big five due to abundance of such animals in Kruger National Park and surrounding private game farms and nature reserves. The numerous nature reserves within the district include: Selati Game reserve, Chester Reserve, Ndzalama Wildlife Reserve, Klaserie, Thorny Bush and Timbavati, Westfalia Estates, Merensky Reserve, Letaba Ranch, Geothermal springs in Hans merensky Nature Reserve and Soutini Baleni, Manotsa and Madrid and Shiluvane. Tourism related activities offered in these areas include: hiking, white water rafting, abseiling, hot air ballooning, rock climbing and bird watching. A Tourism Impact Assessment will be carried out during the EIA and the report detailing the impacts of constructing the power line in the area will be attached to the Environmental Impact Report.

Airports

There are several landing strips within the area which play a significant role in increasing tourist traffic and establishing the area as a gateway to the Kruger National Park and the surrounding areas. There are two airports within the 3000m corridor located on Archie 156KT and Lillie 148KT with the landing strip having a length of 1.1km. These airports cater for visitors to the Boulders Game Ranch. Two other airports are also near the corridors, namely Hendrick Van Eick Airport and Gravelotte Airports which are approximately 9km and 4km south west of the corridors.

6. PUBLIC PARTICIPATION PROCESS

6.1 Introduction

Public Participation Process (PPP) is viewed as a process of empowering communities and stakeholders in their efforts to safeguard the resource-base in more efficient ways and to use the resources sustainably. It also enables people to play lead roles in identifying, designing, directing and implementing any development activity which has an impact on their immediate environment, and therefore on their way of life. When undertaking an EIA project, public participation process is undertaken in terms of the Regulations set out in Chapter 6 of the EIA Regulations, Government Notice R982 of December 2014 as amended. The activities carried out as part of the process are as follows:

- *Section 40 – all registered Interested and Affected Parties (I&APs) are given 30 days to submit comments on generated reports;*
- *Section 41 – the person conducting a PPP must give notice to all I&APs by fixing notice boards, giving written notice and placing advertisements in local newspapers and provincial/national newspapers;*
- *Section 42 – open and continuously maintain a register of Interested and Affected Parties (I&APs);*
- *Section 43 – all registered I&APs are entitled to comment on all reports and the person conducting the PPP must ensure that comments raised are brought to the attention of the proponent or applicant; and*
- *Section 44 – the person conducting the PPP must ensure that comments of I&APs and records of meetings are recorded and responded to. The comments and responses report must be attached to the reports that are submitted to the competent authority.*

6.2 Objectives and approach to the PPP

The objectives of the PPP are:

- ❑ To gather input from Interested and Affected Parties (I&APs) regarding the level and nature of their interest to better plan public participation activities related to the EIA;
- ❑ To obtain local knowledge from the public to enhance our understanding of the environmental, cultural and socio-economic setting of the proposed project for use in the EIA;
- ❑ To understand the reasons behind the views of the public regarding the potential environmental impacts;

- ❑ To solicit public input or views regarding potential alternatives and mitigation measures to reduce environmental impacts;
- ❑ To work with the public to resolve a topic specific issue;
- ❑ To obtain public comments on the Draft Scoping Report to verify whether information in the report is accurate, representative and adequate;
- ❑ To provide feedback to Interested and Affected Parties about how their input, views, issues and concerns have been considered in the process; and
- ❑ To inform the public about the Competent Authority's (Department of Environmental Affairs) decision and next steps to follow.

6.3 Public Participation Team

A team of Public Participation Practitioners was assembled to undertake the PPP taking into consideration the geographic nature/area of the receiving environment, process needs of I&APs (language; organizational structures etc.) and the technical nature of the project. Reference is made to the table below for the roles and experience of the PP team:

Table 6-1: Roles and Experience of PP team

Name	Position	Experience
Moses Mahlangu	PP Team Manager:	<ul style="list-style-type: none"> • Involved in more than 20 EIA projects for Eskom power lines and substations; • Handled consultations with municipality councillors, traditional leaders in different regions in South Africa using six different languages; • Has been involved in 8 Eskom construction projects as an ECO; and • Previously worked as a teacher and school inspector for 12 years
Vicus Coetser	Facilitator for Public Meetings	<ul style="list-style-type: none"> • Mr Vicus Coetser commands a vast experience of facilitating public meetings which involve farming communities; and • Currently involved in the handling of negotiations for Eskom servitude for different power lines in Limpopo Province. He is thus familiar with the farming community in the study area.
Calvin	PPP Officer	More than 10 Eskom (Transmission & Distribution) projects since

Netshaulu		2010. Mr. Netshaulu is responsible for continuous database management. Database management is internally considered as a backbone of public participation process since an accurate record keeping of participating stakeholders is needed for the flow of information between stakeholders, the study team and the proponent.
Khazamula Daniel Chauke	Local PP Officer	<ul style="list-style-type: none"> • Mr. Chauke is a local person who speaks both xiTsonga and Northern Sotho; and • He has worked in Tzaneen-Phalaborwa-Giyani as an agricultural extension officer working in villages. Mr. Chauke brings the skill of communicating with the villagers and good knowledge of the affected villages.

6.4 Limitations Associated with Public Participation Process

Certain limitations are found with any public participation process. The most important are:

- I&APs not registering and therefore not partaking in public events and the public participation process;
- I&AP not attending public events relating to the proposed project;
- I&AP not receiving information timeously and commenting timeously;
- Lengthy time associated with identifying and contacting all I&AP in a study area; and
- I&APs focusing on issues that do not relate to the proposed project.

6.5 Summary of PP Activities undertaken

The activities undertaken and proposed during the Pre-Application and Scoping Phases of the assessment are outlined in Table 6-2 below.

Table 6-2: Summary of PP Activities

DATE	ACTIVITY	PARTICIPANTS	PRODUCTS
26/09/2016	Identified Interested and Affected Parties and listed them in the database	Consultants and the public	I&AP Database (See Appendix D-1a)
13/01/2017	Placed posters in the study area	PP Consultant	Posters (See Appendix D-4)

19/01/2017	Distribution of PP documents (BID, Reply Sheet, Study Area Map and list of properties owners)	Consultants and the Public	Information documents distributed (See Appendix D-2a)
20/01/2017 and 24/01/2017	Officially announced the project through the newspapers advertisements (One regional and four different local newspapers)	Project Proponent (Eskom), Consultants and general public	Newspapers adverts (See Appendix D-3a)
08/02/2017	Focus Group meeting (Majeje Traditional Authority)	Project Proponent (Eskom), Consultants and Majeje Traditional Authority)	Minutes (See Appendix D-5b)
08/02/2017	Focus Group meeting (Mashishimale CPA)	Project Proponent (Eskom), Consultants and Mashishimale CPA	Minutes (See Appendix D-5b)
09/02/2017	Focus Group meeting (Selati Game Reserve)	Consultants and Selati Game Reserve	Minutes (See Appendix D-5b)
10/02/2017	Focus Group meeting (Grietjie Community Members)	Consultants and Grietjie Community Members	Minutes (See Appendix D-5b)
10/02/2017	Focus Group meeting (The Local Governments and Key Stakeholders)	Project Proponent (Eskom), Consultants, the Local Government and Key Stakeholders.	Minutes (See Appendix D-5b)
02/03/2017	Focus Group meeting (Modjadji Traditional Authority)	Project Proponent (Eskom), Consultants and Modjadji Traditional Authority	Minutes (See Appendix D-5b)
02/03/2017	Focus Group meeting (Olifants North Game Reserve)	Project Proponent (Eskom), Consultants and Olifants Game Reserve Representatives	Minutes (See Appendix D-5b)

ACTIVITIES UNDERTAKEN DURING THE AVAILABILITY OF DRAFT SCOPING REPORT

12/05/2017	Advertise the availability of DSR and the dates of public meeting in the Citizen and Local Newspapers	PP team	Newspapers Adverts (See Appendix D-3b)
15/05/2017	Notify I&APs about the availability of DSR and the dates of the public meetings	PP team	Letter (See Appendix D-6a)
24/05/2017	Public Meeting	Project Proponent (Eskom),	Minutes

		Consultants and the General Public in Phalaborwa	(See Appendix D-6c)
24/05/2017	Focus Group Meeting	Project Proponent (Eskom), Consultants and the Agri-Letaba Farmers Association	Minutes (See Appendix D-6c)
24/05/2017	Public Meeting	Project Proponent (Eskom), Consultants and Nyavana Traditional Authority	Minutes (See Appendix D-6c)
25/05/2017	Focus Group Meeting	Project Proponent (Eskom), Consultants and Selati Game Reserve	Minutes (See Appendix D-6c)
25/05/2017	Public Meeting	Project Proponent (Eskom), Consultants and the General Public in Gravelotte	Minutes (See Appendix D-6c)
09/06/2017	Reminder to comment on DSR	Registered Stakeholders	Email's proof (See Appendix D-6d)
19/06/2017	Circulation of Minutes	PP Consultant	Email's proof (See Appendix D-6e)
24/07-01/08/2017	Notification of availability of revised (final) scoping report	Registered Stakeholders	E-mail proof and notification letter (See Appendix D-7a and D-7b)
22/08/2017	Public Meeting	Project Proponent (Eskom), Consultants and stakeholders	Minutes (See Appendix D-6c)

6.6 Methodology Adopted

Public Participation Process entails that all stakeholders that might be affected or have interest in the proposed project be afforded an opportunity to participate in the impact assessment of the project and they must each realize that they have responsibilities. See Figure 6-1 and 6-2 for the role of the Interested and Affected Parties (I&APs), the EAP and the Competent Authority (CA):

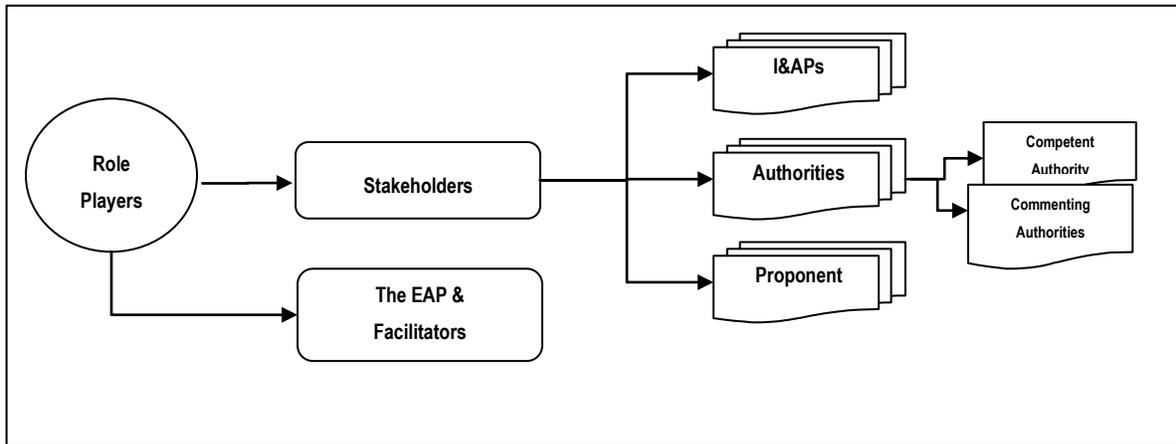


Figure 6-1: Role Players in the PPP

The Proponent:

- Provide adequate information to the Authorities, the EAP and to I&APs
- Adopt an open and transparent attitude during the interaction with I&APs
- Understand that the EAP acts independently and objectively in order to improve communication between I&APs and the Proponent
- Have empathy and patience with I&APs who do not possess the relevant background knowledge
- Avoid raising unrealistic expectations

I&APs:

- Register as an I&AP and advise the EAP about other I&APs who should be consulted
- Engage according to the agreed procedures and time frames
- Representatives of landowners and other organizations must ensure that their views are of their members and not their own
 - Avoid making unrealistic demands and provide appropriate information
 - Assist in identifying and prioritizing issues that need to be investigated and verify that issues have been recorded and considered



The EAP/PP Team:

- Communicate with all I&APs in order to provide them with information to enable them to participate in a meaningful way
- Organize all the required PPP activities
- Record and process the inputs, comments and issues received from I&APs
- Ensure that I&APs inputs are integrated into the reports which are communicated to the competent authority
- Avoid raising unrealistic expectations and undue fears

Competent Authority:

- Ensure that the requirements for decision-making do not limit the rights of stakeholders to engage adequately in the process
 - Where appropriate, ensure that the Proponent appointed an independent EAP
- Allow adequate time for stakeholder engagement
- Provide a decision on the application
- Allow for stakeholders to appeal against the decision

Figure 6-2: Role Players

Due to the larger area traversed by the proposed power lines and the different groups, there was need to have a diversified team who understand the cultures and languages of the different groups of people. Preliminary information with regards to possible Interested and Affected Parties was collected prior to the public participation activities. This allowed us to better plan the public participation activities. Potlako Negotiators were tasked with identifying all the landowners within the project area whilst Mr Moses

Mahlangu and Mr Khazamula Chauke undertook a reconnaissance site visit to the area on the 12th and 13th of January 2017 in order:

- ✓ To develop the preliminary understanding of the social context (representative structures; language; communication media, etc.);
- ✓ To identify points where information could be made accessible to the local communities (venues for meetings and public places where information documents could be placed); and
- ✓ To identify those parties or structures that may be interested in and/or affected by the proposed developments (farming communities; municipalities and tribal lands).

Though the most dominant languages within the project area Northern Sotho and Tsonga accounting for 46% and 44% of the total districts population, whilst Afrikaans and English account for 2% and 1.3% respectively, English was used for advertising and notification of all stakeholders involved. To ensure that all potential interested and affected parties were notified and received all project information, the following steps were undertaken:

Site Reconnaissance

Mr. Moses Mahlangu and Mr. Khazamula Chauke undertook a reconnaissance site visit to the area on the 12th and 13th of January 2017, as it was clear that the length of this proposed power line (± 120 km) would traverse several villages and commercial farms. The reason for the site visit was to develop the preliminary understanding of the social context (representative structures; language; communication media, etc.). The outcome of this site visit was that it became clear that information to the communities in the receiving environment would best be distributed via leadership structures that are available in these communities, namely:

- Traditional Leadership (who communicate better with elderly people in villages)
- Different Landowners Groupings (mainly farmers associations)

The PP Team thought it best to use local officers to mitigate the issue of language in meetings with the recognised leadership structures that are used for communication. In this regard it was therefore decided to enlist the services of:

- i. Mr Chauke - who is a local person and speaks both xiTsonga and North Sotho. He has worked in the area of Tzaneen-Phalaborwa-Giyani as agricultural extension officer, working in villages. Mr Chauke brought in the skills of communicating with the villagers and good knowledge of the affected villages. All villages to be traversed by the line were visited and the PP Team spoke to the local responsible persons (the izinduna). See attached proof of consultation.

During the reconnaissance site visit on the 12th and 13th of January 2017, several izinduna were visited and given the BID and brief explanation of the project. This was done in their languages. It must also be noted that in villages meeting are held on Sundays to disseminate information about activities in the villages. Our understanding was that this approach was adequate for information dissemination and adequately addressed the issue of language when disseminating information, hence we deemed it sufficient to advertise in English only because the younger generation understand the advert in English and the older generation will get information from the weekend izimbizos (weekend meetings).

- ii. Mr Vicus Coetser – the services of Vicus was enlisted to address the issue of consulting landowners in the language of their choice. Again the PP Team picked it up that the issue of language used in the method of informing the farming community about the project will best be addressed by involving a liaising officer like Mr Vicus instead of putting more resources on the site notices and adverts. Mr Vicus (Potlako Negotiators and Services Pty Ltd) moved from farm to farm informing landowners about the project in the language of their choice (English or Afrikaans). Mr Vicus was also used to facilitate meetings of commercial farmers.
- iii. Mr Moses Mahlangu is conversant in Afrikaans, English and five other African languages (Nguni and Sesotho language). Mr Mahlangu communicated with Afrikaans speaking communities in their languages. In ensuring that potentially affected landowners get information regarding the project (in their language of choice). Mr Mahlangu extensively consulted with their local leaders who assisted in mobilising their constituencies to participate in the studies. Typical examples of leaders used are:
- Mr Dusty Joubert – Selati Game Reserve Area.
 - Mr Mike Joseph – Grietjie Community Area.
 - Mr Ernest Mkansi – Several Gunyula Farm Portions.
 - Mr Sean Nielsen – Maseke Game Reserve and Neighbouring Farms.

- Mr Joe Parson – Olifants North Game Reserve Area.
- Ruan Burger/Pieter Vorster – Agri-Letaba Farmers Association Area.

6.6.1 Stakeholder Identification

EIA Regulations, 2014 GNR. No 982, Chapter 6 [Section 42 – open and continuously maintain a register of I&APs]

With the help of land-owners' database developed by Potlako Negotiators and Services (Pty) Ltd and through networking and advertising, I&APs were identified and these I&APs are currently registered on the database. Two separate databases are maintained viz. the database for landowners and the database for all other stakeholders (I&APs). The two databases of registered stakeholders submitted with this report includes stakeholders from:

- National, Provincial and Local Government;
- Landowners;
- Non-Governmental Organizations; and
- Business, Industry & Tourism.

(Reference is made to Appendix D-1a and D-1b)

DIGES Group endeavored to ensure that individuals/organizations from a 'vertical' (institutional) as well as a 'horizontal' (geographical) point of view were identified. Geographically, DIGES Group focused on nearby, adjacent and directly affected landowners, Traditional Authorities, Community Property Associations and organizations that represent them. A 'vertical' approach was used to identify those institutions or individuals that might be affected by or could contribute to the project, but who are not necessarily in its direct sphere of impact. At the time of officially introducing the project to the public, 218 of the landowners in the study area had already been identified by Potlako Negotiators and Services (Pty) Ltd as such contact details were known and most landowners received the Background Information Document (BID) early in the study process. Reference is made to **Appendix D-1a and D-2b** for the landowner database and proof of notification respectively. These stakeholders will be invited to different meetings that will be held in the study area. Government departments and the four local municipalities under the Mopani District Municipality have also been identified and registered on the database. Officials

from the municipalities in the study area have also received information on this project and were invited to focus group meeting held on the 10th of February 2017 in Tzaneen.

6.6.2 Giving Notice to all Interested and Affected Parties

Identified potentially Interested and Affected Parties were informed about the project as required in terms of *EIA Regulations, 2014 GNR. No 982, Chapter 6 [Section 41 – the person conducting a PPP must give notice to all I&APs by fixing notice boards, giving written notice and placing advertisements in local newspapers and provincial/national newspapers.]*

To create awareness, use was made of Background Information Document (BID), emails; telephone calls; newspaper advertisements and site notices; visits to different Traditional Authority offices and municipal offices. Visiting Traditional Authority offices and municipal offices also helped the PPP Team to establish the preferred consultation process in the area.

✓ Emailed and posted letters

The first strategy of informing the public about the proposed project after the reconnaissance site visit was to send out personalised letters via emails and post to all stakeholders on the database informing them about the project and inviting them to submit their comments and issues about the proposed project in their area. A BID was also included in this package. (Refer to **Appendix D-2b** for a copy of this letter).

✓ Media Advertisement

Advertisements were placed in national/provincial and local newspapers inviting I&APs to register to receive information on the project. (Refer to **Appendix D-3a** for a copy of the advertisements). The following newspapers were used:

Table 6-3: Advertising at Project Inception

Newspaper	Date	Extent
The Citizen	24/01/2017	National
Hoedspruit Herald	20/01/2017	Maruleng Local Municipality

Phalaborwa Herald	20/01/2017	Phalaborwa Local Municipality
Mopani Herald	20/01/2017	Giyani-Tzaneen-Phalaborwa
Letaba Herald	20/01/2017	Greater Letaba Local Municipality

✓ *Site Notices*

The advertisement was enlarged into A1 size posters that were placed at strategic points on the study area, mainly at the different municipal offices and Traditional Authority offices where community members could easily see them. (Refer to **Appendix D-4** for a copy of this poster).

✓ *Distribution of Other Documents*

Background Information Documents (BIDs) (Please see **Appendix D-2a** for a copy of the BID) with registration forms were forwarded to all I&APs in the database. The purpose of the BID was to provide I&APs with background information on the Environmental Impact Assessment Process, the Public Participation Process, and the need for the proposed Foskor-Spencer 400kV Eskom Transmission power line and the related upgrade of Spencer Substation. It also provides information on the location of the alternative corridors and specialist studies to be conducted as part of the process. The BID provided people, who are interested and/or affected by the project, with the opportunity to officially register as an I&AP. As part of the BID, a register and comment sheet was provided to enable the public to register as an I&AP and to provide the consultants with written comments. The registration sheet also ensured that the names and contact details of I&APs are captured correctly on the database so that they may receive all project-related information and invitations to public events.

6.7 Meetings

Different groups of stakeholders were identified and registered as stakeholders. The PP Team considered it necessary to consult with different stakeholders separately as their perceptions of such projects differed e.g. villagers usually consider such project as bringing development and job opportunities whilst stakeholders that are involved in ecotourism and game farming consider power lines as being destructive to their industry. Hence the need to be consulted with separately and sometimes individually. Proximity of locations of different stakeholders also made it difficult to get them to attend the same meetings. Invitations to the meetings were sent out, see **Appendix D-5a** for proof of invitations

6.7.1 Meetings with Landowners

Prior to submitting the Draft Scoping Report (DSR), landowners consulted were from Grietjie Game Reserve and Olifants North Game Reserve. Mr. Sean Nielson indicated that he will represent Banakome CPA (Maseke community who owns Maseke Game Reserve). Mr. Nielson did not attend the meeting of the 02nd of March 2017 as was expected. As the consultation process progressed it was observed that landowner involvement was not showing an encouraging level of participation by property owners. To improve the situation the PP Team enlisted the services of more local key persons as Public Involvement Officers as follows:

- **Mr. Dusty Joubert** – He is a manager of Selati Game Reserve which is composed of fifteen farms. The PP Team leader met Mr. Joubert to agree on the consultation strategy for landowners forming Selati Game Reserve. Mr. Joubert reported that the shareholders of the Selati Game Reserve appointed a committee of four (4) members who will meet the study team during the review period of DSR
- **Mr. Mike Joseph** – He is a chairperson of Grietjie Nature Reserve and he mobilised property owners on Grietjie farm to meet with the PP Team leader to agree on the consultation process preferred by the Grietjie community. Concerns and questions to be addressed by Eskom were noted and it was agreed that a more formal meeting will be held during the review period of the DSR
- **Mr. Ernest Mkansi** – He owns several farm portions of the farm Gunyula and he agreed to help set up a meeting for the study team to come and present the project. The plan is to arrange a meeting once the DSR is made available for public review.
- **Mr. Sean Nielsen** – Mr. Nielsen indicated that he will represent the Banakome CPA (Maseke Community) who owns Maseke Game Reserve. He will arrange some members of the Banakome CPA to meet the study team during the review of DSR
- **Mr. Joe Parson** – Mr. Parson manages the Olifants North (Balule) Game Reserve. He mobilised landowners belonging to ONGR to attend a meeting that was Scheduled 02nd of March 2017. At this meeting, mainly landowners from Grietjie Game farm attended and very few ONGR property owners attended.
- **Ruan Burger** – The farm Henley has several farm portions owned by different owners. Since Mr. Burger owns quite a number of farm portions it was decided to ask him to help set up a meeting with his neighbours. He indicated that the feeling of most landowners is that, the issue of consultation with Eskom for a powerline servitude in the area must be handled by Afriforum on their behalf. At the time of finalising the draft scoping report Afriforum had not as yet contacted the PP team. The way forward at this stage is therefore to try and meet Afriforum or properties owners during the comment period of the DSR (i.e. April – May 2017)

6.7.2 Meetings with Traditional Authorities (or Community Property Association)

Prior to the submission of the DSR, two traditional authorities have been met (Majeje, Mashishimale and Modjadji) and the minutes of these meetings and attendance registers are included under **Appendix D-5b** and **Appendix D-5d**. The minutes of the meetings held were circulated to all attendees for confirmation (see **Appendix D-5c** for proof of submission).

6.7.3 Meetings with Local Government (Municipalities)

A focus group meeting was arranged for the 10th of February 2017 in Tzaneen. Several key stakeholders registered in the database were invited to the meeting. The minutes of this meeting are included under **Appendix D-5b** and the attendance register is under **Appendix D-5d**.

6.8 Comments and Responses Report

EIA Regulations, 2014 GNR. No 982, Chapter 6 [Section 44 – the person conducting the PPP must ensure that comments of I&APs and records of meetings are recorded and responded to. The comments and responses report must be attached to the reports that are submitted to the competent authority.

Comments and Issues raised during this phase of the project were recorded and responded to in the Comment & Response Report (see **Appendix D-6f**). The key issues raised centered around economic benefits (job opportunities during construction), compensation for the land taken as servitude and the perceived negative impacts of the proposed power lines on eco-tourism industry (game farms and lodges).

6.9 Public Participation at Draft Scoping Phase

6.9.1 Giving Notice to All Interested and Affected Parties (I&APs) about the Availability of Draft Scoping Report and Plan of Study

As required by NEMA EIA Regulations 2014 as amended, the Draft Scoping Report was made available to I&APs for them to have an input in the form of comments. I&APs were notified by way of:

- ✓ *Emailed letters*

Letters were emailed to all I&APs to notify them about the availability of the Draft Scoping Report and were invited to the public meetings on the 24th -25th of May 2017 (**See Appendix D-6a**).

- ✓ *Media advertisement*

Advertisements were placed in national/provincial and local newspapers notifying them about the availability of Draft Scoping Report and to encourage them to comment as well as to attend public meetings that were planned in their area. The newspapers used to announce the project were again used to notify I&APs about the availability of Draft Scoping Report. Reference is made to Table

Table 6-4: Advertising at Draft Scoping Phase

Newspaper	Date	Extent
The Citizen	12/05/2017	National
Hoedspruit Herald	12/05/2017	Maruleng Local Municipality
Phalaborwa Herald	12/05/2017	Phalaborwa Local Municipality
Mopani Herald	12/05/2017	Giyani-Tzaneen-Phalaborwa
Letaba Herald	12/05/2017	Greater Letaba Local Municipality

6.9.2 Distribution of Draft Scoping Report

The Draft Scoping Reports were made available for public review and comment from 15th of May 2017 to 15th of June 2017. Copies of the Draft Scoping Reports and Revised Scoping Reports were also placed in the Local Libraries in the study area on the 15th of May 2017 and the 31st of July 2017 respectively. (See **Appendix D-6b** for proof of delivery). The reports were placed in the following local libraries:

Table 6-5: Local Libraries

Name of the Library	Contact details
Phalaborwa Public Library	Mr Steve Mkhobeki - (015) 318 6311
Tzaneen Public Library	Ms Christine Nel - (015) 307 8050
Hoedspruit Public Library	Ms Nelly Sekgobela - (015) 793 2409
Giyani Public Library	Ms Relinah Shingane - (015) 811 5500
Modjadji Public Library	Ms Rebecca Nkgapele – (015) 309 8609

6.9.3 Public Meetings

Two Public Meetings and three Focus Group meetings were held with different stakeholders in the study area from the 24th of May 2017 and 25th of May 2017 and the minutes of the meeting were recorded. Two meetings were also held on the 22nd of August 2017 to discuss the revised report. (**See Appendix D-6c**).

Meetings were held with the following stakeholders:

- General public in Phalaborwa;
- General Public in Gravelotte;
- Nyavana Traditional Authority;
- Selati Game Reserve Stakeholders; and
- Agri-Letaba Farmers Association

6.9.4 Circulation of Minutes

Minutes of the two focus group meetings (Selati Game Reserve Stakeholders and Agri-Letaba Farmers Association) were circulated to attendees to confirm if they are the true reflection of the meetings (**See Appendix D-6e** for proof of circulation of minutes).

6.9.5 Comments received during public review of Draft Scoping Report

All comments received during the public review of Draft and Revised Scoping Report were addressed and incorporated into the Final Scoping Report that will be submitted to the authority (Department of Environmental Affairs) for decision making. Reference is made to **Appendix D-6f for the Comments and Response Report**.

6.10 Concluding Remarks and Recommendations

The PP Team hereby submit concluding remarks as indicated in the table below:

Table 6-6: Concluding Remarks

<p>Level of Interest</p>	<p>Meetings and communications with landowners in the study area occurred at different levels of interest in that:</p> <ul style="list-style-type: none"> • Traditional Authorities/Councils are generally welcoming to the project in that they see potential for job/economic opportunities and compensation for the use of their land; • Community Property Associations form land management arms of the Traditional Authorities/Councils and are also receptive to the project; • Game Farmers and Nature Reserves owners are strongly opposed to the power line on their properties as they perceive it to be destructive to eco-tourism industry; • Commercial farmers were only met in the form of Agri-Letaba Farmers Association and it was agreed that once the final route is determined the association will help to get the directly affected landowners talk to Eskom. The few landowners that were telephonically contacted indicated that they will not allow power lines through their properties; and • Participation by commenting authorities, especially the district and local municipalities in the receiving environment has been very slow. A reminder letter was sent through to them advising them to submit the comments before the closing period. Responses were only received from the Limpopo Department of Economic Development, Environment and Tourism (LEDET) and the South African Heritage Resources Agency (SAHRA).
<p>The Consultation Process</p>	<ul style="list-style-type: none"> • Initially the process and the intention of consultation was to introduce the project to stakeholders. This was in the form of sending out information documents (BID, maps, farm list and questionnaires); • The project was also introduced to the public by advertising in different local newspapers and site notices that were placed at different public places. One national newspaper was used to advertise the project. Landowners on the database were forwarded the information documents; and • Several meetings were held with some traditional authorities/CPAs, landowners and government officials during the introduction stage and the review period of the Draft Scoping Report.
<p>Comments, Issues & Responses</p>	<ul style="list-style-type: none"> • Except for comments recorded at different meetings, very few comments have been received via the reply/registration sheet. Comments, issues and questions raised have been addressed in the Comments and Response Report.

Based on the above information it is recommended that:

- Communication with I&APs, especially the communities in the vicinity of the proposed route, should continue to ensure informed decision-making and a transparent process throughout;
- Ongoing communication with the landowners that are potentially directly affected by the proposed 400kV power lines in the form of focus group meetings should continue. Landowners should be encouraged to attend meetings meant to discuss the project; and
- Identified issues and concerns must be fed into the technical and planning processes to enhance the development of measures for successful mitigation/avoidance of negative impacts. The EAP, Eskom and the specialists are advised to give special attention to issues and comments raised by landowners

6.11 Conclusion

Based on the inputs received during the Public Participation Process conducted so far, the PPP team is confident that all reasonable efforts were made to inform the public in the study area about the proposed project. The consultation process is considered to have managed to give the public, especially the landowner's ample opportunity to raise issues of concern, which they might have regarding the proposed transmission power lines and substation upgrade. Mainly the concerns have been about compensation, job creation, potential impact on eco-tourism and the loss of agricultural land.

Consultation and/or communication with stakeholders and I&APs is ongoing throughout the study process up until an Environmental Authorisation is issued. Any additional information that will be received from stakeholders and that might be requested by stakeholders will be given attention during the EIA Phase. In addition, information regarding the project, Environmental Impact Assessment process and the Environmental Authorization (EA) will be communicated to all I&APs.

6.12 Way Forward

Registered stakeholders will be notified about the submission of the FSR to DEA. Once the FSR and the PoS for EIA are approved, all registered stakeholders will be informed and advised about the beginning of the EIA Phase of the study process.

7. POTENTIAL IMPACTS AND DETERMINATION OF SIGNIFICANCE

This section of the report evaluates the possible negative and positive impacts which may occur because of going ahead with the proposed project. Potential environmental impacts have been identified based on the following:

- A review of the proposed activity; and
- The nature of the receiving environment.

Reference is made to the Figure below for the methodology used:

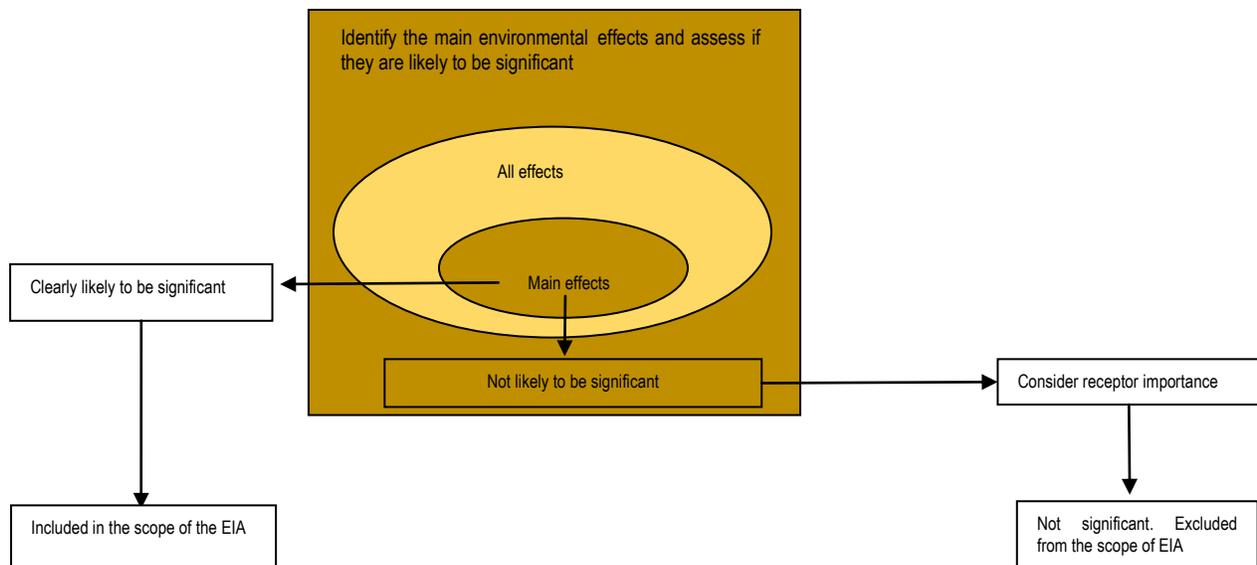


Figure 7-1: Identification of impacts

Risks and key issues were identified through an internal process based on similar developments and site visits. These included the following:

- Biodiversity impacts;
- Soil/Land Impacts;
- Hydrological impacts;
- Waste impact;
- Air quality impact;

- Visual and noise impact;
- Heritage and archeological impacts;
- Tourism related impacts;
- Land use impacts; and
- Socio-economic Impacts

Section 7.1 discusses the impacts identified for this particular project.

7.1 Potential Impacts

7.1.1 Biodiversity Impacts

Vegetation

The vegetation type on site is classified as vulnerable, endangered and least threatened with commercial farming, conservation and residential being the most prominent land use. The following impacts are anticipated:

Construction

- Clearing of vegetation leads to loss of habitat;
- Loss of conservation important species; and
- The establishment of alien invasive species.

Operation

- Loss of conservation important species; and
- The establishment of alien invasive species.

Fauna and avi-fauna

The proposed power line alternatives traverse across nature reserves, i.e., Selati and Ndzalama Game reserves and other Private Nature reserves which are home to diverse animal species that include elephants, rhinos, sable, lion and cheetah. The following impacts are anticipated.

Construction

- Loss of habitat for fauna species due to vegetation clearance;
- Disturbance during construction activities;
- Loss of conservation species;
- Vegetation removal and associated habitat destruction would lead to habitat loss for avifauna;
- The destruction of avifaunal nests when vegetation is being cleared;
- Disturbances through construction activities that will displace various avifaunal species.

7.1.2 Soil/Land Impacts

During construction of roads and structures, unstable soils, any form of vegetation clearing and excavations presents a risk of a negative impact. The following impacts are anticipated:

Construction Impacts

- Vegetation cover within the areas where the construction materials are laid down will be damaged, which could leave soil bare and susceptible to erosion;
- Oil or fuel leakages from construction equipment will contaminate soils;
- The movement of heavy machinery will result in soil compaction that will modify habitats, destroy vegetation and inhibit re-vegetation; and
- Erosion of stockpiled topsoil and the disturbance of soils due to vegetation stripping will lead to habitat inundation.
- Loss of agricultural land due to the Spencer upgrade.

Operation

- Oil or fuel leakages from maintenance vehicles will contaminate soils.
- Possible spillage from the transformer oil holding dam.

7.1.3 Hydrological Impacts

Surface water features are a very important component of the natural environment, as they are typically characterised by high levels of biodiversity and are critical for the sustaining of human livelihoods through the provision of water for drinking and other human uses. They are sensitive features of the natural environment and pollution or degradation of rivers/streams can result in a loss of biodiversity, as well as an adverse impact on the human users which depend on the resource to sustain their livelihoods. The following impacts are expected:

Construction Impacts

- The uncontrolled interaction of construction workers with watercourses that could lead to the pollution of the water in these drainage systems.
- Leakage of hazardous materials including chemicals and hydrocarbons such as fuel, and oil, which could potentially enter nearby surface water resources through storm water flows;

- The incorrect mixing (batching) of cement could lead to siltation and contamination of watercourses;
- Inadequate storm water management and soil stabilisation measures in cleared areas could lead to erosion that may lead to siltation of nearby watercourses;
- The creation of new access roads for construction traffic across watercourses may lead to the erosion of banks and disturbance of riparian vegetation that may trigger the further development of gully (donga) erosion thereby reducing the quality of water; and
- Construction of accesses across watercourses may impede the natural flow of water (especially if access is required across flowing water). This would alter the hydrology of the watercourse and potentially affect the quality of water at some downstream water users.
- Water may be illegally abstracted from water bodies for construction activities such as dust suppression; and
- Landscaping may have an indirect impact on the existing drainage lines and dry water courses by causing increased run off, erosion and limited seepage.

Operation

During routine maintenance, water may be impacted by the following:

- Servitude clearing would increase surface water runoff and sedimentation in local water bodies;
- Fuel leaks from maintenance vehicles or spills of materials such as oil during maintenance would result in a deterioration of water quality; and
- Waste or maintenance material may be dumped in local water bodies.

7.1.4 Land use

The substation area and sections of the proposed power line corridors traverse across areas that are currently being used for commercial and subsistence agriculture. Impacts associated with the proposed project include:

- Impact of the change of land use on the surrounding area.
- Impact on arable land; and
- Loss of agricultural land.

7.1.5 Waste Generation

Any construction work generates solid waste, which can spread through the environment. Solid waste generation at the site will include metal scraps and wooden packing material. Hazardous waste is the oil waste, transformer oil and sewerage.

7.1.6 Air Quality

Air quality will be negatively impacted through the following activities:

- Combustion emissions resulting from the construction equipment which includes diesel construction equipment used for site grading and excavations, heavy duty diesel tanks used to deliver materials and trucks used to transport workers to, from and around the construction site; and
- Fugitive dust emissions resulting from the site grading or excavation activities, construction of plant, roads and vehicles using gravel/unpaved roads.

7.1.7 Archaeological Impacts

The construction of the power lines and the upgrade of Spencer substation will entail ground disturbing activities that could directly impact cultural resources by damaging and displacing artefacts, diminishing site integrity and altering the characteristics that make the resources significant. Activities that may result in this includes:

- General cutting and filling; and
- Foundation excavations.

7.1.8 Visual Impacts

Visual intrusion is highly dependent on the type of infrastructure planned and the surroundings of the development. The major visual components of transmission facilities would be the structures or towers, the conductors and the right-of-way whilst the area near Foskor substation is characterised of mining activities and nature reserves that include landing strips. The activities that are expected to cause landscape impacts and that are associated with the construction phase, are the establishment of the construction camp, construction of access roads and the clearance of the servitude. These activities will create surface disturbances which will result in the removal of vegetation and the exposure of the

underlying soil. The placement or establishment of the power lines in areas that are largely natural is expected to have a negative visual impact on the residents, tourists and motorists.

7.1.9 Noise

Heavy machinery is often required for construction works. This machinery contributes to tremendous amount of sustained noise. Such noise elevations affect the environment by:

- Sonically vibrating structures; and
- Presenting a danger to human welfare.

Even when it is not perceived consciously, the noise elevations can affect human and animal welfare in varying degrees, both physiologically and psychologically. The proposed transmission line would produce operation noise impacts associated with the transmission power line during adverse weather conditions. In addition, at Spencer substation the addition of a transformer will have a cumulative impact as they emit a low-frequency, long wavelength hums.

7.1.10 Health and Safety

Health of construction workers may be at risk if appropriate clothing or equipment is not used for specific activities.

7.1.11 Socio-economic

The actual impacts experienced at a given project site will depend on a variety of factors that range between the baseline conditions, the public participation process, engagement and capacity building that has taken place, the type of construction methods used, the role of politics and other processes of social change either already underway or which may develop during the life of a project. Social change process expected are categorised into four groups:

i. Economic Processes

These affect economic activity in the region including the way in which people make a living as well as macroeconomic factors that affect the society as a whole. The anticipated impacts are:

- Waged labour/ employment creation and decrease in unemployment- development directly influences changes in employment and income opportunities in communities.

There will be reasonably few numbers of short and medium-term employment opportunities available which can potentially create tension among community members;

ii. Geographic processes

These affect the land-use patterns of a community and impacts expected are:

- ❑ Conversion and diversification of land-use- the land is currently being used for mining, conservation, agricultural and residential by the surrounding communities. The construction of substation and power line will change the land use for the project site.

iii. Institutional and legal processes

These processes affect the efficiency and effectiveness of various organisations that are responsible for the supply of goods and services that people depend on. Expected impacts include:

- ❑ Gender relations: in most societies certain roles, occupations and responsibilities and qualities are associated with being male or female. Women lack representation in high paying professions such as construction and mining; and
- ❑ Capacity building and skills transfer- the project is expected to have a positive impact in capacity building in the communities as opportunities exist to develop the skills of the local residents.

iv. Socio-cultural processes

These affect the culture of a society, i.e., all aspects of the way that people live together. Impacts expected are:

- ❑ Unacceptable social behaviour- the presence of incoming workers and or the influx of jobseekers can lead to deviant social behaviour in the communities they are based. Where sourcing of local labour is not possible, "outsiders" will need to be employed in order to provide necessary skills. These employees may be accommodated in a construction camp. Historically, such camps create social impacts by introducing new people to an area. Changes can be both positive and negative - positive in that people exchange ideas and backgrounds, and negative in terms of

conflict that these differences may evoke. The construction camp may also attract women who may use the opportunity to generate income. This may increase the potential for family disintegration as well increased incidences of sexually transmitted diseases;

- ❑ Loss of natural and cultural heritage during construction;
- ❑ Physical quality of the living environment relate to the exposure to dust, noise, risk, odour, vibration and artificial light. During the construction and operation phase the activities carried out on site have a potential to create pollution;
- ❑ Aesthetic quality of the living environment and sense of place- it is expected that the activities carried out on site could impact on the sense of place, visual quality and aesthetic appeal;
- ❑ Health and Social Well-being- construction related public health impacts are possible due to the air, noise and light pollution. Construction activities will result in increased traffic in the area, particularly from heavy vehicles, as well as disruptions to traffic flow along affected roads. This increase in traffic together with construction activities such as open trenches will lead to an increase in safety risks for residents, motorists and passengers.
- ❑ Personal safety and hazard exposure/crime and violence- personal safety and risk exposure due to the construction site and related infrastructure and due to the influx of strangers entering the local communities.

7.1.12 Infrastructure Framework: Transportation

The use of the road network will play a large role in delivering materials and resources to the construction camp during construction. An increase in traffic volumes is expected to be minimal and short term, during the construction period. The roads that will be used for access include the R40, R526, R529, R81, R71 and district roads.

7.1.13 Increased Safety Risk

Construction activities will result in increased traffic in the area, particularly from heavy vehicles, as well as disruptions to traffic flow along affected roads. This increase in traffic together with construction

activities such as open trenches will lead to an increase in safety risks for residents, motorists and passengers.

8. PLAN OF STUDY

8.1 Introduction

This section describes the proposed Plan of Study (PoS) to be undertaken during the Environmental Impact Assessment Phase. The PoS has been prepared to meet the requirements of the EIA Regulations, Government Notice R982 as outlined in Appendix 2 Section 2(i). The following activities will be undertaken:

- ❑ Specialist studies;
- ❑ Compilation of draft and final Environmental Impact Report and draft Environmental Management Programme;
- ❑ Public Participation including consultations with stakeholders; and
- ❑ Submission of Final Environmental Impact Report and Draft Environmental Management Programme.

8.2 Project Description

Due to the increasing load demand in the Limpopo Province, Eskom Holdings SOC Limited intends to strengthen the Limpopo East Corridor by constructing and operating the following infrastructure:

- ❑ ±110km, 400kV power line from Foskor MTS near Phalaborwa to Spencer MTS near Mohlabaneng village. Two alternative corridors and two deviations from these corridors have been identified and will be assessed. Though a 400kV power line requires a 55m wide servitude, this study will assess a 3000m wide corridor to cater for constraints which might be posed by the location of physical features and the final engineering designs. Reference is made to the Locality Map attached in Appendix C-1. The buffer in the maps indicate the corridors;
- ❑ 400/132kV transformation yard and 1 x 500MVA, 400/132kV transformer which will cater for the proposed 400kV power line coming from Foskor MTS. This extension will require a footprint area of ±9 ha. The final layout will be attached to the Final Environmental Impact Report. A preliminary layout is attached in Appendix B-1;
- ❑ A transformer oil holding dam with a capacity of 120m³. The oil dam is required to contain any spillage from the 1 x500MVA, 400/132kV transformer and to prevent pollution to the environment and ensure compliance with Environmental Legislation. Reference is made to the drawing in Appendix B-2.

8.3 Location

The proposed project area is within Mopani District Municipality which is located in the north east of the Limpopo Province. The proposed power line will traverse across 4 Local Municipalities: Maruleng, Ba-Phalaborwa, Greater Tzaneen and Greater Letaba and can be accessed via R71, R81 from and R40. Foskor MTS is approximately 9km south of Phalaborwa and Spencer MTS is approximately 37km of Giyani. Reference is made to Appendix C-1 for the locality map.

8.4 Specialists' Assessment

The first site inspection undertaken by both Consultants and applicant was sort of reconnaissance field survey where different components of the environment that are likely to be affected by the proposed development were briefly assessed. Based on the environment observed and the nature of the development, there is need to have an in depth understanding of the status quo of various aspects of the environment and how the development will have an impact on these environmental aspects. Specialists' studies are therefore required to inform the Environmental Impact Process by considering the specific nature of the environment within which the development is to be undertaken. The results of the studies will serve as a basis to identify the potential impacts expected should the development be undertaken. Noise and air quality impacts while important are likely to be less significant hence they will not require a specialist assessment. The following eight specialist assessments will be undertaken:

- i. Avi-fauna Impact Assessment;
- ii. Agricultural and Land Capability Assessment;
- iii. Biodiversity Impact Assessment;
- iv. Heritage Impact Assessment;
- v. Social Impact Assessment;
- vi. Tourism Impact Assessment;
- vii. Visual Impact Assessment; and
- viii. Wetland Impact Assessment

The table below shows the Specialists who will undertake the studies and their areas of study.

Table 8-1: List of Specialist Studies to be carried out.

AREA OF SPECIALIST	SPECIALIST
<i>Avi-fauna</i>	<i>Chris Van Rooyen</i>
<i>Agricultural and Land Capability</i>	<i>FNR Lesesdi Organic Farming Development</i>
<i>Biodiversity</i>	<i>Dr. Wynand Vlok</i>
<i>Heritage and Palaeontology</i>	<i>Vhubvo Archaeo-Heritage Consultant</i>
<i>Socio-Economic Assessment</i>	<i>Afro Conserva Integration</i>
<i>Tourism</i>	<i>Engwe Scoping Cultural Heritage</i>
<i>Visual</i>	<i>AXIS Landscape Architects</i>
<i>Wetlands</i>	<i>Sazi Environmental Consultants</i>

In addition to the Terms of Reference listed below, the specialists will be guided by:

- ✓ Regulation 13 of Environmental Impact Assessment Regulations of 4 December 2014, Government Notice No. R982 as amended on the 7th of April 2017;
- ✓ Appendix 6 of Environmental Impact Assessment Regulations of December 2014, Government Notice No. R982 as amended on the 7th of April 2017; and
- ✓ **Specialists Studies, Integrated Environmental Management, Information Series 4** which can be downloaded from the Department’s website: www.environment.gov.za.

8.4.1 Terms of Reference

The following specialists’ studies will be carried out:

A. Agricultural Potential

Key Issues

Sections of the proposed power line corridors traverse across areas that are currently being used for commercial and subsistence agriculture. In terms of the Conservation of Agricultural Resources Act (CARA), there is need to determine the impact of the proposed project on the agricultural potential of the affected area. The approach to this study is listed below:

Approach

- Define parameters of land as stipulated by the Subdivision of Agricultural Land Act No. 70 of 1970 and the Amended Regulation of Conservation of Agricultural Resources Act No. 43 of 1983;
- Classify high potential agricultural land in South Africa compiled by the Agricultural Research Council for the National Department of Agriculture;
- Identify the current land-use on the farms and that of the neighbourhood;
- Identify other Agro-ecological factors prevailing in the area;
- Identify the agricultural potential of the area and possible crop types;
- Undertake an economic analysis; and
- Provide a recommendation and mitigation measures to reduce the identified impacts.

B. Avi-fauna

Key Issues

During the construction phase and maintenance of power lines and substations, habitat destruction and alteration inevitably takes place. There is a need to assess the impact of the development on birds and to recommend if the development should be undertaken and indicate the corridor which will have the least negative impact on avi-fauna. The Terms of Reference for the assessment will be:

Approach

- Provide a description of the study area pertaining to the power line sensitive avi-fauna;
- Identify concerns and potential impacts on avifauna;
- Provide sensitive and possible no-go areas;
- Evaluate the envisaged impacts on sensitive avifauna;
- Provide recommendations on the envisaged impacts on avifauna and preferred alternatives; and
- Preparation of a map that indicate locations of birds and bats including roosting and foraging.

C. BIODIVERSITY

Key Issues

The project area is comprised of several private nature reserves and is also classified under the Kruger to Canyon Biosphere. The natural environment is intact in most of these areas and the vegetation types are classified as threatened, endangered or vulnerable. The clearing of vegetation and movement of construction vehicles will have a negative impact on the flora and fauna within the servitude. The Terms of Reference for this study is as follows:

Approach

- Undertake baseline survey and describe affected environment within the project footprint;
- Take into consideration the National Environmental Management: Biodiversity Act (Act No. 10 of 2004), Limpopo Conservation Plan, the Mopani District Bioregional Plan and any other relevant Acts;
- Assess the current ecological status and the conservation priority within the project footprint;
- Undertake sensitivity study to identify protected species, Red Data species and alien species;
- Compile a plant rescue and protection plan which allows for the maximum transplant of conservation of important species from areas to be transformed;
- Prepare maps that indicate critical biodiversity areas and ecological support areas; critical endangered and endangered vegetation areas; and
- Recommend the preferred corridor and mitigation measures.

D. Heritage

Key Issues

The power line will traverse across areas that were previously and are still inhabited. There is a need to understand the archaeological, cultural, and general heritage sensitivity of the area proposed for the development. The anticipated impacts are:

The Terms of Reference for the study are:

Approach

- Undertake a Phase 1 Heritage and Paleontology Impact Assessment in accordance with the South African Heritage Resources Act (Act No. 25 of 1999);

- Undertake baseline study indicating the location of heritage and paleontology resources, the nature and degree of significance and the present physical condition;
- Prepare a heritage and paleontology sensitivity map, based on the findings of the study;
- Identify the resources to be monitored; and
- Recommend the preferred corridor with mitigations measures to be implemented.

E. Social Impact Assessment

Key Issues

The proposed power lines will be constructed in areas characterised of mining, conservation activities and residential. There is need for community members and landowners to decide how much and what type of new development the community can accommodate without compromising the day-to-day quality of life for residents. The assessment should assist in making decisions that promote long-term sustainability, including economic prosperity, a healthy community and social well-being.

Approach

- Identify relevant legislation, standards and policies;
- Define and describe the receiving environment in terms of the footprint, local and regional from a social perspective, and identify, analyse and in detail assess the opportunities and constraints arising from or potentially limiting the proposed infrastructure;
- Investigate the potential social benefits of the proposed infrastructure to ensure maximum benefit to the local community and associated structures;
- Assess the development impact of the proposed infrastructure on the economy of the local area (from a social point of view), which will form an important component for establishing the overall feasibility of the project; and
- Recommend mitigation measures to the impacts identified.

F. Tourism Impact Assessment

Key Issues

- Impact on the tourism potential locally and regionally.

Approach

- Provide status of tourism within and in close proximity to the study area;

- Identify conservation/protected areas in conjunction with tourism worthy areas;
- Identify provincial, regional and local tourism trends;
- Identify existing tourism products in surrounding region;
- Undertake an impact assessment of the proposed development on existing tourism industry; and
- Identify mitigation measures of the proposed infrastructure on the ecotourism industry.

G. Visual Impact Assessment

Key issues

Landscape and visual impacts may result in changes to the landscape. A distinction should be made between impacts on the landscape and on the viewers. The former are impacts on the physical landscape that may result in changes to landscape character while the latter are impacts on the viewers themselves and the views they experience. To assess these impacts in greater detail, the specialist assessment will undertake the following activities:

Approach

- Determine of the extent of the study area;
- Identify and describe the landscape character of the study area;
- Identify of the elements of visual value and -quality that could be affected by the proposed project;
- Identify the landscape and visual receptors in the study area that will be affected by the proposed project and assess their sensitivity;
- Indicate the potential landscape and visual impacts;
- Assess the significance of the landscape and visual impacts; and
- Recommendations of mitigation measures to reduce and/or alleviate the potential adverse landscape and visual impacts.

H. Wetland Delineation

The proposed power line corridors will cross various rivers, drainage lines and wetlands.

Key Issues

- Impact on wetlands and surface waters;

Approach

- Identify the relevant legislature and guidelines pertaining to water resources;
- Delineate all wetlands as per the guideline by DWAF 2005;
- Provide suitable mitigation measures to protect watercourses during project life-cycle;
- Recommend monitoring programme and measures to protect hydrological features and other sensitive features from construction impacts including spillages; and
- Prepare a map as per National Freshwater Priority Areas including buffer zones.

8.5 Methodology used to analyse impacts

ISO 2001:2004 defines an impact as any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization’s environmental aspect whilst an environmental aspect is defined as an element of an organization’s activities or products or services that can interact with the environment. The project related impacts have been identified as detailed in Section 7.1 and will be assessed as per the criteria specified in Section 4.1.1 and Table 8-2 below:

Table 8-2: Criteria for Site and Route Selection

Aspect	Criteria	Rationale
Visual Impact	<i>Avoid area used for tourism and recreational activities</i>	<ul style="list-style-type: none"> • Avoid aligning the route across or in front of areas with scenic and wilderness qualities, particularly areas visited frequently. • Keep the power lines off higher ground, and rather align them in valleys and lower lying areas where they will be less obtrusive.
Housing Infrastructure	<i>Avoid crossing existing infrastructure</i>	<ul style="list-style-type: none"> • To avoid interference with the day to day activities of the residents during construction and maintenance.
Biodiversity	<i>Avoid steep slopes, and water courses which have species diversity</i>	<ul style="list-style-type: none"> • To maintain the integrity of biodiversity,
Topography	<i>Avoid steep terrain and rocky outcrops.</i>	<ul style="list-style-type: none"> • These areas are difficult to access, would require roads that are prone to erosion,
Archaeological Attributes	<i>Avoid vulnerable and important archaeological sites.</i>	<ul style="list-style-type: none"> • Archaeological sites are important from a cultural and tourism perspective, and would likely be damaged during if the construction activities.

Birds	<i>Avoid important bird habitats, including migration routes, cliff and steep slopes, and larger riverbeds.</i>	<ul style="list-style-type: none"> • Electrocutation/ collision of birds with the power line is likely to occur during the operation phase
Accessibility	<i>Issues concerning accessibility during construction and maintenance should be considered</i>	<ul style="list-style-type: none"> • The power line should be constructed where it will be accessible to the construction and maintenance.
Technical Feasibility	<i>Issues concerning the Right of Way</i>	<ul style="list-style-type: none"> • The power line should follow routes where the Right of way will not be compromised. A 400kV power lines needs approximately 55m

The assessment will consider the descriptions of how an environmental effect will occur or how the project will interact with the environment. The type of effect was determined by the environmental components sensitivity to and the ability to recover from the impact was also considered by evaluating the extent, magnitude, duration and the reversibility of the impact resulting from project activities. The evaluation criteria used for the project is presented in Section 8.5.1 below.

8.5.1 Characteristics of Environmental Impacts

The significance of an impact is an expression of the cost or value of an impact to society. Impacts are divided according to phases: pre-construction, construction, operation and decommissioning phase. The following parameters will be used to assess the identified environmental impacts:

8.5.1.1 Magnitude/ Intensity of the effect

This refers to the degree to which the project area is affected by an impact. The intensity of the impact is considered by examining whether the impact is destructive or benign, whether it destroys impacted environment, alters its functioning, or slightly alters the environment itself.

Table 8-3: Scoring of Intensity

CATEGORY	DESCRIPTION	SCORE
Minor (MI)	The impact alters the affected environment in such a way that the natural processes or functions are not affected.	2
Low (LO)	The affected environment is altered, but functions and processes	4

	continue, albeit in a modified way.	
Medium (ME)	The impact alters the affected environment in such a way that the natural processes or functions are modified to a great extent.	6
High (HI)	Function or process of the affected environment is disturbed to the extent where it temporarily or ceases.	8
Very High (VH)	Function or process of the affected environment is disturbed to the extent where it permanently ceases.	10

8.5.1.2 Extent

These are geographic boundaries that reflect the physical area in which an impact occurs.

Table 8-4: Scoring of Extent

CATEGORY	DESCRIPTION	SCORE
Footprint (F)	The impacted area extends only as far as the activity, including the total footprint occurring within the total site area.	1
Site (S)	The impact could affect the whole, or a significant portion of the site.	2
Regional (R)	The impact could affect the area including the neighboring properties, the transport routes and the adjoining towns or suburbs.	3
National (N)	The impact could have an effect that expands throughout the country (South Africa).	4
International (IN)	Where the impact has international ramifications that extend beyond the boundaries of South Africa.	5

8.5.1.3 Duration

Duration pertains to the length of time that the environmental impact will be felt by the affected entities.

Table 8-5: Scoring for Duration

CATEGORY	DESCRIPTION	SCORE
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Short term (ST)	The impact will either disappear with mitigation or will be mitigated through a natural process in a period shorter than that of the construction phase.	1
Short to Medium Term (SMT)	The impact will be relevant through to the end of a construction phase.	2
Medium term (MT)	The impact will last up to the end of the development phases, where after it will be entirely negated.	3
Long term (LT)	The impact will continue or last for the entire operational lifetime of the development, but will be mitigated by direct human action or by natural processes thereafter.	4
Permanent (P)	This is the only class of impact, which will be non-transitory. Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient.	5

8.5.1.4 Probability

This describes the likelihood of the impacts actually occurring. The impact may occur for any length of time during the life cycle of the activity, and not at any given time.

Table 8-6: Scoring for Probability

CATEGORY	DESCRIPTION	SCORE
Improbable (IM)	The possibility of the impact occurring is none, due either to the circumstances, design or experience. The chance of this impact occurring is zero (0%).	1
Possible (PO)	The possibility of the impact occurring is very low, due either to the circumstances, design or experience. The chances of this impact occurring is defined as 25%.	2
Likely (L)	There is a possibility that the impact will occur to the extent that provisions must therefore be made. The chances of this impact	3

	occurring is defined as 50%.	
Highly Likely (HL)	It is most likely that the impacts will occur at some stage of the development. Plans must be drawn up before carrying out the activity. The chances of this impact occurring is defined as 75%.	4
Definite (D)	The impact will take place regardless of any prevention plans, and only mitigation actions or contingency plans to contain the effect can be relied on. The chance of this impact occurring is defined as 100%.	5

Table 8-7: Scoring for Reversibility of Impact

CATEGORY	DESCRIPTION	SCORE
Completely Reversible (CR)	The impact can be completely reversed with the implementation of the correct mitigation and rehabilitation measures as stipulated in the Environmental Management Programme.	90-100%
Partly reversible (PR)	The impact can be partly reversed providing that mitigation measures as stipulated in the Environmental Management Programme are implemented and rehabilitation measures are undertaken.	6-89%
Irreversible (IR)	The impact cannot be reversed, regardless of the mitigation or rehabilitation measures taking place	0-5%

Table 8-8: Scoring for Resource Loss

CATEGORY	DESCRIPTION	SCORE
Resource will not be lost (RL)	The resource will not be lost or destroyed provided that mitigation and rehabilitation measures as stipulated in the Environmental Management Programme are implemented.	90-100%
Resource may be	Partial loss or destruction of the resources will occur	1-89%

partly destroyed (RPD)	even though all management and mitigation measures as stipulated in the Environmental Management Programme are implemented.	
Resource cannot be replaced (RR)	The resource cannot be replaced no matter which management or mitigation measures are implemented.	0%

Table 8-9: Score for Mitigatable

CATEGORY	DESCRIPTION	SCORE
Completely Mitigatable (CM)	The impact can be completely mitigated providing that all management and mitigation measures as stipulated in the Environmental Management Programme are implemented	90-100%
Partly mitigatable (PM)	The impact cannot be completely mitigated even though all management and mitigation measures as stipulated in the Environmental Management Programme are implemented. Implementation of these measures will provide a measure of mitigatability.	1-89%
Un-mitigatable (UN)	The impact cannot be mitigated no matter which management or mitigation measures are implemented.	0%

8.5.1.5 Cumulative Impacts

According to DEAT 2002, cumulative impacts are impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities. Cumulative impacts can occur from the collective impacts of individual minor actions over a period of time.

Table 8-10: Categories for Cumulative Impact

CATEGORY	DESCRIPTION
Marginal	Insignificant
Compounding	Increased impact

8.5.1.6 Status

Table 8-11: Categories for the Status of the Impact

CATEGORY	DESCRIPTION
Positive	Impacts have a positive socio-economic and environmental benefits.
Negative	There are negative socio-economic and environment impacts.

8.5.1.7 Significance

The potential impacts are assigned a significance rating (S), based on the information in the tables above. It provides an indication of the importance of the impact in terms of both tangible and intangible characteristics. The significance of the impact “without mitigation” is the prime determinant of the nature and degree of mitigation required. Where the impact is positive, significance is noted as “positive”. (S) is formulated by adding the sum of numbers assigned to Extent (E), Duration (D), and Intensity (I) and multiplying the sum by the Probability.

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

Table 8-12: Significance Ratings of Impacts

CATEGORY	DESCRIPTION	SCORE
Zero Impact	No impact	0
Low	Mitigation of impacts is easily achieved where this impact would not have a direct influence on the decision to develop in the area.	<30
Medium	Mitigation of impact is both feasible and fairly easy. The impact could influence the decision to develop in the area unless it is effectively mitigated.	30-60
High	Significant impacts where there is difficult. The impact must have an influence on the decision process to develop in the area.	>60

8.6 *Environmental Impact Reporting*

An Environmental Impact Report (EIR) will be compiled that will describe the process undertaken and assess the significance of the impacts identified at scoping stage. The EIR will include the specialist impact assessment reports commissioned as part of the environmental process to investigate and assess the two alternative power line corridors, deviations and the substation upgrade and their associated impacts as well as provide additional information required by I&APs to inform their comment and the decision-making process. An Environmental Impact Statement (EIS) will be provided which will summarise the impacts of the proposed project, alternatives assessed and the mitigation measures that have been recommended. Based on the outcome of the assessment, we will recommend to the Department of Environmental Affairs whether the project should be approved or not and the conditions and/ stipulations of such approval. The recommendations will be based on:

- The information provided by the applicant with regards to the project activities;
- Assumptions and limitations during the assessment;
- The impact assessment
- The specialists input;
- GIS mapping; and
- The public input, i.e., stakeholders and Interested and affected parties.

8.7 *Environmental Management Programme (EMPr)*

After impacts are assessed and an Environmental Impact Statement given, DIGES will compile an Environmental Management Programme (EMPr) that discusses the impacts and the mitigation measures recommended to minimize the impacts expected during construction, operation and operation of the 400kV power line and Spencer substation upgrade. This document will also identify corrective actions if monitoring indicates that the performance requirements have not been met and notifies the responsible parties to undertake the actions required. Integrated Environmental Management (IEM) principles will also influence the development of these measures, which are aimed at achieving broadly acceptable standards at minimum costs. These measures, procedures and monitoring guidelines will be designed to ensure that the impacts anticipated as a result of the proposed development are limited to the acceptable

significance predicted in this study. The document will be prepared to meet the requirements of the EIA Regulations, Government Notice R982 as outlined in Appendix 4.

8.8 Public Participation Process

Public participation is an on-going process that is undertaken throughout the project cycle. The Interested and Affected Parties register will therefore be open throughout the EIA process. The draft Environmental Impact Report will undergo a public review for a period of 30 days where they are able to evaluate and comment on the contents of the report. The availability of the report will be advertised in the newspapers used during the Scoping Phase. The draft Environmental Impact Report will also be submitted to the public places within the project area, the land owners and Government stakeholders.

Issues/concerns and/or comments that are raised during the commenting period will be considered and categorized in terms of their complexity with regards to environmental aspects. These issues/concerns and/or comments will be recorded and form part of the final report that will be submitted to the Department of Environmental Affairs for review. These comments will also help the consultant to come up with sound mitigation measures that will reduce certain impacts either socially or environmentally.

8.9 EIA Programme

The intended study programme including the dates that the Competent Authority will be consulted is set out below:

Table 8-13: EIA Programme

PHASE		DATES	CONSULTATION WITH COMPETENT AUTHORITY
Screening	<i>Applicant to determine location and project activities</i>	March 2016	
	<i>EAP to determine applicability of the EIA Regulations</i>	05 -23 September 2016	
Scoping	<i>Baseline Site Investigations</i>		
	<i>Identify I &APs</i>	16 Sept-31 Oct 2016	
	<i>Notify I & Aps about project</i>	13-25 January 2017	
	<i>Advertise</i>	20-24 January 2017	
	<i>Focus Group Meetings</i>	19 January-31 May	

PHASE		DATES	CONSULTATION WITH COMPETENT AUTHORITY
		2017	
	<i>Public Review of DSR</i>	<i>28 April-8 June 2017</i>	
	<i>Incorporate comments</i>	<i>12 June-13 July 2017</i>	
	<i>Submit Application and SR to DEA and I & AP</i>	<i>1 Aug 2017</i>	Yes
	<i>Submit Second SR and PoS to DEA</i>	<i>22 September 2017</i>	Yes
	<i>DEA to review document and issue decision</i>	<i>22 September -6 November 2017</i>	Yes
Environmental Impact Assessment	<i>On -going Public Participation</i>	<i>Until June 2018</i>	
	<i>On-going stakeholder database management</i>	<i>Until June 2018</i>	
	<i>Specialist Assessment</i>	<i>26 July-22 September 2017</i>	
	<i>Impact Assessment and incorporation of Specialist Assessments</i>	<i>November 2017-15 December 2017</i>	
	<i>Public Review of DEIR and DEMPr</i>	<i>15 Jan-15 February 2018</i>	
	<i>Focus Group Meetings</i>	<i>15 Jan- 15 Feb 2018</i>	
	<i>Incorporate comments</i>	<i>16-26 Feb 2018</i>	
	<i>Submit FEIR</i>	<i>March 2018</i>	
	<i>Competent Authority to review documents and issue a decision</i>	<i>March 2018- End July 2018</i>	
Notification	<i>Notification of I &AP of CA decision</i>	<i>Aug 2018</i>	
	<i>Advertise</i>	<i>Aug 2018</i>	

9. CONCLUSION

A scoping assessment was undertaken as guided by EIA Regulations, Government Notice R982 of December 2014 as amended and this report was compiled as per Appendix 2 of the Regulations. A desktop study carried out by the applicant has indicated that they prefer Corridor alternative 1 mainly due to the few nature reserves within the corridor and it also runs parallel existing power lines at Foskor and Spencer substations. All corridor alternatives including the deviation will be fully assessed during the EIA phase to recommend the best alternative for construction and operation.

A baseline survey was carried out to identify the potential biophysical and socio-economic impacts for the proposed area. Avi-fauna, Biodiversity, Heritage, Social, Soil and Land Capability, Tourism, Visual, and Wetland Delineation specialist studies will be undertaken to fully assess the potential impacts identified at the scoping phase. These studies will form part of the Environmental Impact Report. A draft Environmental Management Programme will be compiled as per Appendix 4 to mitigate the identified negative impacts.

Public participation was undertaken and guided by Chapter 6 of the EIA Regulations, R982 as amended. As indicated in Section 6 of this report there were challenges that were faced with regards to the public meetings. Lessons will be drawn from these challenges and during Environmental Impact Assessment Phase, DIGES will ensure that all interested and affected parties are up to date with the process.

Declaration of Disclosure

DIGES undertakes to disclose to the Competent Authority any material information that has or may have the potential to influence the decision of the Competent Authority or the objectivity of any report or document required in terms of National Environmental Management Act (Act No. 107 of 1998) and will provide the Competent Authority with access to all information at its disposal regarding the application, whether such information is favourable to the application or not.



14/08/2017

Signature

Date

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