



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

(For official use only)

File Reference Number:

Application Number:

Date Received:

DEA 12/12/20/2097

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2010, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2010 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
3. Where applicable **tick** the boxes that are applicable in the report.
4. An incomplete report may be returned to the applicant for revision.
5. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
6. This report must be handed in at offices of the relevant competent authority as determined by each authority.
7. No faxed or e-mailed reports will be accepted.
8. The report must be compiled by an independent environmental assessment practitioner.
9. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
10. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.

1. INTRODUCTION

South Africa's new Environmental Impact Assessment (EIA) regulations come into effect on 02 August 2010 signaling the start of the official implementation process of a new regime aimed at improving the efficiency and effectiveness of Environmental Impact Assessment.

EIA is a pro-active and systematic process where potential environmental impacts, both positive and negative, associated with certain activities are assessed, investigated and reported. The process contributes to giving effect to the objectives of integrated environmental management as decision makers are informed of the desirability of such activities and on the conditions which authorisation of the activity should be subject to, where relevant.

The new revised regulations were published by the Minister of Water and Environmental Affairs in Government Gazette 33306 of 18 June 2010. The National Environmental Management Act (NEMA) EIA 2010 regulations and the listing notices thereto replace the NEMA EIA regulations of 2006 and its associated listing notices.

These regulations signify an important step towards a more efficient and effective EIA system, in that apart from aligning the 2006 Regulations with the new and improved Act, the 2010 EIA Regulations seek to streamline the EIA process. It also introduces an approach where impacts associated with the sensitivity of the receiving environment are treated with more care - this is achieved through the introduction of a Listing Notice dedicated to activities planned for predefined sensitive areas.

The lists of activities requiring environmental authorisation prior to commencement have also been revised. This was a major focus of the amendment process as the EIA system was inter alia overburdened by large numbers of applications associated with insignificant activities; the comprehensive scoping and EIR process with its associated substantial costs was in some instances unjustifiably required for activities for which the impacts were known and thereby potential entrepreneurs could be excluded from the economy; and some critical activities were omitted.

Subsequently, three listing notices have been published in conjunction with the new regulations.

Listing notice one (1) stipulates the activities requiring a basic assessment report (BAR). These are typically activities that have the potential to impact negatively on the environment but due to the nature and scale of such activities, these impacts are generally known. Listing notice two (2) identifies the activities requiring both Scoping and an Environmental Impact Report (EIR). These are typically large scale or highly polluting activities and the full range of potential impacts need to be established through a scoping exercise prior to it being assessed. Listing notice three (3) contains activities that will only require an environmental authorisation through a basic assessment process if the activity is undertaken in one of the specified geographical areas indicated in that listing notice. Geographical areas differ from province to province.

2. LEGAL REQUIREMENTS

For this project an application is lodged with the National Department of Environmental Affairs (DEA) for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010.

The Environmental Impact Assessment Regulations were published on 18 June 2010 in Government Notice No. R.543. Relevant to this project are the activities that are listed in Listing Notices 1 and 3. A Basic Assessment (BA) is the procedure designed for Listing Notices 1 and 3, where the impacts of activities are more generally known and can be easily managed. A BA therefore has to be conducted and relevant to this project are the following listed activities:

Relevant notice:	Activity No:	Description of each listed activity as per project description:
R 546 of 18 June 2010	4	The construction of an access and construction road wider than 4 meters (ii) outside urban areas, in (gg) areas within 10 km from national parks or world heritage sites or 5 km from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve.
R 546 of 18 June 2010	14	The clearance of an area of 5 hectare or more of vegetation where 75% or

		<p>more of the vegetative cover constitutes indigenous vegetation, <u>except</u> where such removal of vegetation is required for (3) the undertaking of a linear activity falling below the thresholds in Notice 544 of 2010, in all areas outside urban areas. <i>This activity is relevant, because the proposed 33kV power line will be constructed to 132kV specifications and is therefore a linear activity falling above the threshold of Notice 544 of 2010.</i></p>
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3. STUDY APPROACH

The approach followed by the consultants was based on the specifications for the undertaking of a Basic Assessment as provided in the document "Companion to the EIA Regulations, Integrated Environmental Management Guideline Series 5, Department of Environmental Affairs, 2010".

The study approach followed by the Consultants, in short, entailed the following steps:

- Preliminary site investigations to determine the scope of works of the project and to familiarise with the sites were done by the EAP and Eskom in November and December 2010.
- An application for a Basic Assessment was submitted to DEA and the project was issued with reference number 12/12/20/2097 on 24 November 2010.
- Specialist ecological input was obtained to investigate the flora, fauna and the general biophysical environment in an attempt to identify the potential impacts of the project.
- The proposed development is covered by the National Heritage Resources Act which incorporates heritage impact assessments in the Environmental Impact Assessment process. A Phase 1 Heritage Impact Assessment was therefore done by a specialist to identify the potential impact on heritage resources.
- Input from an avifauna specialist was also obtained to determine the impact of the proposed project on birds.
- During the months of January, February and June 2011 the EAP, the ecologist, the bird impact specialist and the archaeologist/cultural heritage management consultant conducted more site investigations.
- The Public Participation Programme (PPP) started in November 2010 and continued until June 2011. It included the identification of key stakeholders, the distribution of information letters with a request for comment, as well as advertising of the project in the local press and on site.
- In addition, notification of an information meeting on 22 February was sent to all IAPs. The purpose of the meeting was to furnish the landowners and other interested parties with information regarding the extent of the project, the proposed alternatives, the process of negotiations for servitudes, and the extent of the Environmental Impact Assessment Process. Project posters with information and maps of the routes were presented at the meeting. Written comment was requested at the meeting.
- A draft Basic Assessment Report was compiled with the main aim to identify issues, potential impacts and potential alternatives associated with this project. It included a description of the status quo of all relevant environmental components as well as the proceedings of the PPP and communication with registered Interested & Affected Parties (IAPs).
- The draft Basic Assessment Report was distributed on 3 July 2011 to the following stakeholders for their comment:
 - Department of Water Affairs: Water Resources & Water Quality Management
 - Limpopo Heritage Resource Authority
 - Limpopo Department of Economic Development, Environment and Tourism: Environmental Impact Management
 - Department of Agriculture, Forestry and Fisheries: Land Use and Soil Management
 - Department of Minerals and Energy
 - SA National Road Agency Agency Ltd.: Northern Region
 - Road Agency Limpopo
 - Department of Roads and Transport
 - Department of Rural Development and Land Reform: Land Claims Commissioner
 - Department of Rural Development and Land Reform: State Land Administration
 - Transvaal Landou Unie SA Noord
 - Distriks Landbou Unie Vaalwater
 - Distriks Landbou Unie Thabazimbi
 - Distriks Landbou Unie Ellisras
 - Agri Limpopo
 - Waterberg Biospere Reserve
 - Waterberg Nature Conservancy
 - Mokolo River Nature reserve
 - Waterberg District Municipality

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- Lephalale Local Municipality
 - Eskom Transmission
 - Eskom Distribution Northern Region
 - Landowners
- Comment from all IAPs to the draft BAR was requested by 14 September 2011.
 - Subsequently, a *final Basic Assessment Report* (BAR) was compiled (this document) and forwarded to DEA on 30 September 2011. This report includes all concerns raised to the draft BAR and responses thereto. The Consultants (EAP) ensured that any concerns raised are addressed in appropriate detail in the final Basic Assessment Report.

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?

YES	NO
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If YES, please complete the form entitled "Details of specialist and declaration of interest"

for appointment of a specialist for each specialist thus appointed:

Any specialist reports must be contained in Appendix D.

1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail¹:

1.1 Background

Eskom Distribution Northern Region (the Applicant) commissioned Texture Environmental Consultants (the Environmental Assessment Practitioner) to undertake an Environmental Impact Assessment for the following project.

The proposed project requires the construction of a ±17km 33kV line from the new Bulgerivier substation to supply Toulon Pumps. Inclusive to this application is the construction of the following:

- Construct a 33kV line from the new Bulgerivier substation to T-off from the Waterberg-Toulon Pumps 132kV line.
- Construct an access/ construction road for the new 33kV line.
- Obtain a servitude area of 31metres wide for the line.

The outcome of this project is to improve the supply to Toulon Pumps substation. The substation provides supply to the pump station that provides water to the Lephalele Municipality as well as Matimba Power Station.

The applicant is Eskom Distribution Northern Region, Land Development with contact person Ms. Nkateko Msimango, Environmental Management in Polokwane.

1.2 Locality and Regional Context

Eskom is planning the construction of a 33kV powerline from Bulge River substation to link in on the existing Waterberg-Toulon Pumps powerline. The substation and powerline corridors are to the south of Lephalele (Ellisras) and north-east of Vaalwater in the Limpopo Province. The study area is north of the Waterberg mountain range and the Marakele National Park.

The study area falls within the well-known *Waterberg Biosphere Reserve*. The Waterberg Biosphere Reserve (WBR) comprises a large area (100km x 100km) with extraordinary wilderness quality. The area does not have any significant mining, industries or forestry, allowing for the area to remain largely intact. Further to the above the area comprises only one town (Vaalwater), one hamlet (Alma) and some 30 rural settlements on the periphery. The WBR boasts a rich archaeological heritage, the Waterberg complex is a critically important water catchment area in a largely water scarce Province; and approximately 80% of the area is already under conservation management or is operating as game farms.

Biosphere reserves are seen to promote an integrated approach that recognises the link between conservation of biodiversity and the development needs of communities as a central component of the biosphere approach. Biosphere reserves are intended to fulfill three complementary functions:

- Conservation function - to preserve genetic resources, species, ecosystems and landscapes;
- Development function - to foster sustainable economic and human development; and
- Logistic support function - to support demonstration projects, environmental education and training, and research and monitoring related to local, national and global issues of conservation and sustainable development.

¹ Please note that this description should not be a verbatim repetition of the listed activity as contained in the relevant Government Notice, but should be a brief description of activities to be undertaken as per the project description.

To facilitate these functions the following three types of physical elements or zones are recommended:

1. Core areas

Core areas are areas which are securely protected sites for conserving biological diversity, monitoring minimally disturbed ecosystems, and undertaking non-destructive research and other low-impact uses (such as education). These areas do not have to be formally protected, but should be devoted to long-term protection. Provincial nature reserves and national parks naturally fall within this category, but so can privately owned land that has been placed under strict conservation management, by way of a legally established conservancy agreement. The Mokolo Dam Nature Reserve and incorporated land, that is situated in the study area, fall within the core area.

Regarding Service Infrastructure:

- No bulk services will be allowed unless it directly services the Biosphere.
- Service infrastructure will be limited to what is absolutely necessary.
- Service Infrastructure must be of a good quality and have only limited visual and environmental impact.

2. Buffer Zones

Buffer zones are areas which usually surround or adjoin the core areas, and are used for cooperative activities compatible with sound ecological practices, including environmental education, recreation, ecotourism, and applied and basic research. Buffer zones are predominantly natural or near natural areas with clearly defined boundaries and formal administrative status.

3. Transition areas

Transition areas are flexible transition areas or areas of co-operation, which may contain a variety of agricultural activities, settlements and other uses and in which local communities, management agencies, scientists, non-governmental organizations, cultural groups, economic interests and other stakeholders work together to manage and sustainably develop the area's resources.

The Transition Zone comprises of two sub-zones for the purpose of distinguishing between those areas with low impact and those with high impact. The land use within the Transition Zone 1 remains nature-based game ranching, also allowing for cattle grazing, pastures and eco-tourism developments. Emphasis is still be placed on the protection of the Waterberg's character and ecology. Eco-tourism developments of a slightly higher impact and greater size are allowed than within the Buffer Zone. Within the Transition Zone 2, all of the above will be allowed. In addition, higher level tourism developments, cultivated lands, irrigation, orchards, agro-industries, human settlements and related light industry, support services and infrastructure will be allowed.

According to a status of the ecology report of the Waterberg Biosphere Reserve, the study area falls within both highly and moderately transformed areas. Most of the study area falls within an area of low conservation priority, but the Mokolo dam area falls within an area of very high conservation priority. The zonation map of the Waterberg Biosphere Reserve shows the study area to fall mostly within the Transition Zone 2, with the Mokolo Dam Nature Reserve within the Core zone.

Various Spatial Development Guidelines and Spatial Management tools exist on a national, provincial and local level, which are used to manage land uses and land use changes in the study area. These tools provide specific guidelines for desired spatial patterns and land use management. With regard to the WBR, the Limpopo Spatial Development Framework (SDF) Plan is a macro spatial development plan. At a district level, the Waterberg SDF Plan as well as Local SDF plans were completed for Thabazimbi, Mogalakwena, Mookgopong, Modimolle, Bela-Bela and Lephalale, which cover the whole study area. However, although the SDF plans do recognise the existence of the Biosphere area, no clear differentiation is made with regard to guidelines for development or land use management within the WBR.

In the EMF of the Waterberg District Municipality the northern half of the project area is indicated to be in Environmental Management zone 9. This zone is described as 'an area with an agriculture focus with a tourism component surrounded by natural areas'. The southern half of the routes/ project area is in Environmental Management Zone 2 that is described as 'nature and cultural tourism focus areas within a high quality natural setting'.

Three powerline route alternatives were considered for this project. Taking the zonation of the Waterberg Biosphere reserve into consideration, the Eskom powerline project was designed to limit impact on the sensitive Mokolo Dam area that is in the Core Zone. The majority of the proposed project falls in Transition Zone 2 where infrastructure could be allowed.

The Route Alternatives 2 and 3 run further to the west of the Mokolo Dam area and will impact least on the Mokolo Dam Nature Reserve. The **affected properties** for the three routes for the 33kV line are on the farms Bulge Rivier 198 KQ Portions 2, 6; Mooifontein 150 KQ Portions 1,2,3; Hartbeesdrift 189KQ RE; Bulspruit 146 KQ Portion 1; Onverwacht 149 KQ RE, Portion 1; Wolwenfontein 645 LQ Portions 1,2,3; Bultfontein 145 KQ Portions 1,2 in the Lephalale Local Municipality in the Limpopo Province. The study area is situated on the 1:50 000 topographical base maps 2327DC, 2327DD, 2427BA, 2427BB, 2629AA. (Refer to Appendix A for a copy of the Locality map and Route map, with the alternative routes for the line.)

The affected properties for the proposed/preferred Route Alternative 3 are on the farms Bulge Rivier 198 KQ Portions 2, 6; Hartbeesdrift 189KQ RE; Mooifontein 150 KQ Portions 1; Bulspruit 146 KQ Portion 1; Onverwacht 149 KQ RE, Portion 1; Wolwenfontein 645 LQ Portions 2, 3; in the Lephalale Local Municipality in the Limpopo Province.

1.3 Project Details

1.3.1 Need for the project

Toulon Pumps substation provides supply to the pump station that supplies water to the Lephalale Municipality as well as Matimba Power Station. The single 33kV that supplies this substation is in a poor condition, and maintenance thereof has been difficult due to the mountainous terrain.

The Toulon Pumps substation is supplied from Waterberg Substation that is equipped with 2x20MVA 132/33kV and 1x10MVA 132/22kV transformers. The 132/33kV transformers supply Ellisras (Lephalale Municipality) and Toulon Pumps substations while the 132/22kV transformer supplies the Afguns and Marapong feeders.

The broader area is growing with regards to mining and housing developments, as well as existing customers expanding their works and these result in huge demand for power. Currently the network is experiencing under voltages and is incapable of handling additional loads due to the contingency constraints of the network. It is therefore proposed to supply Toulon Pumps substation from the new authorised Bulgerivier substation. **The current EIA application is only part of the broader scope of works to improve the network performance.**

Part of the **scope of works** for this new project is the following:

- Install 10MVA 132/33kV transformer at Bulgerivier substation.
- Construct a ±17km 33kV line from Bulgerivier substation to supply Toulon Pumps.
- Construct an access/ construction road for the new 33kV line.
- Obtain a servitude area of 31metres wide for the 33kV line

(Refer to the Eskom Scope of works, in Appendix C, for more information).

1.3.2 Project components

The proposed project requires the construction of a 33kV line from the new (to be constructed) Bulgerivier substation to supply the existing Toulon Pumps substation. The 33kV line will T-off from the Waterberg-Toulon Pumps 132kV line. Inclusive to this application is the construction of the following:

1. *Construct a 33kV line from the new Bulgerivier substation to supply the existing Toulon Pumps substation.*

It is proposed to construct a 33kV line from the new Bulgerivier substation north towards Toulon Pumps substation at the Mokolo dam. The new proposed line will T-off from the Waterberg-Toulon Pumps 132kV line that supplies Toulon Pumps substation.

The proposed structure for the 33kV powerline, is a monopole steel structure, built to 132kV standards. Clearance between phases on the same side of the pole structure is normally around 2.2m for this type of design, and the clearance on strain structures is 1.8m. This clearance should be sufficient to prevent phase – phase electrocutions of birds on the towers. The length of the stand-off insulators is likely to be about 1.5 meters. Refer to Appendix C for a visual of the monopole steel structure.

The pylons for a powerline are between 18 to 30 meters high, depending on the terrain and existing land use. The flatter the terrain, the shorter the pylons to be used. The conductor attachment height on a pole is 13m (for 20m intermediate poles) and more for longer poles, depending on the pole length. Ground clearances will adhere to OHS-Requirements of 6.3m and 7.5m. Where the site is relatively flat, single pylons without stays will be used, except for where the powerline has to change direction. Relevant to this project is that the site investigated for the line is flat for the majority of the route and stays will not be used except at turns in the route. Rocky areas are found closer to the Mokolo Dam area. Strain poles have a planting depth of 2m but intermediate pole planting depths varies between 2.6m (for 20m poles) and 3m (for 24m poles) or more depending on the pole length. The pole foundation is dependant on the soil type and varies in size and consists of a 8:1 good soil cement mix that are compacted in 200mm layers. A concrete cap of 1.2m x 1.2m is cast around the pole to "seal" the soil around the pole from oxygen - to control oxidation or rust on the pole. In general, these pylons could be placed 220-330 meters apart, for the length of the line of approximately 17km. The separating distance from any other line is 21 meters.

The Provincial Roads P84/1 (R517); D2132 are affected by the proposed route servitudes.

In terms of the National Roads Act (Act No 54 of 1971) the requirements of standard conditions applicable to power lines parallel to or across national and provincial roads are as follows:

- Only under exceptional circumstances will crossings within 500m of an intersection be permitted.
- No infrastructure will be allowed within 60m from the edge of the road reserve or within a distance of ninety-five (95) metres from the centre line of a building restriction road.
- Vertical clearance as set out in the Occupational Health and Safety Act No. 85 of 1993 to be maintained.
- The proposed angle of crossing to be as close to 90 degrees as possible.
- When considering an infrastructure site, no direct access from a national road to be permitted.

In addition, the following general requirements of the Provincial Department of Roads and Transport: Roads Management could be expected:

- A wayleave will be granted in terms of the Advertising on Roads and Ribbon Development Act (Act 21 of 1940, as amended) and the Roads Ordinance (Ordinance 22 of 1957, as amended) and its Regulations and does not exempt Eskom from the provisions of any other law.
- The Wayleave Application should be supplied to the Dept, with appropriate plans before the commencement of construction.
- The general conditions for the overhead wayleave should be accepted by Eskom in writing as per written notification of the Dept.
- The overhead lines are not to be lower than 10m above the highest point of the road surface.
- At crossings no pylons, poles, anchors or parts thereof may be erected closer than 16 m from the road reserve. Where the routes of the lines are parallel to the road(s), it must not be closer than 15m outside the road reserve.
- Crossing services should be perpendicular to the affected road(s).

It is expected that Eskom Land and Rights will apply for exemption from some of the requirements above. The specific requirements from the Provincial Department of Roads and Transport: Roads Management should be obtained. At the time of submission of this report, comment has not been obtained from the Department.

The route for the line has three alternatives that are discussed as follows:

- Route Alternative 1, which runs along the symbols ABCDE,
 - Route Alternative 2, which runs along the symbols AFCDIE,
 - Route Alternative 3, which runs along the symbols AFGHIE,
- (Refer to the map in Appendix A).

Alternative 1: The route for the line is proposed to run from Bulgerivier substation (at A-B) in an easterly direction adjacent to the R517 between Vaalwater and Lephalale. From there the route will turn north at Bulgerivier onto the D2132 dirt road between Bulgerivier (B-C-D) and Toulon Pumps up to the point where the proposed line will T-off from the Waterberg-Toulon Pumps 132kV line (E).

Alternative 2: This alternative is proposed to run along farm boundaries from Bulgerivier substation (A-F). The route will turn east to cross the dirt road from Bulgerivier to Toulon Pumps (at C). From there the route will follow the road to D where it will turn northwest along a farm border towards I and then north to T-off at E.

Alternative 3: Alternative 3 runs from the Bulgerivier substation (A) all along farm borders. Firstly in a northerly direction towards F, turns northwest to G, north to H and then in a easterly direction to I and north to the T-off at E. (Refer to google map in Appendix A).

2. *Obtain a servitude area of 31 meters wide*

A servitude area is generally a no building area, except for Eskom structures. Usually, normal farming activities may continue in a servitude with the exception that no trees may be planted or high structures may be erected. In general, the servitude for Eskom 132kV powerlines is 31 meters wide which implies 15,5 meters on either side of the powerline. The proposed new line will be built to 132kV specifications.

3. *Construct an access road for the new line*

An access road will be constructed underneath the proposed line to be able to construct the line. Storm water drainage and erosion prevention measures will be implemented. An area of 8m will be cleared, 4m on either side of the proposed alignment of the line.

1.4 Compensation

The process of negotiations can commence as soon as the Environmental Impact Assessment recommended the preferred alternative i.e. route, site etc. for the project. After identification of the preferred alternative, a land valuator will be appointed to value the property(ies). The distance/length of the line affecting each property is measured to calculate the hectares affected by the line. The valuations will be tabled before an Eskom tender committee for approval. A process of negotiations will follow between landowner(s) and Eskom. After agreement has been reached, Eskom and the landowner will sign the documents. Eskom pays 100% of the land value of the 31 meters wide servitude. Servitude rights for a servitude in general terms will be obtained by means of an "Option to Acquire a Servitude". Interest will be calculated from the date of signing of the option to the date of registration of the servitude. Eskom Distribution has a compensation model that allows for a once-off compensation for the servitude which will be paid upon registration of the servitude. A servitude will be registered which provides Eskom with the rights to construct and maintain a powerline on the applicable property. The applicable land is therefore not purchased. All normal activity on the farm/land can continue as usual. For the sake of safety the landowner should not construct any structures in the servitude area underneath the powerline.

Eskom has the right to enter the servitude 24 hours per day to maintain the line. Power for rural supply cannot be supplied directly from an 132kV line. There is however some indirect benefit in the construction of the line for the community, in that the supply would be strengthened with a stable feed to the substations. Eskom strives to follow the shortest route from point A to B due to the fact that the line costs approximately R1 600 000 per kilometer to construct. Objections and site-specific problems will be considered in the finalisation of any route/site.

The option document (referred to above) is a binding document that will reflect all the requirements of the landowner, for example: the negotiated compensation for the servitude; specific access arrangements to his property etc. Negotiations between the landowner and the negotiator will address site-specific requirements such as the positions of the pylons, on the property in question. These agreements/requirements will be noted on a site plan, as part of the option document. Construction may only commence once the ROD has been issued and the option document has been signed by the affected landowner.

2. FEASIBLE AND REASONABLE ALTERNATIVES

"alternatives", in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

- (a) the property on which or location where it is proposed to undertake the activity;
- (b) the type of activity to be undertaken;

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- (c) the design or layout of the activity;
 - (d) the technology to be used in the activity;
 - (e) the operational aspects of the activity; and
 - (f) the option of not implementing the activity.

Describe alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. The determination of whether site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

THE FOLLOWING ALTERNATIVES HAVE BEEN IDENTIFIED AND ARE DESCRIBED AS FOLLOWS:

2.1 ALTERNATIVE ACTIVITIES:

2.1.1 Electricity Distribution

The outcome of this project will ensure the injection of premium supply into the Eskom Distribution Network. The addition of the proposed 33kV line from the new Bulgerivier substation towards Toulon Pumps substation will ensure sufficient supply to the pump station, that supplies water to the Lephalale Municipality as well as Matimba Power Station. Currently, the single 33kV that supplies this substation is in a poor condition, and maintenance thereof has been difficult due to the mountainous terrain.

The proposed project is part of a total solution to supply the network with electricity and in specific the Toulon Pumps substation. There is no other activity alternative due to the technical constraints of the proposed project.

2.1.2 Agriculture

The construction of powerlines with the resulting clearance of servitudes can lead to a loss in agricultural land. The proposed construction of the powerline will however not impact significantly on any agricultural activity. The following is relevant for this project:

- The land capabilities of the immediate surrounding areas within which the proposed servitudes fall are fairly limited. Most of the sandy soils are too shallow or nutrient-poor for high-yield crop production. Certain areas with heavier soils are suited for arable land. However, due to the dry winter periods irrigation would be necessary. The climate is generally favourable for year-round production of crops in open-field cultivation.
- The veld carrying capacity is relatively low although many sweet grasses are present. Cattle farming does occur in the area but suitably large areas for grazing are needed. The suitability for grazing land is there but needs to be carefully managed.
- The general land capability is highly suited to wilderness land. This is already a major form of land use in the region with numerous nature reserves, a biosphere reserve, private game farms and lodges. Including the Marakele National Park.
- Should the construction of the powerline impact on any agricultural activities, this impact will only be for a limited period during construction. An access road of 8m wide will be cleared to construct the powerline. After construction the access road could be revegetated and normal agricultural activities could continue under the powerline as usual.
- It is therefore submitted that the servitude area will not interfere with any agricultural activities. In addition, Eskom will not own the servitude but will purchase the rights to construct and maintain the line. A change in land use from agriculture to other land uses is not applicable.
- In addition, in terms of the Subdivision of Agricultural Land Act, 1970 (Act 70 of 1970), Section 2(a) Eskom is a statutory body and therefore it is not subjected to the provisions of the Act.

2.1.3 No-Go

It is suggested that to maintain the status quo is not the best option for the macro environment. Toulon Pumps substation provides supply to the pump station that in turn supplies water to the Lephalale Municipality as well as Matimba Power Station. The single 33kV that supplies this substation is in a poor condition, and the status quo cannot be maintained.

This proposed project is therefore part of the infrastructure to supply the Eskom Distribution grid with power. Should this application not be approved then the supply to the Toulon Pumps substation will be unreliable and in future this can result in major disturbances in water provision to Lephalale Municipality as well as Matimba Power Station. This could subsequently result in major disruptions of power supply to different areas at different times. The No-go option will not solve the current demand for electricity at Toulon Pumps substation. The No-Go development alternative could therefore not be considered the responsible way to manage the site.

2.2 ALTERNATIVE ROUTES FOR THE POWER LINE

The project consists of the construction of an approximately 17km 33kV line between the new Bulgerivier substation towards the Toulon Pumps substation. Alternative routes for the power line were considered. Refer to Appendix A for the project maps indicating the route Alternatives.

- Route Alternative 1, which runs along the symbols ABCDE,
- Route Alternative 2, which runs along the symbols AFCDIE,
- Route Alternative 3, which runs along the symbols AFGHIE,

2.2.1 Ecological Status report

The ecological status report identified the following:

- The study area falls within the Savanna Biome. The vegetation types encountered are those of Central Sandy Bushveld in the north of the area and Western Sandy Bushveld in the south of the area. With possible elements from two nearby veldtypes of Limpopo Sweet Bushveld and Waterberg Mountain Bushveld present in the study area.
- Red data species and protected species found in the area include Camel thorn (*Acacia erioloba*), Leadwood (*Combretum imberbe*), Marula (*Sclerocarya birrea* subsp. *caffra*), Wild pear (*Dombeya rotundifolia* var. *rotundifolia*), and Tamboti (*Spirostachys africana*).
- No threatened or protected mammal, butterfly or amphibian species were observed in the study area, although some are most likely present. These include African rock python (*Python natalensis*), Giant bullfrog (*Pyxicephalus adspersus*), Honey badger (*Mellivora capensis*), Pangonlin (*Manis temmincki*) and Southern African hedgehog (*Atelerix frontalis*).
- The soils within the study area and those of the proposed servitude routes for the powerline are predominantly shallow to deep sandy and gravelly soils with low clay content and are typically red to yellowish in colour. There are areas of loamier soils, which are ideal for numerous agricultural crops.
- Large areas are undisturbed bushveld with numerous nature reserves, game ranches and lodges. Other land uses in the area include agriculture in the form of irrigated, cultivated lands and cattle. The urbanisation of the immediate region is low.
- Floristic and faunal sensitivity calculations were done. A large percentage of the vegetation in the study area can be viewed as pristine. The vegetation is fairly uniform with no small ecosystems or islands of uniqueness being present.
- Floristic sensitivity calculations were as follows: Regional vegetation – medium (Go-Slow zone); Rivers – medium/high (Go-But zones); Rocky areas – medium/high (Go-But zone); Camel thorns – high (No-Go zone).
- Faunal sensitivity calculations were as follows: Regional vegetation – medium (Go-Slow zone); Rivers – medium/high (Go-But zones); Rocky areas – medium/high (Go-But zones); Camel thorns – medium/high (Go-But zone).
- The ecological sensitivity of the study area is determined by combining the sensitivity analyses of both the floral and faunal components with the following outcomes: Regional vegetation – medium (Go-Slow zone); Rivers – medium / high (Go-But zones); Rocky areas - medium/high (Go-But zone); and the area of Camel thorns – high (No-Go zone).

- A number of mitigating actions were recommended and the proper implementation and management of these will ensure that impacts are reduced and are kept to acceptable levels.
- Some of the main mitigating measures included avoiding highly sensitive areas; not setting up campsites or storage facilities outside of the substation site; limiting the amount of actual pylons within the rocky area; placing pylons a minimum of 30m from the edge of river banks and 10m from drainage lines; removing all rubble to official dumpsites; implementing soil erosion and weed eradication management measures after construction; and not using chemicals for the control of weeds.
- Assessment of impacts on the various distinctive ecological units in the study area (before and after) mitigating and management measures were deemed to be as follows: Regional vegetation – medium (before), low (after); Rivers – medium, bordering on high (before), low (after); Rocky areas – medium, bordering on high (before), low (after). No rating matrix is given for the area of camel thorns simply because there are no possible mitigating measures to reduce the negative impact and the area must be seen as a “No-Go” zone.
- Tamboti trees were observed in the study area, especially in the rocky ridges and rocky areas close to the Mokolo Dam. The rocky ridges or slopes have a fair presence of Tamboti trees (*Spirostachys africana*) spread throughout them. According to the provincial ordinances of the Limpopo Province the Tamboti is a protected tree and permits need to be obtained from the Provincial Department of Environment Affairs. Fines or prison sentences may be imposed on organisations or persons removing such trees without prior permission. For further details see the Limpopo Environmental Management Act (7 of 2003), published 30 April 2004, Provincial Gazette No.997.
- Having taken all aspects of the investigation into account Alternative Route 1 (A-B-C-D-E) is not recommended. While Route 2 (A-F-C-D-I-E) and Route 3 (A-F-G-H-I-E) are seen as equally acceptable alternatives. Therefore, all other factors in the EIA need to be taken into account in determining whether Route 2 or Route 3 should be the final route alternative for the project.

Line Variant Recommendations

Line variant recommendations are made on the strength of all the impacts and mitigating actions. As well as the sensitivities of the various biophysical features and vegetation types.

Comparison of the number of ecologically sensitive units alternative routes potentially impact on:

Ecologically Sensitive Criteria	Alternative Route 1			
	A-B	B-C	C-D	D-E
Areas of High ecological sensitivity	0	0	1	1
No-Go areas	0	0	0	1
Rivers and streams crossed	0	0	0	1
Rocky outcrops in corridor	0	0	1	1
Wetlands encountered	0	0	0	0
Total impacts per section	0	0	2	4
Total impacts per route	6			

Ecologically Sensitive Criteria	Alternative Route 2				
	A-F	F-C	C-D	D-I	I-E
Areas of High ecological sensitivity	0	0	0	1	0
No-Go areas	0	0	0	0	0
Rivers and streams crossed	0	0	0	1	0
Rocky outcrops in corridor	0	0	0	1	0
Wetlands encountered	0	0	0	0	0
Total impacts per section	0	0	0	3	0
Total impacts per route	3				

Ecologically Sensitive Criteria	Alternative Route 3				
	A-F	F-G	G-H	H-I	I-E
Areas of High ecological sensitivity	0	0	1	0	0
No-Go areas	0	0	0	0	0
Rivers and streams crossed	0	0	1	0	0

Rocky outcrops in corridor	0	0	1	0	0
Wetlands encountered	0	0	0	0	0
Total impacts per section	0	0	3	0	0
Total impacts per route	3				

The above comparison shows that Alternative Route 1 has the highest number of potential impacts, while Alternative Routes 2 & 3 potentially have the same number of impacts on ecological sensitive areas. Therefore other criteria, such as number of sharp turns in a corridor and number of low impact areas passed through, need to be considered as well. Sharp turns in a powerline leave a larger footprint on the ground than that of a straight line.

All three routes pass over watercourses, while Route 1 passes through a “No-Go” Zone. Alternative Routes 2 & 3 are therefore both more ecologically feasible than Route 1. However, Routes 2 & 3 both pass through areas where protected Tamboti trees occur. Therefore, although the impacts of Routes 2 & 3 on the natural environment will potentially be the same it is imperative that all mitigating measures are implemented to reduce these impacts.

For all of the above reasons, Alternative Route 1 is not an acceptable alternative, while Alternative Routes 2 & 3 are equally acceptable or recommended alternatives.

Therefore from an ecological perspective the line variant recommendation is: **Alternative Route 2** or **Alternative Route 3** can be used.

2.2.2 Bird Impact Assessment

The Bird Impact Assessment indicated the following:

- **Habitat transformation impact**

The impact of the proposed line on the natural habitat (and therefore potentially on power line sensitive Red Data species) would be limited if it is placed next to existing linear impacts, particularly dirt roads, as is the case with alternative 1. If alternative 1 is selected, the impact of the clearing of vegetation for the new line would considerably less than if the line was partially constructed in undisturbed woodland, as would be the case if either alternative 2 or 3 is selected. The impact on smaller, non-Red Data species that are potentially breeding in the area that will be cleared for the new power line will be local in extent, in that it will not affect regional or national populations in any significant way.

The proposed construction of the new power line should have a **low** habitat transformation impact from an avifaunal perspective, if **alternative 1** is used. If **alternative 2 or 3** is used, the impact would be **medium**, as it would involve more extensive clearing of undisturbed woodland.

- **Collisions**

The new line will cross drainage lines and might be a potential cause of collisions for these species and other, non-Red Data species such as certain species of ducks, waders and possibly Hamerkops. Species such as Kori Bustard and Secretarybird are known to be vulnerable to collisions with power lines, and the risk would be higher where the proposed alignments cross open habitat, especially old lands. The collision risk should therefore be regarded as **medium-high** along some sections of the proposed power line alignments.

- **Electrocution**

Although not recorded in large numbers, it is likely that White-backed and Cape Vultures forage in the area. There are cattle and game in the area surrounding area, and should a carcass be available to the birds, they might attempt to roost on the poles. The risk of phase-earth electrocution is therefore evaluated to be **medium**.

Conclusions

The construction of the proposed new 33kV Bulge-Toulon power line should pose a limited threat to the birds. The power line poses a **medium-high** collision risk, mostly to water associated species, and those species attracted to open habitats, particularly old lands. The line will pose a **medium** electrocution risk, in particular to vultures. If alternative 1 is used for the power line, the habitat transformation impacts should be **low**, but if alternative 2 or 3 is used, the habitat transformation impacts will be **medium**, as it will entail the clearing of undisturbed woodland.

Recommendations

- The span that crosses drainage lines and old lands should be marked with Bird Flight Diverters on the earth wire of the line, five metres apart, alternating black and white

- The poles should be fitted with bird perches on top of the poles to draw birds, particularly vultures, away from the potentially risky insulators.
- From a bird impact perspective, **all three alignments** (Route Alternatives 1, 2 and 3) are suitable options, should the proposed mitigation be implemented.

2.2.3 Heritage Impact Assessment

The main findings of the Heritage Impact Assessment are summarised as follows:-

The Phase I Heritage Impact Assessment for the Eskom Project revealed none of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) for the Eskom Project Area. Therefore, from a heritage point of view, **Alternatives 1, 2 and 3** are suitable, for the construction of the project.

2.3 CONCLUSION

Alternative routes have been investigated for the project. From a bird impact as well as heritage viewpoint there is no preferred alternative route. From a purely ecological viewpoint, Route Alternatives 2 or 3 can be used. The final decision between Route 2 or 3 should be made on the accumulative weight of other parameters such as feedback from public participation, land tenure issues, construction costs, etc.

Alternative 3 is preferred from the viewpoint of impact on the landowners and agricultural activities.

Paragraphs 3 – 13 below should be completed for each alternative.

The areas where the alternatives for the proposed line are located do not contain any specific features that will make them critically different from the surrounding areas and from one another. The contents of Paragraph 3-13 below would therefore be the same for Alternative 1, 2 and 3.

3. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The coordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

List alternative sites, if applicable.

Alternative: N/A

Alternative S1² (preferred or only site alternative)

Alternative S2 (if any)

Latitude (S):		Longitude (E):	
o	'	o	'
o	'	o	'

In the case of linear activities:

Alternative: Refer to tables below

Alternative S1 (preferred route alternative and Alt line 1)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

Alternative S2 (Alt Line 2)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

Alternative S3 (Alt Line 3)

- Starting point of the activity
- Middle/Additional point of the activity
- End point of the activity

Latitude (S):		Longitude (E):	

² "Alternative S.." refer to site alternatives.

For route alternatives that are longer than 500m, please provide co-ordinates taken every 250 meters along the route for each alternative alignment.

Alternative 1:

250m intervals	Latitude (S) (Degrees Decimal Minutes)	Longitude (E) (Degrees Decimal Minutes)
1	23° 59.024' S	27° 40.813' E
2	23° 59.157' S	27° 40.840' E
3	23° 59.290' S	27° 40.867' E
4	23° 59.423' S	27° 40.894' E
5	23° 59.557' S	27° 40.921' E
6	23° 59.688' S	27° 40.905' E
7	23° 59.813' S	27° 40.923' E
8	23° 59.885' S	27° 41.043' E
9	23° 59.922' S	27° 41.185' E
10	23° 59.958' S	27° 41.327' E
11	23° 59.994' S	27° 41.469' E
12	24° 0.030' S	27° 41.611' E
13	24° 0.066' S	27° 41.753' E
14	24° 0.143' S	27° 41.794' E
15	24° 0.275' S	27° 41.786' E
16	24° 0.386' S	27° 41.871' E
17	24° 0.496' S	27° 41.956' E
18	24° 0.584' S	27° 42.069' E
19	24° 0.707' S	27° 42.072' E
20	24° 0.840' S	27° 42.045' E
21	24° 0.970' S	27° 42.044' E
22	24° 1.096' S	27° 42.100' E
23	24° 1.221' S	27° 42.155' E
24	24° 1.350' S	27° 42.154' E
25	24° 1.480' S	27° 42.114' E
26	24° 1.611' S	27° 42.074' E
27	24° 1.741' S	27° 42.035' E
28	24° 1.872' S	27° 41.996' E
29	24° 2.002' S	27° 41.956' E
30	24° 2.133' S	27° 41.917' E
31	24° 2.263' S	27° 41.877' E
32	24° 2.393' S	27° 41.837' E
33	24° 2.523' S	27° 41.794' E
34	24° 2.652' S	27° 41.751' E
35	24° 2.782' S	27° 41.707' E
36	24° 2.911' S	27° 41.664' E
37	24° 3.041' S	27° 41.621' E
38	24° 3.170' S	27° 41.578' E
39	24° 3.300' S	27° 41.535' E
40	24° 3.430' S	27° 41.493' E
41	24° 3.559' S	27° 41.449' E
42	24° 3.689' S	27° 41.407' E
43	24° 3.818' S	27° 41.364' E
44	24° 3.948' S	27° 41.321' E
45	24° 4.077' S	27° 41.278' E
46	24° 4.190' S	27° 41.197' E
47	24° 4.300' S	27° 41.111' E
48	24° 4.410' S	27° 41.025' E
49	24° 4.541' S	27° 40.995' E
50	24° 4.672' S	27° 41.024' E
51	24° 4.803' S	27° 41.061' E
52	24° 4.934' S	27° 41.098' E
53	24° 5.065' S	27° 41.135' E
54	24° 5.196' S	27° 41.172' E
55	24° 5.327' S	27° 41.210' E
56	24° 5.458' S	27° 41.246' E
57	24° 5.590' S	27° 41.284' E
58	24° 5.721' S	27° 41.321' E
59	24° 5.852' S	27° 41.358' E
60	24° 5.983' S	27° 41.395' E
61	24° 6.114' S	27° 41.432' E
62	24° 6.245' S	27° 41.469' E
63	24° 6.376' S	27° 41.506' E
64	24° 6.507' S	27° 41.543' E
65	24° 6.638' S	27° 41.580' E
66	24° 6.772' S	27° 41.573' E
67	24° 6.905' S	27° 41.552' E

68	24° 7.039' S	27° 41.530' E
69	24° 7.173' S	27° 41.508' E
70	24° 7.300' S	27° 41.457' E
71	24° 7.424' S	27° 41.399' E
72	24° 7.497' S	27° 41.314' E
73	24° 7.462' S	27° 41.171' E
74	24° 7.426' S	27° 41.029' E
75	24° 7.391' S	27° 40.886' E
76	24° 7.356' S	27° 40.744' E
77	24° 7.321' S	27° 40.602' E
78	24° 7.286' S	27° 40.459' E
79	24° 7.233' S	27° 40.323' E
80	24° 7.126' S	27° 40.286' E
81	24° 6.991' S	27° 40.298' E

Alternative 2:

250m intervals	Latitude (S) (Degrees Decimal Minutes)	Longitude (E) (Degrees Decimal Minutes)
1	23° 59.144' S	27° 40.730' E
2	23° 59.280' S	27° 40.730' E
3	23° 59.415' S	27° 40.729' E
4	23° 59.551' S	27° 40.729' E
5	23° 59.686' S	27° 40.728' E
6	23° 59.821' S	27° 40.728' E
7	23° 59.957' S	27° 40.727' E
8	24° 0.092' S	27° 40.727' E
9	24° 0.228' S	27° 40.726' E
10	24° 0.327' S	27° 40.798' E
11	24° 0.399' S	27° 40.923' E
12	24° 0.472' S	27° 41.047' E
13	24° 0.544' S	27° 41.172' E
14	24° 0.617' S	27° 41.296' E
15	24° 0.690' S	27° 41.420' E
16	24° 0.762' S	27° 41.545' E
17	24° 0.835' S	27° 41.669' E
18	24° 0.907' S	27° 41.794' E
19	24° 0.980' S	27° 41.918' E
20	24° 1.053' S	27° 42.043' E
21	24° 1.125' S	27° 42.167' E
22	24° 1.232' S	27° 42.230' E
23	24° 1.366' S	27° 42.234' E
24	24° 1.496' S	27° 42.192' E
25	24° 1.626' S	27° 42.150' E
26	24° 1.756' S	27° 42.108' E
27	24° 1.886' S	27° 42.066' E
28	24° 2.016' S	27° 42.024' E
29	24° 2.145' S	27° 41.982' E
30	24° 2.275' S	27° 41.940' E
31	24° 2.405' S	27° 41.898' E
32	24° 2.535' S	27° 41.856' E
33	24° 2.665' S	27° 41.814' E
34	24° 2.794' S	27° 41.772' E
35	24° 2.924' S	27° 41.730' E
36	24° 3.054' S	27° 41.688' E
37	24° 3.159' S	27° 41.635' E
38	24° 3.101' S	27° 41.502' E
39	24° 3.043' S	27° 41.368' E
40	24° 2.984' S	27° 41.235' E
41	24° 2.926' S	27° 41.102' E
42	24° 2.867' S	27° 40.969' E
43	24° 2.895' S	27° 40.886' E
44	24° 3.029' S	27° 40.864' E
45	24° 3.163' S	27° 40.843' E
46	24° 3.297' S	27° 40.821' E
47	24° 3.431' S	27° 40.799' E
48	24° 3.565' S	27° 40.777' E
49	24° 3.699' S	27° 40.755' E
50	24° 3.833' S	27° 40.734' E
51	24° 3.967' S	27° 40.712' E
52	24° 4.101' S	27° 40.690' E
53	24° 4.234' S	27° 40.668' E
54	24° 4.369' S	27° 40.646' E

55	24° 4.502' S	27° 40.624' E
56	24° 4.636' S	27° 40.603' E
57	24° 4.770' S	27° 40.581' E
58	24° 4.904' S	27° 40.559' E
59	24° 5.038' S	27° 40.537' E
60	24° 5.172' S	27° 40.515' E
61	24° 5.306' S	27° 40.494' E
62	24° 5.440' S	27° 40.472' E
63	24° 5.574' S	27° 40.450' E
64	24° 5.708' S	27° 40.428' E
65	24° 5.842' S	27° 40.406' E
66	24° 5.976' S	27° 40.384' E
67	24° 6.110' S	27° 40.362' E
68	24° 6.244' S	27° 40.341' E
69	24° 6.377' S	27° 40.319' E
70	24° 6.511' S	27° 40.297' E
71	24° 6.645' S	27° 40.275' E
72	24° 6.779' S	27° 40.254' E
73	24° 6.913' S	27° 40.232' E
74	24° 6.994' S	27° 40.296' E

Alternative 3:

250m intervals	Latitude (S) (Degrees Decimal Minutes)	Longitude (E) (Degrees Decimal Minutes)
1	23° 59.108' S	27° 40.660' E
2	23° 59.243' S	27° 40.660' E
3	23° 59.379' S	27° 40.660' E
4	23° 59.514' S	27° 40.660' E
5	23° 59.649' S	27° 40.660' E
6	23° 59.785' S	27° 40.661' E
7	23° 59.920' S	27° 40.661' E
8	24° 0.056' S	27° 40.661' E
9	24° 0.191' S	27° 40.661' E
10	24° 0.326' S	27° 40.662' E
11	24° 0.298' S	27° 40.563' E
12	24° 0.226' S	27° 40.438' E
13	24° 0.154' S	27° 40.313' E
14	24° 0.118' S	27° 40.204' E
15	24° 0.250' S	27° 40.172' E
16	24° 0.382' S	27° 40.139' E
17	24° 0.514' S	27° 40.107' E
18	24° 0.646' S	27° 40.075' E
19	24° 0.779' S	27° 40.042' E
20	24° 0.911' S	27° 40.010' E
21	24° 1.043' S	27° 39.978' E
22	24° 1.175' S	27° 39.945' E
23	24° 1.307' S	27° 39.913' E
24	24° 1.439' S	27° 39.881' E
25	24° 1.572' S	27° 39.848' E
26	24° 1.704' S	27° 39.816' E
27	24° 1.836' S	27° 39.784' E
28	24° 1.968' S	27° 39.751' E
29	24° 2.100' S	27° 39.719' E
30	24° 2.232' S	27° 39.687' E
31	24° 2.303' S	27° 39.779' E
32	24° 2.353' S	27° 39.916' E
33	24° 2.402' S	27° 40.054' E
34	24° 2.452' S	27° 40.191' E
35	24° 2.502' S	27° 40.328' E
36	24° 2.551' S	27° 40.465' E
37	24° 2.601' S	27° 40.603' E
38	24° 2.650' S	27° 40.740' E
39	24° 2.732' S	27° 40.815' E
40	24° 2.866' S	27° 40.794' E
41	24° 3.000' S	27° 40.771' E
42	24° 3.134' S	27° 40.749' E
43	24° 3.268' S	27° 40.727' E
44	24° 3.402' S	27° 40.706' E
45	24° 3.536' S	27° 40.684' E
46	24° 3.670' S	27° 40.662' E
47	24° 3.804' S	27° 40.640' E
48	24° 3.938' S	27° 40.618' E

49	24° 4.071' S	27° 40.596' E
50	24° 4.205' S	27° 40.574' E
51	24° 4.339' S	27° 40.552' E
52	24° 4.473' S	27° 40.530' E
53	24° 4.607' S	27° 40.508' E
54	24° 4.741' S	27° 40.486' E
55	24° 4.875' S	27° 40.464' E
56	24° 5.009' S	27° 40.442' E
57	24° 5.143' S	27° 40.420' E
58	24° 5.277' S	27° 40.398' E
59	24° 5.410' S	27° 40.376' E
60	24° 5.545' S	27° 40.354' E
61	24° 5.678' S	27° 40.332' E
62	24° 5.810' S	27° 40.321' E
63	24° 5.919' S	27° 40.408' E
64	24° 6.044' S	27° 40.426' E
65	24° 6.178' S	27° 40.404' E
66	24° 6.312' S	27° 40.382' E
67	24° 6.446' S	27° 40.360' E
68	24° 6.580' S	27° 40.338' E
69	24° 6.714' S	27° 40.317' E
70	24° 6.848' S	27° 40.295' E
71	24° 6.981' S	27° 40.293' E

Bulgerivier Substation:

Latitude (S) (Degrees Decimal Minutes)		Longitude (E) (Degrees Decimal Minutes)	
24°	6.997' S	27°	40.297' E

4. PHYSICAL SIZE OF THE ACTIVITY

Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

Alternative: N/A

Size of the activity:

- Alternative A1³ (preferred activity alternative)
- Alternative A2 (if any)
- Alternative A3 (if any)

m ²
m ²
m ²

or, for linear activities:

Alternative:

Length of the activity:

- Alternative A1
- Alternative A2
- Alternative A3 (preferred activity alternative)

21 km
18 km
18 km

Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

Alternative:

Size of the site/servitude:

- Alternative A1
- Alternative A2
- Alternative A3 (preferred activity alternative)

31m x 21 000m = 651 000m ²
31m x 18 000m = 558 000m ²
31m x 18 000m = 558 000m ²

5. SITE ACCESS

Does ready access to the site exist?

YES	NO
m	

If NO, what is the distance over which a new access road will be built

Describe the type of access road planned:

No new access to the site is planned. During construction all vehicle movement must be along existing roads adjacent to the fences of the applicable properties. A temporary construction road is envisaged underneath the proposed line to enable the construction activities.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

³ "Alternative A.." refer to activity, process, technology or other alternatives.

6. SITE OR ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

- 6.1 the scale of the plan which must be at least a scale of 1:500;
- 6.2 the property boundaries and numbers of all the properties within 50 meters of the site;
- 6.3 the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
- 6.4 the exact position of each element of the application as well as any other structures on the site;
- 6.5 the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
- 6.6 all trees and shrubs taller than 1.8 meters;
- 6.7 walls and fencing including details of the height and construction material;
- 6.8 servitudes indicating the purpose of the servitude;
- 6.9 sensitive environmental elements within 100 meters of the site or sites including (but not limited thereto):
 - rivers;
 - the 1:100 year flood line (where available or where it is required by DWA);
 - ridges;
 - cultural and historical features;
 - areas with indigenous vegetation (even if it is degraded or invested with alien species);
- 6.10 for gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
- 6.11 the positions from where photographs of the site were taken.

7. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this form. It must be supplemented with additional photographs of relevant features on the site, if applicable.

8. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

9. ACTIVITY MOTIVATION

9(a) Socio-economic value of the activity

What is the expected capital value of the activity on completion?

28.1 million

What is the expected yearly income that will be generated by or as a result of the activity?

R 0

Will the activity contribute to service infrastructure?

YES	NO
-----	----

Is the activity a public amenity?

YES	NO
-----	----

How many new employment opportunities will be created in the development phase of the activity?

0

What is the expected value of the employment opportunities during the development phase?

R 0

What percentage of this will accrue to previously disadvantaged individuals?

0%

How many permanent new employment opportunities will be created during the operational phase of the activity?

0

What is the expected current value of the employment opportunities during the first 10 years?

R0

What percentage of this will accrue to previously disadvantaged individuals?

0%

9(b) Need and desirability of the activity

Motivate and explain the need and desirability of the activity (including demand for the activity):

NEED:

1.	Was the relevant provincial planning department involved in the application?	YES	NO
2.	Does the proposed land use fall within the relevant provincial planning framework?	YES	NO
3.	If the answer to questions 1 and / or 2 was NO, please provide further motivation / explanation: There will be no change in the land use of the property. Eskom will register a servitude that provides Eskom with the rights to construct and maintain a powerline.		

DESIRABILITY:			
1.	Does the proposed land use / development fit the surrounding area?	YES	NO
2.	Does the proposed land use / development conform to the relevant structure plans, SDF and planning visions for the area?	YES	NO
3.	Will the benefits of the proposed land use / development outweigh the negative impacts of it?	YES	NO
4.	If the answer to any of the questions 1-3 was NO, please provide further motivation / explanation: Eskom will only register a servitude on the relevant properties and the land use will not change.		
5.	Will the proposed land use / development impact on the sense of place?	YES	NO
6.	Will the proposed land use / development set a precedent?	YES	NO
7.	Will any person's rights be affected by the proposed land use / development?	YES	NO
8.	Will the proposed land use / development compromise the "urban edge"?	YES	NO
9.	If the answer to any of the question 5-8 was YES, please provide further motivation / explanation. The current land use of the surrounding areas is formal nature reserves, private game ranches as well as agricultural. The construction of a line might impact visually on the areas and impact on the sense of place. Route Alternative 2 or Alternative 3 is proposed, partly because of its limited impact on the activities of landowners. In addition, the visual impact of these two routes are insignificant compared to Route Alternative 1. For Route Alternative 2 and 3 the line is proposed to be constructed along the borders of farms, visually away from the dirt road that feeds the reserves and ranches. The vegetation is expected to screen the line to some extent and therefore limit the visual impact from the road.		

BENEFITS:			
1.	Will the land use / development have any benefits for society in general?	YES	NO
2.	Explain: This proposed project is part of planned infrastructure to supply the Eskom Distribution grid with power. Should this application not be approved then the supply to the Toulon Pumps substation will be unreliable and in future this can result in major disturbances in water provision to Lephalale Municipality as well as Matimba Power Station. This could subsequently result in major disruptions of power supply to different areas at different times.		
3.	Will the land use / development have any benefits for the local communities where it will be located?	YES	NO
4.	Explain: The Toulon Pumps substation needs to supply the Toulon Pumps at the Mokolo dam with firm supply. Should this not be achievable then future supply will be unreliable and this can result in major disturbances in water provision to Lephalale Municipality as well as Matimba Power Station. The local communities will be adversely affected.		

10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline:

The following legislation is applicable to the proposed project:

Legislation

National Environmental Management Act (Act No 107 of 1998) – NEMA EIA Regulations of 2010

Limpopo Environmental Management Act (7 of 2003), published 30 April 2004, Provincial Gazette No.997.
 National Heritage Resources Act, 1999 (Act No 25 of 1999)
 All provisions of the Occupational Health and Safety Act, 1993 (Act No 85 of 1993)
 All provisions of the National Water Act, 1998 (Act No 36 of 1998)
 National Environmental Management: Biodiversity Act, 2004 (Act No 10 of 2004)
 Minerals and Petroleum Resources Development Act, 2002 (Act No 28 of 2002) administered by Department of Minerals and Energy.
 National Forests Act (Act No 84 of 1998)
 Protected species – provincial ordinances
 Conservation of Agricultural Resources Act (Act No 43 of 1983)
 National Veld and Forest Fire Act (Act No 101 of 1998)
 National Environment Management Waste Act, 2008 (Act No 59 of 2008)
 Soil Conservation Act, 1969 (Act No 76 of 1969)

11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

11(a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?

YES	NO
2,5m ³	

If yes, what estimated quantity will be produced per month?

How will the construction solid waste be disposed of (describe)?

Unusable waste, steel and aluminium will be sold to scrap dealers for recycling.

Where will the construction solid waste be disposed of (describe)?

It will be transported off site by the contractor and returned to Eskom stores where scrap will be handed over to buyers. Any waste that cannot be recycled as the above will be transported to the appropriate landfill site licensed in terms of section 20 (b) of the National Environment Management Waste Act, 2008 (Act No 59 of 2008).

Will the activity produce solid waste during its operational phase?

YES	NO
0m ³	

If yes, what estimated quantity will be produced per month?

How will the solid waste be disposed of (describe)?

N/A

Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

N/A

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?

YES	NO
-----	----

If yes, inform the competent authority and request a change to an application for scoping and EIA.

Is the activity that is being applied for a solid waste handling or treatment facility?

YES	NO
-----	----

If yes, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

11(b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?

YES	NO
-----	----

If yes, what estimated quantity will be produced per month?

m ³	
YES	NO

Will the activity produce any effluent that will be treated and/or disposed of on site?

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Will the activity produce effluent that will be treated and/or disposed of at another facility?

YES	NO
-----	----

If yes, provide the particulars of the facility:

Facility name:

Contact person:

Postal address:			
Postal code:			
Telephone:		Cell:	
E-mail:		Fax:	

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

11(c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere?

YES	NO
YES	NO

If yes, is it controlled by any legislation of any sphere of government?

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the emissions in terms of type and concentration:

The activity will not release any emissions during the operational phase. The activity will contribute to dust pollution and production of vehicle fumes for a limited period of time only, during construction. Measures to limit this impact are included in the EMP of this BAR document.

11(d) Generation of noise

Will the activity generate noise?

YES	NO
YES	NO

If yes, is it controlled by any legislation of any sphere of government?

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If no, describe the noise in terms of type and level:

Generation of noise is expected to occur during the construction phase, but it will be a low level of noise and will occur for a limited time only. Measures, as included in the EMP, will be implemented to avoid or minimise generation of noise during construction.

12. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es)

<input type="checkbox"/> municipal	<input type="checkbox"/> water board	<input type="checkbox"/> groundwater	<input type="checkbox"/> river, stream, dam or lake	<input type="checkbox"/> other	<input checked="" type="checkbox"/> the activity will not use water
------------------------------------	--------------------------------------	--------------------------------------	---	--------------------------------	---

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:

litres	
YES	NO

Does the activity require a water use permit from the Department of Water Affairs?

If yes, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this application if it has been submitted.

13. ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

N/a

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

N/a

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

- For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section B and indicate the area, which is covered by each copy No. on the Site Plan.
- Paragraphs 1 - 6 below must be completed for each alternative.

3. Has a specialist been consulted to assist with the completion of this section?

YES	NO
-----	----

If YES, please complete the form entitled "Details of specialist and declaration of interest"

for each specialist thus appointed: **Attached to the application form**

All specialist reports must be contained in Appendix D.

Property description/
physical address:

The affected properties for Route Alternatives 1, 2 and 3 are on the farms Bulge Rivier 198 KQ Portions 2, 6; Mooifontein 150 KQ Portions 1,2,3; Hartbeesdrift 189KQ RE; Bulspruit 146 KQ Portion 1; Onverwacht 149 KQ RE, Portion 1; Wolvenfontein 645 LQ Portions 1,2,3; Bultfontein 145 KQ Portions 1,2 in the Lephalale Local Municipality in the Limpopo Province.

(Farm name, portion etc.) Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application.

In instances where there is more than one town or district involved, please attach a list of towns or districts to this application.

Current land-use zoning:

Agricultural

In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application.

Is a change of land-use application required?

YES	NO
-----	----

Is a consent use application required?

YES	NO
-----	----

Must a building plan be submitted to the local authority?

YES	NO
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Locality map:

An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometers, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.) The map must indicate the following:

- an indication of the project site position as well as the positions of the alternative sites, if any;
- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);
- all roads within a 1km radius of the site or alternative sites; and
- a north arrow;
- a legend; and
- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection)

Section C Copy No. (e.g. A):

Alternative 1, Alternative 2 and Alternative 3

Note: The area where the Alternative 1 route is located does not contain any specific features that will make the site critically more different than the Alternative 2 or Alternative 3 sites. Paragraphs 1 - 6 below are therefore exactly the same for all alternatives.

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Alternative S2:

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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Alternative S3:

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

- 2.1 Ridgeline
- 2.2 Plateau
- 2.3 Side slope of hill/mountain
- 2.4 Closed valley
- 2.5 Open valley
- 2.6 Plain
- 2.7 Undulating plain
- 2.8 Dune
- 2.9 Seafront

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following (tick the appropriate boxes)?

- Shallow water table (less than 1.5m deep)
- Dolomite, sinkhole or doline areas
- Seasonally wet soils (often close to water bodies)
- Unstable rocky slopes or steep slopes with loose soil
- Dispersive soils (soils that dissolve in water)
- Soils with high clay content (clay fraction more than 40%)
- Any other unstable soil or geological feature
- An area sensitive to erosion

Alternative S1:		Alternative S2:		Alternative S3:	
YES	NO	YES	NO	YES	NO
YES	NO	YES	NO	YES	NO
YES	NO	YES	NO	YES	NO
YES	NO	YES	NO	YES	NO
YES	NO	YES	NO	YES	NO
YES	NO	YES	NO	YES	NO
YES	NO	YES	NO	YES	NO
YES	NO	YES	NO	YES	NO

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. (Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted).

4. GROUNDCOVER

Indicate the types of groundcover present on the site:

The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Natural veld - good condition ^E	Natural veld with scattered aliens ^E	Natural veld with heavy alien infestation ^E	Veld dominated by alien species ^E	Gardens
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

If any of the boxes marked with an "E" is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn't have the necessary expertise.

5. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that does currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

- 5.1 Natural area
- 5.2 Low density residential
- 5.3 Medium density residential
- 5.4 High density residential
- 5.5 Informal residential^A
- 5.6 Retail commercial & warehousing

- 5.7 Light industrial
- 5.8 Medium industrial ^{AN}
- 5.9 Heavy industrial ^{AN}
- 5.10 Power station
- 5.11 Office/consulting room
- 5.12 Military or police base/station/compound
- 5.13 Spoil heap or slimes dam^A
- 5.14 Quarry, sand or borrow pit
- 5.15 Dam or reservoir
- 5.16 Hospital/medical centre
- 5.17 School
- 5.18 Tertiary education facility
- 5.19 Church
- 5.20 Old age home
- 5.21 Sewage treatment plant^A
- 5.22 Train station or shunting yard ^N
- 5.23 Railway line ^N
- 5.24 Major road (4 lanes or more) ^N
- 5.25 Airport ^N
- 5.26 Harbour
- 5.27 Sport facilities
- 5.28 Golf course
- 5.29 Polo fields
- 5.30 Filling station ^H
- 5.31 Landfill or waste treatment site
- 5.32 Plantation
- 5.33 Agriculture
- 5.34 River, stream or wetland
- 5.35 Nature conservation area
- 5.36 Mountain, koppie or ridge
- 5.37 Museum
- 5.38 Historical building
- 5.39 Protected Area
- 5.40 Graveyard
- 5.41 Archaeological site
- 5.42 Other land uses (describe)

If any of the boxes marked with an "N" are ticked, how will this impact / be impacted upon by the proposed activity?

N/A

If any of the boxes marked with an "An" are ticked, how will this impact / be impacted upon by the proposed activity?

If YES, specify and explain: **N/A**

If YES, specify:

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If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity.

If YES, specify and explain: A small filling station is in the nearby vicinity of the powerline corridor for Route Alternative 1. However, there will be no impact (or interference) between the two whatsoever. A small school is in the nearby vicinity of Route Alternative 1. Again, there will be no impact (or interference) between the two whatsoever.

If YES, specify:

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6. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or palaeontological sites, on or close (within 20m) to the site?

YES	NO
Uncertain	

If YES, explain:

If uncertain, conduct a specialist investigation by a recognised specialist in the field to establish whether there is such a feature(s) present on or close to the site.

Briefly explain the findings of the specialist:

Will any building or structure older than 60 years be affected in any way?	YES	NO
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	YES	NO

If yes, please submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.

The main findings of the Heritage Impact Assessment are summarised as follows:-

The Phase I Heritage Impact Assessment for the Eskom Project revealed none of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) for the Eskom Project Area. Therefore, from a heritage point of view, Alternative 1, Alternative 2 and Alternative 3 are suitable for the construction of the proposed line.

The following measures are proposed to mitigate/manage any possible impact of the project on heritage resources:

If any heritage resources of significance are exposed during the Eskom Project the South African Heritage Resources Authority (SAHRA) should be notified immediately, all development activities must be stopped and an archaeologist accredited with the Association for Southern African Professional Archaeologist (ASAPA) should be notified in order to determine appropriate mitigation measures for the discovered finds. This may include obtaining the necessary authorisation (permits) from SAHRA to conduct the mitigation measures.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT

The person conducting a public participation process must take into account any guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of the application which is subjected to public participation by—

- (a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the competent authority) at a place conspicuous to the public at the boundary or on the fence of—
 - (i) the site where the activity to which the application relates is or is to be undertaken; and
 - (ii) any alternative site mentioned in the application;
- (b) giving written notice to—
 - (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
 - (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
 - (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
 - (v) the municipality which has jurisdiction in the area;
 - (vi) any organ of state having jurisdiction in respect of any aspect of the activity; and
 - (vii) any other party as required by the competent authority;
- (c) placing an advertisement in—
 - (i) one local newspaper; or
 - (ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;
- (d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or local municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official *Gazette* referred to in subregulation 54(c)(ii); and
- (e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to—
 - (i) illiteracy;
 - (ii) disability; or
 - (iii) any other disadvantage.

2. CONTENT OF ADVERTISEMENTS AND NOTICES

A notice board, advertisement or notices must:

- (a) indicate the details of the application which is subjected to public participation; and
- (b) state—
 - (i) that the application has been submitted to the competent authority in terms of these Regulations, as the case may be;
 - (ii) whether basic assessment or scoping procedures are being applied to the application, in the case of an application for environmental authorisation;
 - (iii) the nature and location of the activity to which the application relates;
 - (iv) where further information on the application or activity can be obtained; and
 - (iv) the manner in which and the person to whom representations in respect of the application may be made.

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

Where the proposed activity may have impacts that extend beyond the municipal area where it is located, a notice must be placed in at least one provincial newspaper or national newspaper, indicating that an application will be submitted to the competent authority in terms of these regulations, the nature and location of the activity, where further information on the proposed activity can be obtained and the manner in which representations in respect of the application can be made, unless a notice has been

placed in any *Gazette* that is published specifically for the purpose of providing notice to the public of applications made in terms of the EIA regulations.

Advertisements and notices must make provision for all alternatives.

4. DETERMINATION OF APPROPRIATE MEASURES

The practitioner must ensure that the public participation is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees, ratepayers associations and traditional authorities where appropriate. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was inadequate.

5. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments and respond to each comment of the public before the application is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to this application. The comments and response report must be attached under Appendix E.

6. AUTHORITY PARTICIPATION

Please note that a complete list of all organs of state and or any other applicable authority with their contact details must be appended to the basic assessment report or scoping report, whichever is applicable.

Authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input.

List of authorities informed:

- Department of Water Affairs: Water Resources & Water Quality Management
- Limpopo Heritage Resource Authority
- Limpopo Department of Economic Development, Environment and Tourism: Environmental Impact Management
- Department of Agriculture, Forestry and Fisheries: Land Use and Soil Management
- Department of Minerals and Energy
- SA National Road Agency Agency Ltd.: Northern Region
- Road Agency Limpopo
- Department of Roads and Transport
- Department of Rural Development and Land Reform: Land Claims Commissioner
- Department of Rural Development and Land Reform: State Land Administration
- Transvaal Landou Unie SA Noord
- Distriks Landbou Unie Vaalwater
- Distriks Landbou Unie Thabazimbi
- Distriks Landbou Unie Ellisras
- Agri Limpopo
- Waterberg Biosphere Reserve
- Waterberg Nature Conservancy
- Mokolo River Nature Reserve
- Waterberg District Municipality
- Lephalale Local Municipality
- Eskom Transmission
- Eskom Distribution Northern Region
- Landowners

- The first phase Public Participation Programme (PPP) started in November 2010 and continued until June 2011. It included the identification of key stakeholders, the distribution of information letters with a request for comment, as well as advertising of the project in the local press and on site.
- In addition, notification of an information meeting on 22 February 2011 was sent to all IAPs. The purpose of the meeting was to furnish the landowners and other interested parties with information regarding the extent of the

project, the proposed alternatives, the process of negotiations for servitudes, and the extent of the Environmental Impact Assessment Process. Project posters with information and maps of the routes were presented at the meeting. Written comment was requested at the meeting.

- A draft Basic Assessment Report was compiled with the main aim to identify issues, potential impacts and potential alternatives associated with this project. It included a description of the status quo of all relevant environmental components as well as the proceedings of the PPP and communication with registered Interested & Affected Parties (IAPs).
- The draft Basic Assessment Report was distributed on 3 August 2011 to the following stakeholders for their comment :
 - Department of Water Affairs: Water Resources & Water Quality Management
 - Limpopo Heritage Resource Authority
 - Limpopo Department of Economic Development, Environment and Tourism: Environmental Impact Management
 - Department of Agriculture, Forestry and Fisheries: Land Use and Soil Management
 - Department of Minerals and Energy
 - SA National Road Agency Agency Ltd.: Northern Region
 - Road Agency Limpopo
 - Department of Roads and Transport
 - Department of Rural Development and Land Reform: Land Claims Commissioner
 - Department of Rural Development and Land Reform: State Land Administration
 - Transvaal Landou Unie SA Noord
 - Distriks Landbou Unie Vaalwater
 - Distriks Landbou Unie Thabazimbi
 - Distriks Landbou Unie Ellisras
 - Agri Limpopo
 - Waterberg Biosphere Reserve
 - Waterberg Nature Conservancy
 - Mokolo River Nature Reserve
 - Waterberg District Municipality
 - Lephalale Local Municipality
 - Eskom Transmission
 - Eskom Distribution Northern Region
 - Landowners
- Comment from all IAPs to the draft BAR was requested by 14 September 2011.
- Subsequently, a *final Basic Assessment Report* (BAR) was compiled (this document) and forwarded to DEA on 30 September 2011. This report includes all concerns raised to the draft BAR and responses thereto. The Consultants (EAP) ensured that any concerns raised are addressed in appropriate detail in the final Basic Assessment Report.

List of authorities from whom comments have been received:

Eskom Transmission: Land Management
South African National Road Agency Ltd
Department of Roads and Transport: Environment
Department of Rural Development and Land Reform: Land Claims Commissioner Limpopo
Department of Agriculture, Forestry and Fisheries: Land Use and Soil Management
Waterberg Nature Conservancy
Gnu Ranch, Mr Anton Erasmus
Waterberg District Municipality
Mokolo River Nature Reserve
Department of Rural Development and Land Reform: Land Reform Office, State Land Unit
Department of Rural Development and Land Reform: Office of Regional Land Claims Commissioner: Limpopo

7. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for linear activities, or where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that subregulation to the extent and in the manner as may be agreed to by the competent authority.

Proof of any such agreement must be provided, where applicable.

Has any comment been received from stakeholders?

YES	NO
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If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

Refer to Section D1 and Appendix E for relevant information.

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2010, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

List the main issues raised by interested and affected parties.

Response from the practitioner to the issues raised by the interested and affected parties (A full response must be given in the Comments and Response Report that must be attached to this report as Annexure E):

COMMENTS RECEIVED BY INTERESTED AND AFFECTED PARTIES DURING THE ADVERTISING FOR THE BASIC ASSESSMENT REPORT

The Public Participation Programme allowed for informed and responsible decision-making by all interested and affected parties. Refer to Appendix E: Comments and Responses Report for copies of written comment.

1. Comment received on the notification letters to IAPs

This section of the report synthesises the issues and concerns identified by interested and affected parties and various stakeholders during the public participation process and can be summarised as follows:

The following IAPs registered:

- Limpopo Department of Economic Development, Environment and Tourism: Waterberg District, Environmental Impact Management
- Waterberg Nature Conservancy
- Adam Gunn, Mogolriver Game Farm (Pty) Ltd/ Mokolo River Nature Reserve
- Department of Rural Development and Land Reform: State Land Administration
- Eskom Transmission
- The Fold, SA Children's Home
- Berthold von Sethe, Witfontein 154 KQ, Witfontein Game Farm
- Man and Maya Oosterhoff, Donkerhoek 615LQ
- George Marx, Wolwenfontein 645LQ
- Anton Erasmus, Bulspruit 147KQ
- Johan Els, Kudu Canyon
- SANRAL
- Agri Lephalale
- TLU Vaalwater
- Department of Roads and Transport
- Dept of Agriculture: Land use and Soil Management
- Waterberg Nature Conservancy
- Hermanusdoorns Shareblock Ltd

Man and Maya Oosterhoff: Leopard Leap Lodge, Donkerhoek 615LQ

Comment:

The necessity of the project is not disputed, but they urge Eskom to implement the project with the lowest possible impact on the still unspoiled and pristine Waterberg Area along existing roads and/or other existing infrastructure. Also to take an upgrade of the existing lines into consideration to avoid new construction works that will affect the bushveld.

Response:

The existing infrastructure could not be upgraded to provide the needed supply. The design of the Route Alternatives took all environmental aspects into account. Refer to the specialist reports done on the status of the fauna and flora, the impact on birds as well as the status of heritage.

Waterberg Nature Conservancy

Comment:

The Waterberg Nature Conservancy is a voluntary organisation of (mainly) landowners in the Waterberg who share

an interest in conservation issues. It is not a geographic entity, although its 65 members (including Welgevonden and Lapalala) own a total of over 160 000 ha on the Waterberg Plateau and employ about a thousand people. A map that indicates the land owned by their membership is still being compiled and is not yet in a reproducible form.

Response:

The EAP took note that the project might affect members of the Waterberg Nature Conservancy. The Conservancy is included as stakeholder in the public participation process.

Eskom Transmission: Land Management

Comment:

Eskom Transmission informs that an Eskom Transmission (Tx) vacant servitude is affected by the proposed project. Eskom Tx will raise no objection to the proposed EIA provided that Eskom Tx's rights and services are acknowledged and respected at all times. Before any construction work commences in the vicinity of Eskom Tx's services, a formal application must be submitted to Eskom Tx.

Response:

Noted. Comment forwarded to Eskom Distribution for their implementation.

South African National Road Agency Ltd

Comment:

The SANRAL has no comment or objection to the proposed project as it does not affect any national road.

Response:

Noted.

George Marx: Wolvenfontein 645KQ

Comment:

Mr Marx indicated that the proposed route will have a visual impact. The line will be directly in line of view from his lodge for the section running past the Mokolo dam. He proposes a change to the route to run on his western farm border.

Response:

The route is adapted to limit visual impact. (Refer to proposed Route Alternative 3 and response from EAP to Adam Gunn below.)

Department of Roads and Transport: Environment

Comment:

The Department requested to be notified of public meetings. Should any road under their jurisdiction be crossed then the Roads Agency Limpopo (RAL) should be contacted to establish their requirements.

Response:

The department is on the Register of IAPs and as such notified of all actions regarding public participation. RAL has been notified of the project. The R517 as well as the D2132 dirt road between Bulgerivier and Toulon Pumps will be affected should route Alternative 1 be constructed. Should Alternative 2 be constructed, then a short section of the D2132 dirt road between Bulge Rivier and Toulon Pumps will be affected. Relaxation of the Road Ordinance/ road reserve will be requested.

Adam Gunn: Mogolriver Game Farm (Pty) Ltd/ Mokolo River Nature Reserve

Comment:

Mr Gunn requests more information and maps for the proposed projects. According to him the logical route of least environmental impact is along existing infrastructure (roads and electricity lines) and away from sensitive areas and ecosystems such as rivers.

Response:

Maps were provided to Mr Gunn. The first route (Alternative 1) was proposed along the dirt road from Bulgerivier to Toulon Pumps. It posed significant impact to the activities of the affected landowners as well as to the Mokolo dam area. Route Alternative 2 was proposed as a result of discussions with landowners in the project area. It was recommended to run the line on farm borders in a straight alignment. This will have less impact on the landowners of the project area. Fewer structures with stays will be erected, because of the straight alignments with less turns. Subsequently Route Alternative 3 was proposed to limit impact to the Mokolo dam area. The alignment was proposed to run further to the west and away from the Mokolo dam to limit visual impact as well as impact to the nature reserve.

Department of Rural Development and Land Reform: Land Claims Commissioner Limpopo

Comment:

The Department responded that there is a restitution land claim lodged on the properties of Bulge rivier 198KQ Ptns 2,16; Bergsig 202KQ Ptn 4; Hermanusdoorns 600KQ Ptns 1; Hermanusdoorns 205KQ Ptn 0; Hermanusdoorns 204KQ Ptn 5.

Response:

Noted. Only Bulge Rivier 198KQ Ptn 2 of the above listed properties is affected by the Eskom powerline. A new enquiry into land claims for the affected properties has been made to the Land Claims Office. No response was received by the time of publication of this report.

Eskom will need to obtain a servitude of 31 meters wide to construct the powerline. The powerline will be constructed on the centre line of the servitude. Servitude rights for a servitude in general terms will be obtained by means of an "Option to Acquire a Servitude". This implicates that a servitude will be registered which provides Eskom with the rights to construct a powerline and maintain the line over the applicable property. The applicable land is therefore not purchased. Compensation is paid to the land owner for the servitude rights and payment for the servitude will be made upon registration of the servitude. The properties in question (servitude) will therefore not be purchased and the registered owner will receive compensation for the use of the servitude. A thorough public participation process and negotiations with affected land owners are in process.

Department of Agriculture, Forestry and Fisheries: Directorate Land Use and Soil Management

Comment:

1. The proposed powerline should follow the existing route as much as possible in order for farmers not to lose more of their land to non agricultural use.
2. Mitigation measures should be in place to control the anticipated soil erosion due to the proposed activities.
3. Control management plan for weeds and invader plants should be in place.
4. Sensitive areas such as wetlands should be observed and protected.

Response:

1. *Route Alternative 1, running adjacent to the existing D2132 dirt road between Bulgerivier and Toulon Pumps will have the most impact on agriculture and the activities of the farmers. Subsequently, Route Alternative 2 (and Route Alternative 3) was proposed to run directly north from Bulge substation along farm borders. These routes will have no impact on agricultural activities and is preferred by the landowners.*
2. *Mitigation measures are proposed and stipulated in Section D:2 and Appendix F (the EMP).*
3. *Mitigation measures are proposed and stipulated in Section D:2 and Appendix F (the EMP).*
4. *Mitigation measures to protect sensitive areas are proposed and stipulated in Section D:2 and Appendix F (the EMP).*

2 Comments received at the information meeting

An *information meeting* was conducted on 22 February 2011 at Biltong go back, a venue on the R33 nearby the project site. The purpose of the meeting was to furnish the landowners and other interested parties with information regarding the extent of the project, the proposed alternatives, the process of negotiations for servitudes, and the extent of the Environmental Impact Assessment Process. Project posters with information and maps of the routes were presented at the meeting. Written comment was requested at the meeting. (Refer to Appendix E for the form that was provided at the meeting, for this purpose). The information meeting was conducted in the format of an open day with an invitation for attendance between 10h00 to 14h00 on 22 February 2011.

Comment can be summarised as follows:

George Marx/ Quintin Kruger, Thabazimbi Safaris/ Leopard Lodge & The Cubs, Wolwenfontein 645LG

Comment:

Their comment is in essence the same as provided by George Marx above. They recommend the route to follow the western farm border on Mr Marx's farm, away from the Mokolo dam area. They do not support Route Alternative 1 that follows the road and passes the Mokolo dam area. Alternative 2 or 3 would therefore be acceptable to them.

Response:

The EIA proposed Alternative 2 or 3 to limit visual impact from the property of Mr Marx to the Mokolo dam area. In addition the impact to this sensitive area will be limited.

Anton Erasmus, Bulspruit 146KQ

Comment:

Mr Erasmus supports the construction of the project and Alternative 2.

Response:

Alternative 2 is designed to accommodate landowners as is the case with Alternative 3. Both Routes (Alternative 2 and 3) have basically the same impact on the property of Mr Erasmus.

Johan Els, Kudu Canyon

Comment:

He requests to be advised regarding Route Alternative 1.

Response:

Currently Route Alternative 1 is not the recommended alternative for construction due to the impact to sensitive areas such as the Mokolo Dam Nature Reserve.

2. COMMENTS RECEIVED BY INTERESTED AND AFFECTED PARTIES IN RESPONSE TO THE DRAFT BAR

The comments received after the submission of the draft BAR can be summarised as follows:

Refer to Appendix E: Comments and Responses Report for copies of written comment.

Waterberg Nature Conservancy, Richard Wadley

Comment:

On the basis of the work undertaken and documented in the summary report, he would be surprised if there would be any opposition to the recommendation that route alternative 3 be adopted for the line. It certainly appears to be the optimal alternative, subject to the views of the landowners directly affected. The route of the line could usefully serve as a firebreak between adjacent properties if the cleared area were to be suitably maintained by the landowners after completion of the line.

Response:

Noted.

Gnu Ranch, Mr Anton Erasmus

Comment:

Mr Erasmus commented that he is the owner of the farm Bulspruit 146KQ (Portion 1). Most of the Route (Alternative 3) labelled AFG is along his farm border. He has no objection to the construction of this alternative. The route on his portions as indicated has limited farm activities and it will be of benefit if Eskom debush the trees and bushes under the line. This will keep his roads on his farm border free of bushes.

Response:

Noted. Route Alternative 3 is proposed on the border of Bulspruit 146KQ Portion 1. Clearing for construction will be done to a maximum of 8m, 4m on either side of the alignment for the powerline. Mechanical control of alien plants around disturbed areas should also be implemented within two months of completion of construction. Thereafter every six months. These areas will be predominantly around the erected pylons where the soils were originally disturbed during the construction phase.

Waterberg District Municipality

Comment:

The District Municipality requests the copies of the draft basic Assessment report to be emailed to them. The comments would be submitted by 14 September 2011.

Reponse:

Copies were emailed the following day. No comment has been received at the time of the submission of the final BAR.

Mokolo River Nature Reserve, Re Bulge Rivier 198KQ Portion 6

Comment:

A site meeting was conducted on 10 August 2011, with representatives of the Mokolo River Nature Reserve. The proposed routes for two ongoing projects, namely the Bulge-Toulon 33kV line (this project) as well as the Bulge-Dorset 132kV line, were discussed. The Mokolo River Nature Reserve indicated their preferences for both. In general they do not want any route to traverse through the Reserve, but prefer the route to run along-side the Reserve.

Response:

They support the proposed Route Alternative 3 (for the Bulge-Toulon 33kV line) as discussed with them on site. They will be affected by Route Alternative 3, that is proposed to run north from Bulge Rivier substation, traversing along the border of Bulge Rivier 198KQ Portion 6.

Department of Rural Development and Land Reform: Land Reform Office, State Land Unit

Comment:

The farms Bulge Rivier 198 KQ Portions 2, 6; Mooifontein 150 KQ Portions 1,2,3; Hartbeesdrift 189KQ RE; Bulspruit 146 KQ Portion 1; Onverwacht 149 KQ RE, Portion 1; Wolwenfontein 645 LQ Portions 1,2,3; Bultfontein 145 KQ Portions 1,2 are privately owned and they have no jurisdiction over it.

Response:

- *During the course of the EIA, all affected landowners were identified and consulted with regarding the proposed project.*
- *The properties in question (servitudes) will not be purchased and the registered owner will receive compensation for the use of the servitude. Further negotiations are taking place to confirm the details for the acquisition of the servitude and compensation therefore.*
- *The negotiator will confirm the specific requests/requirements with each landowner. These will be stipulated in the final document, an option document. The option document is a binding document that reflects all the requirements of the landowner, for example: the exact positions of the pylons on the property; the negotiated compensation for the servitude; specific access arrangements to the property etc.*

Department of Rural Development and Land Reform: Office of Regional Land Claims Commissioner: Limpopo

Comment:

There is no information available on the under-mentioned properties:

The farms Mooifontein 150 KQ Portions 1,2,3; Bulspruit 146 KQ Portion 1; Onverwacht 149 KQ RE, Portion 1; Wolwenfontein 645 LQ Portions 1,2,3; Bultfontein 145 KQ Portions 1,2

Comment:

There is a restitution land claim lodged on the under-mentioned properties:

Bulge Rivier 198 KQ Portions 2, 6; Hartbeesdrift 189KQ RE.

The project manager is Ms Suzan Seabi (015 287 2600).

Response:

Noted. This information will be forwarded to the appointed negotiator for the project.

The properties in question (servitudes) will not be purchased and the registered owner will receive compensation for the use of the servitude. Further negotiations are taking place to confirm the details for the acquisition of the servitudes and compensation therefore.

3 CONCLUSION OF PUBLIC PARTICIPATION PROGRAMME FOR THE BASIC ASSESSMENT REPORT

The Environmental Impact Assessment included an extensive Public Participation Process. The project was advertised with onsite notices, newspaper notices and notification letters to facilitate informed decision. In addition an information meeting was conducted to furnish the landowners and other interested parties with information regarding the extent of the project. The consultants endeavoured to facilitate a transparent and accommodating Public Participation Process.

A draft Basic Assessment Report was compiled with the main aim to identify issues, potential impacts and potential alternatives associated with this project. It included proceedings of the PPP and communication with registered Interested & Affected Parties (IAPs). Notification of the availability thereof was sent to all IAPs on 3 August 2011.

Subsequently, a final Basic Assessment Report (BAR) – this document - was compiled and forwarded to DEA on 30 September 2011. This report includes all concerns raised to the draft BAR and detailed responses thereto.

2. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

2.1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN PHASE

The potential impacts that are likely to occur as a result of the planning and design phase are described below. In addition the mitigation measures that may eliminate or reduce the potential impacts are provided:

Impact on natural habitat

This impact is associated with the potential for disruption of sensitive floral habitats and fauna populations. The planning regarding the route of the powerline should take into account the ecological sensitivity of the site.

Relevant to the project is the following:

- The study area falls within the Savanna Biome. The vegetation types encountered are those of Central Sandy Bushveld in the north of the area and Western Sandy Bushveld in the south of the area.
- Red data species and protected species found in the area include Camel thorn (*Acacia erioloba*), Leadwood (*Combretum imberbe*), Marula (*Sclerocarya birrea* subsp. *caffra*), Wild pear (*Dombeya rotundifolia* var. *rotundifolia*), and Tamboti (*Spirostachys africana*).
- No threatened or protected mammal, butterfly or amphibian species were observed in the study area, although some are most likely present.
- Large areas are undisturbed bushveld with numerous nature reserves, game ranches and lodges.
- Floristic and faunal sensitivity calculations were done. A large percentage of the vegetation in the study area can be viewed as pristine. The vegetation is fairly uniform with no small ecosystems or islands of uniqueness being present.
- Floristic sensitivity calculations were as follows: Regional vegetation – medium (Go-Slow zone); Rivers – medium/high (Go-But zones); Rocky areas – medium/high (Go-But zone); Camel thorns – high (No-Go zone).
- Faunal sensitivity calculations were as follows: Regional vegetation – medium (Go-Slow zone); Rivers – medium/high (Go-But zones); Rocky areas – medium/high (Go-But zones); Camel thorns – medium/high (Go-But zone).
- The ecological sensitivity of the study area is determined with the following outcomes: Regional vegetation – medium (Go-Slow zone); Rivers – medium / high (Go-But zones); Rocky areas - medium/high (Go-But zone); and the area of Camel thorns – high (No-Go zone).
- A number of mitigating actions were recommended and the proper implementation and management of these will ensure that impacts are reduced and are kept to acceptable levels.
- Various species of indigenous trees and bush are protected by law in terms of the National Forests Act No 84 of 1998, which stipulates that it is necessary to obtain a permit from the relevant provincial office of the Department of Agriculture, Forestry and Fisheries in order to cut them.

Mitigation for impact on natural habitat

Proper planning will limit the impact of the powerlines on the natural habitat and therefore the following is proposed:

- Site specific measures in terms of ecology as identified by the ecologist, Johannes Maree (Tel 082 564 1211) must be included in the contract with the Contractor and implemented by the Contractor during the construction phase.
- Some of the main mitigating measures included avoiding highly sensitive areas; not setting up campsites or storage facilities outside of substation site; limiting the amount of actual pylons within the rocky area; placing pylons a minimum of 30m from the edge of river banks and 10m from drainage lines; removing all rubble to official dumpsites; implementing soil erosion and weed eradication management measures after construction; and not using chemicals for the control of weeds.
- Assessment of impacts on the various distinctive ecological units in the study area (before and after) mitigating and management measures were deemed to be as follows: Regional vegetation – medium (before), low (after); Rivers – medium, bordering on high (before), low (after); Rocky areas – medium, bordering on high (before), low

(after). No rating matrix is given for the area of camel thorns simply because there are no possible mitigating measures to reduce the negative impact and the area must be seen as a "No-Go" zone.

- Three red data and/or protected species were observed. Namely, *Sclerocarya birrea* subsp. *caffra* (Marula), *Combretum imberbe* (Leadwood), *Spirostachys africana* (Tamboti) and *Acacia erioloba* (Camel thorn).
- Tamboti trees were observed in the study area, especially in the rocky ridges and rocky areas close to the Mokolo Dam. The rocky ridges or slopes have a fair presence of Tamboti trees (*Spirostachys africana*) spread throughout them. According to the provincial ordinances of the Limpopo Province the Tamboti is a protected tree and permits need to be obtained from the Provincial Department of Environment Affairs. Fines or prison sentences may be imposed on organisations or persons removing such trees without prior permission. For further details see the Limpopo Environmental Management Act (7 of 2003), published 30 April 2004, Provincial Gazette No.997.

The following are specific GPS coordinates along Alternative Route 2 where Tamboti trees were observed:

- S23° 59' 35,9"; E27° 40' 41,2"
 - S23° 59' 37,3"; E27° 40' 41,3"
 - S24° 00' 29,1"; E27° 41' 01,3"
 - S24° 00' 32,6"; E27° 41' 06,6"
 - S24° 00' 31,8"; E24° 41' 05,8"
 - S24° 00' 46,8"; E27° 41' 29,2"
- The rocky area with an unusually high concentration of camel thorn trees (*Acacia erioloba*) makes this a highly sensitive and unique micro ecosystem. Furthermore, camel thorn trees are protected by law. It is therefore imperative that this sensitive area be seen as a "No-Go" area and entirely avoided. For this reason, no mitigating measures are seen as been able to reduce the impact on the site, save the one of total avoidance. The localised area of camel thorns is located on Route Alternative 1 in the vicinity of the entrance to the Mokolo Nature Reserve.

General GPS coordinates of red data / protected species:

- Sensitive area of camel thorn trees: S24° 00.499'; E27° 42.117'
 - Sensitive area of marula trees: S24° 02.188'; E27° 41.835'
- Having taken all aspects of the investigation into account Alternative Route 1 (A-B-C-D-E) is not recommended. While Route 2 (A-F-C-D-I-E) and Route 3 (A-F-G-H-I-E) has equally acceptable alternatives. Therefore, all other factors in the EIA need to be taken into account in determining whether Route 2 or Route 3 should be the final route alternative for the project.
 - Therefore from an ecological perspective the line variant recommendation is: **Alternative Route 2** or **Alternative Route 3** can be used.
 - It was concluded that, from a vegetation and fauna perspective, if duly mitigated and planned, the project will not impact significantly on the environment.

Social Impact

- The construction of new powerlines could potentially impact on landowners if not planned and designed to accommodate the needs of the landowners.
- In addition, the possibility exists that a project might impact also upon residents who are not landowners. Land users or lands rights holders could farm on the portion of land affected by the proposed line or rent a house and not own it. The compensation for the servitude is always paid to the landowner and not to the land user.
- Any possible impact on landowners as well as land users should be identified and accommodated before construction of the route.
- The development on State land allocated to a tribe requires the consent of the Minister of the Department of Rural Development and Land Reform as nominal landowner of the land. The land rights holders must be consulted, must participate in the decision making process, and consent to the development in the form of a tribal resolution.

Mitigation for Social Impact

The route of powerlines should be designed to accommodate the needs of landowners and landusers.

- The design for the powerline route and the placement of structures should be accommodating to existing structures in the alignment of the route.
- Routes with evident visual disturbance caused by existing powerlines or roads are in general more acceptable than traversing through pristine area.

- For the above reasons the Route alternative 1 had been proposed adjacent to existing disturbance (e.g. from the Bulgerivier sub along the existing provincial R517 road and then along the D2132 sand road). This route was not supported by landowners partly due to the visual impact thereof on the Mokolo dam Nature Reserve.
- Subsequently Route Alternatives 2 and 3 were proposed to follow an alignment away from the sensitive Mokolo Dam Nature Reserve area.
- Further to the above, Route Alternatives 2 and 3 were more acceptable to landowners and posed less impact to their activities and entrance gates to properties.
- During the course of the EIA, all affected landowners were identified and consulted with regarding the proposed project.
- The properties in question (servitudes) will not be purchased and the registered owner will receive compensation for the use of the servitude. Further negotiations are taking place to confirm the details for the acquisition of the servitude and compensation therefore.
- The negotiator will confirm the specific requests/requirements with each landowner. These will be stipulated in the final document, an option document. The option document is a binding document that reflects all the requirements of the landowner, for example: the exact positions of the pylons on the property; the negotiated compensation for the servitude; specific access arrangements to the property etc.

2.2 IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE

The potential impacts that are likely to occur as a result of the construction phase are described below. In addition the mitigation measures that may eliminate or reduce the potential impacts are provided:

Risk of Surface and Groundwater Pollution

- Hazardous materials and construction equipment will be stored at the campsite and used on site. The pollution of groundwater may result from spillages that may occur. In addition, the campsite may accommodate construction workers, in which case solid and liquid effluents will be produced, including sewage and domestic solid waste.
- Therefore diesel, oil and lubricant spills are the main concern in respect of water pollution during construction together with organic pollution caused by inadequately managed facilities at site camps and at the work sites. The above may result in a change in groundwater quality with the associated negative impact on humans and the natural habitat.
- A management plan must be in place to rehabilitate any such spills. Part of the management strategy must further include the proper storage and removal of any by-products and building rubble.
- Relevant to this project is the following:
- There is only one semi-perennial river / stream within the powerline corridors of the study area. Namely, the Bulspruit which flows into the Mokolo Dam. There are also no wetlands present within the servitudes or in the areas immediately neighbouring the servitudes. The area comprises of flat to low undulating plains with a general sloping gradient from south to north. There are a few seasonal drainage routes that run across and through the servitudes. Some of these feed into the Malmaniers River, which is immediately to the east of the study area. During the summer rainy season these are intermittently active. Due to the sandiness and drainage properties of the soils in the area, as well as the lack of high rainfall, there are no permanent or semi-permanent wetlands.
- The drainage routes (or lines) are not seen as being of any threat to the powerline, but they should be kept in mind during construction and care should be taken to avoid them. Concrete foot supports should not be placed directly in or on the banks of these drainage furrows. Neither drainage nor erosion is seen to be significant threats as long as the proper mitigating measures are implemented. There were no signs of erosion along the investigated routes.

Mitigation of Surface and Groundwater Pollution

Construction camp

- Encourage the construction contractor to employ local people as far as is reasonably practical and encourage the contractor to transport them daily to and from site. This will reduce solid and liquid waste production and water demand at the site camps.
- Only proper, certified portable chemical toilets to be used in campsites.
- Only certified waster disposal companies to be used to regularly clean and empty portable toilets.
- Under no circumstances may any human waste (sewage) be discarded in the open veld. Not even buried.

- All construction activities and movement of people and machinery to remain within the designated powerline corridor.
- In all cases, abstraction of water for construction purposes will require a permit from the Department of Water Affairs unless pre-existing rights are purchased from farmers. For this project, water tanks will be used during construction.
- Mixing of cement, concrete, paints, solvents, sealants and adhesive must be done in specified areas on concrete aprons or on protected plastic linings to contain spillage or overflows onto soil to avoid contamination of underground water. The use of pre-mixed cement is recommended. No concrete to be allowed to be mixed in the veld.

Diesel, hydraulic fluid and lubricants

- Minimize on-site storage of petroleum products;
- Build adequate structures (berms and containment structures) to contain any oil spills which might emanate from transformers;
- Bund storage tanks to 120% of capacity;
- Ensure proper maintenance procedures in place for vehicles and equipment.
- Servicing of vehicles to be in designated areas with appropriate spill management procedures in place;
- Ensure measures to contain spills readily available on site (spill kits).

Site camp domestic waste (kitchens, showers)

- Deposit solid waste in containers and dispose at municipal waste disposal sites regularly. Proof to be kept by contractor.
- Dispose of liquid waste (grey water) with sewerage.

Site camp sewage

- Minimize on-site accommodation.
- Only proper, certified portable chemical toilets to be used in campsites.
- Only certified waste disposal companies to be used to regularly clean and empty portable toilets.
- Under no circumstances may any human waste (sewage) be discarded in the open veld. Not even buried.
- No ablution facilities allowed to be placed within 200m of the banks of the Bultspruit.
- No ablution facilities allowed to be within 200m of any drainage lines (even during times when they are dry)

Site camp inert waste (waste concrete, reinforcing rods, waste bags, wire, timber etc)

- Ensure compliance with stringent daily clean up requirements on site.
- Any waste that cannot be recycled will be transported to the appropriate landfill site licensed in terms of section 20 (b) of the National Environment Management Waste Act, 2008 (Act No 59 of 2008).

Rivers and drainage lines

- It is strongly recommended that no construction of any sort takes place within aquatic and riparian habitats encountered, as these habitats are viewed as sensitive.
- Two main rivers or streams are in the immediate vicinity of the powerline corridors, namely the Bultspruit and Malmaniersrivier (Malmaniers River). The Malmaniers falls outside of the study area and is therefore not of critical importance. There area however, a few drainage lines (or intermittent streams) that flow across the powerline corridors into the Malmaniers River and need to be avoided. The Bultspruit, however, crosses almost at a right angle through the powerline corridors, on its way into the Mokolo Dam. This stream, and its associated vegetation, is viewed as sensitive.
- No temporary or other construction facilities to be erected or stored within 200m of the banks of the Bultspruit.
- No pylons to be placed directly in any drainage lines (all of which are seasonal in nature) or directly in the Bultspruit.
- Positioning of the foundation slabs and the pylons themselves must be a minimum of 10m away from the edge of drainage lines.
- Positioning of foundation slabs and pylons must be a minimum of 30m away from the edge of the banks of the Bultspruit.
- During and after construction, storm water control measures should be implemented especially around stockpiled soil, excavated areas, trenches etc. so that export of soil into the watercourse is avoided.

Impact of erosion

- Unnecessary clearing of vegetation can result in exposed soil prone to erosive conditions.
- Insufficient soil coverage after placing of topsoil, where large surface areas are applicable, could also cause erosion.
- To cause the loss of soil by erosion is an offence under the Soil Conservation Act, Act No 76 of 1969.)
- The management of surface water runoff during construction is important to prevent soil erosion on the site. If construction takes place during the rainy season, sufficient storm water management will be required to manage water runoff.
- In summary, excavation of foundations for pylons, movement of vehicles and people and the run-off from cleared areas can cause erosion.

Mitigation of Impact of erosion

- The proposed alternative routes for the powerline are dominated by relatively flat to low undulating plains of mixed bushveld. The general gradient along the corridors is low (typically 1-2%), with the steepest gradient (3-4%) being in the vicinity of the Mokolo Dam. No distinctive rocky outcrops (koppies) are present in the study area.
- The sandy nature of the soils in the area makes it susceptible to soil erosion by water once disturbed, especially in steeper areas. The ground around all foundation slabs for the pylons need to be inspected before and after the summer rainy season for erosion. Any erosion found needs to be fixed and preventative measures put in place to prevent a reoccurrence of the situation.
- Neither drainage nor erosion is seen to be significant threats as long as the proper mitigating measures are implemented. There were no signs of erosion along the investigated routes.
- Construction activities should be well managed to prevent erosion and the following is relevant:
 - It is strongly recommended that no construction of any sort take place within aquatic and riparian habitats encountered, as these habitats are viewed as sensitive.
 - As a minimum measure, positioning of the foundation slabs for pylons must be a minimum of 10m away from the edge of drainage lines.
 - Positioning of foundation slabs and pylons must be a minimum of 30m away from the edge of the banks of the Bulspruit.
 - Construction must be limited to drier periods.
 - Due to the physical nature of the powerlines, their impact will be minimal over the medium to long term. Tree and shrub growth directly below the lines will be cleared and kept permanently so. Clearing of this 8m wide strip has a massive impact on the flora directly within this corridor. However, due to the good condition of the veld and the low negative impacts in the immediate vicinity, the impact on the larger scale is minimal with regards to species destruction.
 - Unnecessary clearing of flora resulting in exposed soil prone to erosive conditions should be avoided.
 - No trees or existing grass strata outside of the powerline corridor should be removed to lower any kinetic energy of potential run-off.
 - Indigenous vegetation, which does not interfere with the safe operation of the substation/ powerline, should be left undisturbed.
 - The powerline corridor through the rocky area must be kept as straight as possible as indicated on the maps showing route alternatives. Sharp turns in the line create an actual larger footprint on the ground and in the rocky area care must be taken to keep this footprint as small as possible.
 - Great care and thought must be taken into the actual positioning and construction of the foundation slabs. The soils are sandy and this area has the steepest gradient of the study site. There is therefore a real danger of soil erosion and resulting veld degradation in this area.
 - The sandy nature of the soils in the area makes it susceptible to soil erosion by water once disturbed, especially in steeper areas. The ground around all foundation slabs for the pylons need to be inspected before and after the summer rainy season for erosion. Any erosion found needs to be fixed and preventative measures put in place to prevent a reoccurrence of the situation.
 - The eradication of any alien vegetation should be followed up as soon as possible by replacement with indigenous vegetation to ensure quick and sufficient coverage of exposed soil.
 - Pro-active measures must be implemented to curb erosion and to rehabilitate eroded areas. All areas susceptible to erosion must be installed with temporary and permanent diversion channels and berms to prevent concentration of surface water and scouring of slopes and banks, thereby countering soil erosion.

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- Specifications for topsoil storage and replacement to ensure sufficient soil coverage as soon as possible after construction activities as identified in the Environmental Management Plan must be implemented.
 - All cleared areas must be ripped and rehabilitated after construction. The top 200mm layer of topsoil must be removed and stockpiled in heaps not higher than 2m and replaced on the construction areas once the activities have been completed. The affected areas should be replanted with a grass mixture indigenous to the area.

Solid Waste

- It is expected that a certain amount of construction waste will be generated during construction.
- Expected waste could be unused steel, conductor cables, cement or concrete and general waste around the construction site (plastic, tins and paper), which may degrade the environment if not disposed in the correct manner.
- Solid waste might remain on site after the completion of construction. This can cause pollution to the environment and be detrimental to animals.

Mitigation of Solid waste

- The construction teams should ensure that all waste is removed from the site and that they recycle the items that can be used again. Unusable waste steel and aluminium will be sold to scrap dealers for recycling at the Eskom stores.
- Any waste that cannot be recycled will be transported to the appropriate landfill site licensed in terms of section 20 (b) of the National Environment Management Waste Act, 2008 (Act No 59 of 2008).
- Stockpiling of construction material should be such that pollution of water resources is prevented and that the materials will be retained in a storm event.
- Once construction is completed, the contractor has to obtain written consent from the relevant landowner that the construction site, construction areas, access routes, etc. are sufficiently and adequately rehabilitated to the landowner's satisfaction.

Impact of labourers

An uncontrolled influx of labourers with associated squatter and increased crime problems create pressure on the natural environment (placement of snares, removal of trees for firewood, careless waste disposal, etc.). This could be severe resulting in permanent damage to the environment if not mitigated properly.

Mitigation of impact of labourers

- Mitigation measures to counter impact on the natural environment and limit potential for crime include specifications in terms of control of construction workers (i.e. provision of toilet and cooking facilities, provision of either accommodation facilities or transport facilities, implementation of Environmental Educational Programmes, etc.). Accommodation for labourers must either be limited to guarding personnel on the construction site (with labourers transported to and from existing neighbouring towns) or a separate fenced and controlled area where proper accommodation and relevant facilities are provided.
- Prepare a comprehensive Environmental Management Plan (EMP) for the control of environmental impacts at the site camps.
- The EMP is to include specific provision for the management of the following:
 - Site location
 - Solid waste
 - Liquid effluent (sewage)
 - Storm water
 - Litter
 - Nuisance (Noise)
 - Hazardous substances
 - Social pathologies (prostitution, drunkenness, theft)
 - HIV/Aids prevention.
- Develop an HIV/Aids workplace policy.
- Ensure that the contractors develop a comprehensive site camp management plan. This should apply even in the case of the limited accommodation camps recommended above.
- Plan campsites an appropriate distance from any facility where it can cause a nuisance.

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- No temporary construction or dwelling sites to be set up within or nearby the powerline corridors. All temporary accommodation to be confined to the area of the Bulge River substation site.

Impact on Safety and Security

A range of safety and security issues could result from the construction of the project. These could be i.e. a threat to the safety of children or individuals in the area; mortality to stock and other farm animals close to the site; an increase in crime, including stock theft and poaching.

In terms of safety, it should be noted that the project involves the excavation of land for the structures of the powerlines. The excavated area for the pylons could be approximately 3 meters deep by 1,5 meters wide. In addition, the footprint for the proposed substation will be excavated. Excavations and open trenches can act as a trap for children (and also snakes, small mammals and lizards). Blasting could also create a safety risk in terms of flying objects and damage to properties.

The negative impact of noise and dust, generally associated with construction activities, are temporary, occurring mostly during the construction phase.

Mitigation of Impact on Safety and Security

Safety mitigation measures

- During construction, the Contractor should, put up a temporary fence around the campsite and work areas.
- All construction activities should take place within fenced or otherwise demarcated areas.
- All excavated areas for pylons must be fenced and barrier tape must be placed around them to prevent humans and animals from falling into them.
- The contractors must appoint their own guards to safeguard their materials.
- Construction workers should wear clearly identifiable clothing that allows landowners to easily identify contract workers on site.
- Once construction is completed, the contractor has to obtain written consent from the relevant landowner that the construction site, construction areas, access routes, etc. are sufficiently and adequately rehabilitated to the landowners' satisfaction.
- Should blasting be deemed necessary, it may only be undertaken by specialists in the field and should be limited to localised areas. All relevant legislation must be adhered to.
- All adjacent landowners have to be informed of the blasting programme prior to any blasting taking place. Contractors must liaise personally with adjacent landowners. All communication in this regard must be documented.
- A Fire Management Plan has to be identified during the pre-construction phase and must be implemented throughout the construction and operational phases of the project.
- Cooking or fires must be kept to within the demarcated area of the substation. Special care needs to be taken for the prevention of run away veld fires into the adjacent area. This could have disastrous consequences as the area is well wooded and accommodates numerous game farms with wild animals. Not to mention the close proximity of human settlements and agricultural lands.
- The immediate area (minimum of 2m by 2m) surrounding the cooking fire or spot must be cleared of all flammable materials, such as grass. This is also necessary with the use of portable gas or paraffin burners typically used for cooking.
- No fires to be left unattended or allowed to burn through the night.
- No open fires to be allowed outside of the Bulge River substation campsite.
- No open fires to be allowed in the powerline corridors or adjacent areas.
- No firewood to be collected in the adjacent veld.
- Tamboti trees have a milky sap in the wood that is poisonous to humans. Under no circumstances must any tamboti wood be used for making fires or cooking. Gloves must be used if working with the raw wood or if removing trees.

Noise mitigation measures:

- Construction hours will be restricted to specific periods which exclude Sundays and public holidays.
- All construction workers will be allowed only for specified day light hours and will be transported from the site by the contractors.

Dust mitigation measures:

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- Sweeping of construction sites, clearing of building rubble and debris as well as regular watering of the construction site (storage areas, roads, etc.) must take place at least once a day.

Impact on natural habitat

The construction of the powerline will have impact on the natural environment. This impact is associated with disturbance to and/or destruction of the flora component.

- During construction the project could cause a significant impact where insensitive clearing for construction and access purposes, etc. is required. Insensitive clearing can cause the destruction of habitat. Not only does vegetation removal represent a loss of seed and organic matter, but it is also a loss of protection to plants and small animals. Insensitive vegetation clearance can also cause erosion.
- Pressure on the natural environment will occur as a result of an influx of labourers into the area that could involve the collection of firewood and medicinal plants, as well as uncontrolled veld fires.
- Various species of indigenous trees and bush on private land are protected by law in terms of the National Forests Act No. 84 of 1998, which stipulates that it is necessary to obtain a permit from the Forestry Branch of the Department of Agriculture, Forestry and Fisheries in order to cut, trim or remove them.

Mitigation of impact on natural habitat

- The proposed project requires the construction of a 33kV line. The total servitude width is 31 meters.
- Site-specific measures for the specific property as identified by the ecologist, must be implemented by the Contractor during the construction phase and by Eskom and the maintenance teams during the operational phase. Refer to mitigation measures provided in the Planning phase.
- During the construction phase, campsite and temporary storage facilities to be erected within the demarcated area of the Bulge River substation only. No unnecessary clearing of bush to take place. Only the absolute minimal in terms of access roads to the construction site to be constructed.
- Proper management procedures need to be in place to prevent the illegal snaring or hunting of wild animals in the area for food.
- The campsite (if setup in the Bulge River substation grounds as recommended) will be situated along a tarred, public road (R517) and all workers, vehicles, etc should take care. As a safety measure for construction workers and motorists, no activities, facilities or storage to be within 30m of the shoulder of the public road (R517). Or within 20m of the public sand road (D2132).
- A work corridor to be limited to 20 metres along the route of the servitudes.
- No camp sites or other temporary structures to be erected within the work area of the powerline corridors, or in adjacent open areas outside of the corridors.
- Camp site, storage facilities and other necessary temporary structures to be erected within the immediate area of the Bulge River substation.
- No material or machinery to be stored in the open veld along the powerline corridors.
- Damage can result in habitat modification or erosion as a result of the proposed powerline construction activities. This can be avoided in general, by not allowing any construction of any sort to take place within aquatic and riparian habitats encountered, as these habitats are viewed as sensitive.
- As a minimum measure, positioning of the foundation slabs for pylons must be a minimum of 10m away from the edge of drainage lines.
- Ensure that no trees or existing grass strata outside of the servitude corridor be removed to lower any kinetic energy of potential run-off, that disturbed surface areas in the construction phase be restored and lastly that no open trenches or mounds of soils created during construction be left.
- The procedures for vegetation clearance and maintenance within servitudes and on Eskom owned land as prescribed by Eskom must be implemented. Selective bush clearing must take place, i.e. indigenous vegetation, which does not interfere with the safe operation of the structure, should be left undisturbed.
- Where clearing of access for construction is essential, the maximum width to be cleared is 8m, 4m on either side of the alignment for the powerline. Clearing for tower positions must be the minimum required for the specific tower.
- No fires may be made for the burning of vegetation and waste.
- Fire fighting equipment must be readily available on site during welding and cutting operations.
- Branches and other debris resulting from pruning processes should not be left below conductors or in areas where it will pose a risk to infrastructure.
- Fires shall not be made for the purpose of chasing or disturbing indigenous fauna.

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- No firearms should be allowed at the construction sites.
 - No animals or birds may be fed, disturbed, hunted or trapped.
 - Construction workers should be barred from collecting firewood or any medicinal and protected plant species.
 - Rocky areas
 - Rocky areas and slopes close to the Mokolo Dam have been identified along the proposed servitude routes. These areas are seen as medium/high sensitive and should be approached with caution.
 - The area is not seen as a “No-Go” area, but care should still be taken to avoid any unnecessary disturbance of veld or soil. Removal of trees, shrubs and other vegetation should be kept strictly to within the 8m corridors under the powerlines.
 - Access roads need to be kept to an absolute minimum.
 - There are a number of Tamboti trees within or close to the powerline corridor. Only those directly within the 8m corridors directly under the powerlines should be removed. Every effort should be made to avoid removing or damaging any Tamboties where possible. It is imperative that the correct permits, etc be obtained for any Tamboti trees that unfortunately need to be removed. The onus of which rests on Eskom.
 - Tamboti trees have a milky sap in the wood that is poisonous to humans. Under no circumstances must any tamboti wood be used for making fires or cooking. Gloves must be used if working with the raw wood or if removing trees.
 - No temporary storage facilities, toilets, dwellings, etc. of any kind to take place within this rocky area.
 - The longest possible distance between pylons should be used in an effort to limit the actual footprint size on the rocky area.
 - Disturbance of the soils must be kept to an absolute minimum to limit the potential introduction of alien plants. This area is pristine with little to no alien infestation. Alien plants generally get a foothold in an area where the soils have been disturbed.
 - Mechanical control of alien species must be implemented within two months of completion of construction of the powerline. Thereafter ever six months.
 - No chemical control of alien plant species to be used.
 - Rivers and drainage lines
 - A major stream (Bulspruit), along with a few drainage lines cross the corridors of the powerlines. These need to be completely avoided.
 - No temporary or other construction facilities to be erected or stored within 200m of the banks of the Bulspruit.
 - No pylons to be placed directly in any drainage lines (all of which are seasonal in nature) or directly in the Bulspruit.
 - Positioning of the foundation slabs and the pylons themselves must be a minimum of 10m away from the edge of drainage lines.
 - Positioning of foundation slabs and pylons must be a minimum of 30m away from the edge of the banks of the Bulspruit.
 - No ablution facilities allowed to be placed within 200m of the banks of the Bultspruit.
 - No ablution facilities allowed to be within 200m of any drainage lines (even during times when they are dry)
 - Only portable, chemical ablution facilities to be used and these to be positioned only within the 31m powerline servitudes.
 - Portable ablution facilities only to be serviced by registered companies and on a regular basis.
 - Strictly no effluent or sewage to be dumped in the veld or river.
 - Strictly no litter of any kind to be left lying around or dumped in the veld or river.
 - Proper water facilities need to be installed and maintained for construction workers. No water from out of the rivers may be used for drinking, washing or cooking purposes.
 - Alien Vegetation
 - All exotic plants must be removed during construction and cleared areas must be rehabilitated. Areas where exotic plants are cleared should be rehabilitated and re-planted with approved indigenous species.
 - Care must be taken to ensure alien vegetation is not spread as a result of vegetation management processes through the transport of seeds or other vegetative material from one site to another.
 - Alien vegetation in servitudes shall be managed in terms of Regulation GNR.1048 of 25 May 1984 (as amended) issued in terms of the Conservation of Agricultural Resources Act, Act 43 of 1983. In Terms of these regulations, Eskom shall “control” i.e. combat category 1, 2 and 3 plants to the extent necessary to prevent or to contain the occurrence, establishment, growth, multiplication, propagation, regeneration and spreading such plants within servitude areas or land owned by Eskom. Due to the nature of alien vegetation,

a control programme for alien vegetation control must be implemented. The implementation thereof can be more frequent than the three year interval recommended for indigenous vegetation. Alien vegetation can grow at rates significantly faster than 1 meter per year.

- The above ongoing programme should be implemented to mechanically control alien plant species that invade the disturbed soils around the newly erected pylons. This should be done in such a way as to allow the natural grasses to colonise the disturbed area, thereby keeping the aliens at bay.
- Mechanical control of alien species to be implemented within two months of completion of construction of the powerline. Thereafter every six months.
- Surface area under powerlines to be mowed and not ploughed.
- No chemical control to be used in the control of alien plants or indigenous plants.

Impact on Birds

The possible impacts of the proposed construction of powerlines and substations on birds are the following:

Loss of breeding, foraging and roosting habitat through habitat transformation

During the construction phase and maintenance of powerlines and substations, some habitat destruction and alteration inevitably takes place. This happens with the construction of access roads, and the clearing of servitudes. These activities have an impact on birds breeding, foraging and roosting in or in close proximity of the site, through the modification of habitat.

Mitigation of Impact on Birds

Relevant to this study:

The impact of the proposed line on the natural habitat (and therefore potentially on power line sensitive Red Data species) would be limited if it is placed next to existing linear impacts, particularly dirt roads, as is the case with Alternative 1. If Alternative 1 is selected, the impact of the clearing of vegetation for the new line would considerably less than if the line was partially constructed in undisturbed woodland, as would be the case if either Route Alternative 2 or 3 is selected. The impact on smaller, non-Red Data species that are potentially breeding in the area that will be cleared for the new power line will be local in extent, in that it will not affect regional or national populations in any significant way.

The proposed construction of the new power line should have a **low** habitat transformation impact from an avifaunal perspective, if **alternative 1** is used. If **alternative 2 or 3** is used, the impact would be **medium**, as it would involve more extensive clearing of undisturbed woodland.

Impact on cultural heritage resources

Construction can destroy heritage resources ('national estate') should it occur in or near the proposed project area.

Mitigation of impact on cultural heritage resources

No sites of Archeological significance were identified (see full Heritage Impact report in Appendix D). If any heritage resources of significance are exposed during the implementation of this Eskom Project, the South African Heritage Resources Authority (SAHRA) should be notified immediately, all construction activities must be stopped and an archaeologist accredited with the Association for Southern African Professional Archaeologist (ASAPA) should be notified in order to determine appropriate mitigation measures for the discovered finds. This may include obtaining the necessary authorisation (permits) from SAHRA to conduct the mitigation measures.

Visual impact

The visual impact resulting from the construction of powerlines can be substantial in a more rural environment. Should sensitive vegetation clearing as proposed in the mitigation measures be exercised then the visual impact of the powerlines should not be significant.

Mitigation of visual impact

The following is relevant to this project:

- Impact to the natural habitat as a result of the project is to be expected. Construction could cause a significant impact where insensitive clearing for construction and access purposes, etc. is required. Insensitive clearing can cause the destruction of habitat.
- It is suggested that any existing servitude roads as well as existing roads must be used during construction and maintenance of the powerline.
- The procedures for vegetation clearance and maintenance within overhead powerline servitudes and on Eskom owned land, updated September 2009 must be implemented. These procedures includes i.e. the following:
 - Where clearing for an access road is essential, the maximum width to be cleared is 8m.
 - Clearing for pylon positions must be the minimum required for the specific tower, not more than a 5m radius around the structure position.
 - Indigenous vegetation, which does not interfere with the safe operation of the powerline, should be left undisturbed.

Loss of agricultural land

The construction of powerlines with the resulting clearance of servitudes can lead to a loss in agricultural land.

Mitigation of impact on Agriculture

The proposed construction of the powerline will not impact significantly on any agricultural activity. The following is relevant to this project:

- The land capabilities of the immediate surrounding areas within which the proposed servitudes fall are fairly limited. Most of the sandy soils are too shallow or nutrient-poor for high-yield crop production. Certain areas with heavier soils are suited for arable land. However, due to the dry winter periods irrigation would be necessary. The climate is generally favourable for year-round production of crops in open-field cultivation.
- The veld carrying capacity is relatively low although many sweet grasses are present. Cattle farming does occur in the area but suitably large areas for grazing are needed. The suitability for grazing land is there but needs to be carefully managed.
- The general land capability is highly suited to wilderness land. This is already a major form of land use in the region with numerous nature reserves, a biosphere reserve, private game farms and lodges. Including the Marakele National Park.
- Should the construction of the powerline impact on any agricultural activities, this impact will only be for a limited period during construction. An access road of 8m wide will be cleared to construct the powerline. After construction the access road could be revegetated and normal agricultural activities could continue under the powerline as usual.
- It is therefore submitted that the servitude area will not interfere with any agricultural activities. In addition, Eskom will not own the servitude but will purchase the rights to construct and maintain the line. A change in land use from agriculture to other land uses is not applicable.
- In addition, in terms of the Subdivision of Agricultural Land Act, 1970 (Act 70 of 1970), Section 2(a) Eskom is a statutory body and therefore it is not subjected to the provisions of the Act.

2.3 IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE

The potential impacts that are likely to occur as a result of the operational phase are described below. In addition the mitigation measures that may eliminate or reduce the potential impacts are provided:

Impact on Birds

Two common problems in Southern Africa are the electrocution of birds (and other animals) and birds colliding with powerlines.

Electrocutions: Electrocution of birds happens when they loose their balance and they bridge the clearances.

Collisions: Collisions are when birds collide with the conductors or earth wires of overhead powerlines.

Mitigation of impact on birds

Relevant to this study:

Electrocutions:

- Although not recorded in large numbers, it is likely that White-backed and Cape Vultures forage in the area (Cape Vultures have been recorded in 2427BA by SABAP1, and White-backed Vultures were recorded during the helicopter fly-over). There are cattle and game in the area surrounding area, and should a carcass be available to the birds, they might attempt to roost on the poles. The risk of phase-earth electrocution is therefore evaluated to be **medium**.
- The poles should be fitted with bird perches on top of the poles to draw birds, particularly vultures, away from the potentially risky insulators.

Collisions:

The most direct impact that the proposed line could potentially have on Red Data birds is collisions with the overhead earth wire. However, the following factors reduce the risk of collisions:

- The new line will cross drainage lines and might be a potential cause of collisions for these species and other, non-Red Data species such as certain species of ducks, waders and possibly Hamerkops. Species such as Kori Bustard and Secretarybird are known to be vulnerable to collisions with power lines, and the risk would be higher where the proposed alignments cross open habitat, especially old lands. The collision risk should therefore be regarded as **medium-high** along some sections of the proposed power line alignments.
- The span of the powerline that crosses drainage lines and old lands should be marked with Bird Flight Diverters on the earth wire of the line, five metres apart, alternating black and white (see Appendix B of the specialist report for the area to be marked with Bird Flight Diverters).

Visual impact

Impact on the esthetics of an area is related primarily to the visual impact of the proposed powerline and secondary to the impact of habitat destruction.

Factors to consider regarding the visual impact are the following:

- The ability of the surrounding environment to absorb the visual impact of the powerline.
- The structures to be used for the powerline.

Mitigation of Visual Impact

It is not expected that significant additional visual impact will occur as a result of the powerline due to the following:

- The proposed Route Alternatives 2 and 3 have been designed to pose less visual impact to sensitive areas such as the Mokolo Dam Nature Reserve. These two routes will follow an alignment to the west and away from the dam.
- These two alignments will in addition not affect the entrances to several properties along the Bulge River dirt road towards the dam.
- In addition, visual impact could generally be mitigated to some extent by constructing the line with monopole steel structures. A visual of the structure is included in Appendix C of the BAR. The monopole is planted 2 meters deep in a concrete slab with a 2 meters wide radius. From previous experience the steel poles are known to weather and with time blend into the environment.

Impact of alien vegetation

One of the impacts of concern is the introduction of alien plants and the use of chemical herbicides (weed-killers).

Mitigation of alien vegetation

- Mechanical control of alien plants around disturbed areas to be implemented within two months of completion of construction. Thereafter every six months. These areas will be predominantly around the erected pylons where the soils were originally disturbed during the construction phase. Mechanical control to be of such a nature as to allow local grasses and other pioneer plants to colonise the previously disturbed areas, thereby keeping out alien invasives.
- No chemical control (herbicides) of alien plants to be used. These chemicals will have a detrimental effect on the surrounding vegetation and habitats.
- Vegetation under pylons and next to pylons to be mowed and not ploughed. This is an effort to avoid disturbing the ground which leaves it open to colonisation by alien weeds.

- Disturbance of the soils must be kept to an absolute minimum to limit the potential introduction of alien plants. This area is pristine with little to no alien infestation. Alien plants generally get a foothold in an area where the soils have been disturbed.
- Area around foundation slabs to be checked before and after the summer rains for signs of soil erosion due to water run-off. Such sites need to be modified and rehabilitated to prevent ongoing erosion.
- Two of the impacts of greatest concern on the environment are the introduction of alien plants and soil erosion. As already mentioned these impacts need to be monitored and managed on an ongoing basis.

Impact on Safety and Security

Fire Hazard:

Poor maintenance, bird collision, electrical faults as well as pylons struck by lightning could result in veld fires that could result in destruction of habitat and property and even severe injury and/or death. It is important to note Eskom's responsibilities in terms of the National Veld and Forest Fire Act, Act No 101 of 1998. Reference is made to Section 3(1) of the National Veld and Forest Fire Act that clearly indicates that Owners may form an association for the purpose of predicting, preventing, managing and extinguishing veld fires. This implicates that it is voluntary to join a Fire Protection Agency and not mandatory according to the Act. As it is not mandatory to join a Fire Protection Agency, Eskom's maintenance staff working in the different areas is encouraged to join the Fire Protection Agencies if their workload and staff availability allows this. Section 12 (1) of the National Veld and Forest Act reads as follows: "Every owner on whose land a veldfire may start or from whose land it may spread must prepare and maintain a firebreak on his or her side of the boundary between his or her land and adjoining land." Servitudes are registered for all Eskom sub-transmission (33 to 132kV) powerlines and a way leave agreement is obtained for the reticulation powerlines (11 and 22 kV). According to a legal opinion obtained from the Corporate Legal Department, Eskom is not the landowner of powerline servitudes or rights of way, but only where Eskom purchased the land for a substation and is in possession of a title deed.

Risk of Electrocutation:

There could be concern about the safety of people and animals in the environment of substations and powerlines. To prevent the risk of electrocution no structures are allowed in the servitude areas of the powerlines.

Mitigation of Impact on Safety and Security

Fire Hazard:

- The existing complaints structure must be revised by Eskom and be updated on a regular basis and communicated with all affected landowners to ensure effective response and service supply (especially in terms of reporting of obvious electrical faults).
- The applicable Emergency telephone numbers should always be available on site. Ms Nkateko Msimango of Environmental Management, Eskom Distribution Northern Region is the relevant contact person (Tel: 015 299 0012/ Cell: 072 018 5167).
- Annual fire management programmes will need to be implemented to manage the risk appropriately.
- Cooking or fires must be kept to within the demarcated area of the substation. Special care needs to be taken for the prevention of run away veld fires into the adjacent area. This could have disastrous consequences as the area is well wooded and accommodates numerous game farms with wild animals. Not to mention the close proximity of human settlements and agricultural lands.
- The immediate area (minimum of 2m by 2m) surrounding the cooking fire or spot must be cleared of all flammable materials, such as grass. This is also necessary with the use of portable gas or paraffin burners typically used for cooking.
- No fires to be left unattended or allowed to burn through the night.
- No open fires to be allowed outside of the Bulge River substation campsite.
- No open fires to be allowed in the powerline corridors or adjacent areas.
- Branches and other debris resulting from pruning processes should not be left below conductors or in areas where it will pose a risk to infrastructure.
- Debris shall not be burnt under any circumstances.
- Fires shall not be made for the purpose of chasing or disturbing indigenous fauna.
- Eskom encourages affected landowners and maintenance staff to participate in the Fire Protection Agency.

Risk of Electrocutation:

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- To prevent the risk of electrocution no structures are allowed in the 31 meters wide servitude area of the powerlines.

Safety of landowners/ land rights users:

Security measures to safeguard the property and the landowner/ landuser are the following:

- Eskom needs to make an appointment with the affected landowner to maintain the line on his property.
- Only in case of an emergency, Eskom will have the right to enter the property at any hour.
- Communication between landowners and Eskom is of importance in case of emergency breakdowns.
- Security measures such as the usage of existing gates with Eskom locks are proposed.
- Eskom should compensate the landowner for any damage to the landowners' property.
- Security measures are provided in the Environmental Management Plan (EMP) of the EIA Report.

2.4 IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING AND CLOSURE PHASE

It is not envisaged that the powerline will be decommissioned. This project is part of the future infrastructure to supply the Toulon Pumps substation. The substation provides supply to the pump station that provides water to the Lephalele Municipality as well as Matimba Power Station. Should this application not be approved, this can result in major disturbances in water as well as energy provision.

Indicate mitigation measures that may eliminate or reduce the potential impacts listed above:

Should there be a need to decommission the powerline then the following mitigation measures that may eliminate or reduce the potential impact are applicable:

- The powerline will have to be physically removed which would entail the reversal of the construction process.
- The construction teams will ensure that all waste is removed from the sites and that they recycle the items that can be used again. Unusable waste steel and aluminium will be sold to scrap dealers for recycling at the Eskom stores.
- The disposal of materials will have to be at an approved waste disposal facility.
- The route of the powerline will have to be rehabilitated.
- Once the decommissioning is completed, the contractor has to obtain written consent from the relevant landowner that the construction site, construction areas, access routes, etc. are sufficiently and adequately rehabilitated to the landowner's satisfaction.

3. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, the following environmental impact statement could sum up the impact that the proposed activity may have on the environment after the management and mitigation of impacts have been taken into account with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

3.1 No-go alternative (compulsory)

- It is suggested that to maintain the status quo is not the best option for the macro environment.
- The outcome of this project is to improve the supply to Toulon Pumps substation. The substation provides supply to the pump station that provides water to the Lephalele Municipality as well as Matimba Power Station.
- This proposed project is therefore part of the infrastructure to supply the Eskom Distribution grid with power.
- Should this application not be approved then the supply to the Toulon Pumps substation will be unreliable and in future this can result in major disturbances in water provision to Lephalele Municipality as well as Matimba Power Station. This could subsequently result in major disruptions of power supply to different areas at different times.
- The No-go option will not solve the current demand for electricity at Toulon Pumps substation.

The positive impacts of the proposed project on the environment are as follows:

- Long-term, regional benefits of reliable power supply and the resultant socio-economic benefits.
 - Included in this is the fact that any infrastructure development as a secondary impact will ultimately positively influence the development of the SMME- sector through electricity provision.
 - On the opposite pole the lack thereof will most certainly be to the detriment of SMMEs, especially in rural developing areas, where the lack of, as well as inconsistent, infrastructure could seriously lead to the detriment of economic development directly impacting on social well-being.
- Potential reduction in crime as a result of short-term job creation during construction (providing farm safety and security measures are implemented)
- Possible local growth in the economy of the surroundings towns and others in the sub-region, and for local businesses depending on where the construction camp is.
- Economic benefits for contractors and other suppliers of goods and services.
- The project as proposed will ensure significant capital investment that will contribute to the economical growth of the area.
- Private business opportunities could be stimulated.

The No-Go development alternative could therefore not be considered the responsible way to manage the site.

3.2 Environmental impact statement

It is evident that the biggest impact of the project on the environment is expected to occur during the construction phase. It is expected that with the proposed mitigation of impacts and the implementation of the Environmental Management Plan, the expected negative impact could be mitigated to acceptable measures.

EVALUATION METHOD FOLLOWED

The nature and extent of expected negative impacts are described directly under the heading for each impact. Below this description for each impact, a table has been designed to facilitate evaluation of the expected negative impact in terms of significance (intensity), duration, probability and significance after mitigation.

The numerical values used for "Impact Severity" (significance / intensity) relates to the potential severity of the proposed project on the specific environmental component without any mitigation and is being evaluated and rated on a scale from 0 to 4 where the following values apply :

0 = no impact

1 = low impact

2 = medium impact

3 = significant impact

4 = severe impact

The duration of the expected negative impact is supplied as either “temporary” - 0-3 years (generally during construction) or “permanent”. The probability that the expected negative impact would occur if not mitigated is rated as “low”, “medium” or “high”. The negative impacts are also evaluated in terms of the effectiveness with which it could be mitigated: “Severity of Impact after Mitigation” is rated on a scale from 0 to 4, with a severe impact after mitigation receiving a rating of 4 (and can therefore influence the viability of the project) and no impact after mitigation receiving a rating of 0.

Route Alternative 1

Evaluation of Impact and Evaluation of Mitigation Measures

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Risk of surface and ground water pollution	3	Temporary	Medium	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impact on cultural heritage resources	0	none	none	0

0

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impact on natural habitat	4	Permanent	High	4

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Risk of Erosion	4	Permanent	High	2

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Visual impact (Change of character and atmosphere of the area)	3	Permanent	High	2

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impacts on safety and security	2	Temporary	High	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impact of labourers	2	Temporary	High	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impact on Birds	1	Permanent	Low	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Social Impact	3	Temporary	High	2

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impact of Solid Waste	3	Temporary	Medium	0

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Loss of agricultural land	3	Temporary	Medium	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impact of alien vegetation	2	Permanent	High	1

Alternative 2

Evaluation of Impact and Evaluation of Mitigation Measures

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Risk of surface and ground water pollution	2	Temporary	Medium	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impact on cultural heritage resources	0	none	none	0

0

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impact on natural habitat	3	Permanent	Medium	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Risk of Erosion	4	Permanent	High	2

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Visual impact (Change of character and atmosphere of the area)	3	Permanent	Low	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impacts on safety and security	2	Temporary	High	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impact of labourers	2	Temporary	High	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impact on Birds	2	Permanent	Low	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Social Impact	2	Temporary	High	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impact of Solid Waste	3	Temporary	Medium	0

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Loss of agricultural land	1	Temporary	Medium	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impact of alien vegetation	2	Permanent	High	1

Alternative 3

Evaluation of Impact and Evaluation of Mitigation Measures

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Risk of surface and ground water pollution	2	Temporary	Medium	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impact on cultural heritage resources	0	none	none	0

0

Impact Description	Impact	Impact	Impact	Mitigation
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Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impact on natural habitat	3	Permanent	Medium	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Risk of Erosion	4	Permanent	High	2

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Visual impact (Change of character and atmosphere of the area)	2	Permanent	Low	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impacts on safety and security	2	Temporary	High	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impact of labourers	2	Temporary	High	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impact on Birds	2	Permanent	Low	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Social Impact	1	Temporary	High	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impact of Solid Waste	3	Temporary	Medium	0

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Loss of agricultural land	1	Temporary	Medium	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impact of alien vegetation	2	Permanent	High	1

No biophysical, social or cultural-historical environmental impact has been identified that is expected to result in significant costs to the environment should the proposed mitigation measures be implemented; therefore the environmental consultants (EAPs) recommend the construction of the project.

SECTION E. RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?

YES	NO
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If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment):

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

Ecological Sensitivity:

- Alternative Route 1 has the highest number of potential impacts, while Alternative Routes 2 & 3 potentially have the same number of impacts on ecological sensitive areas. Therefore other criteria, such as number of sharp turns in a corridor and number of low impact areas passed through, need to be considered as well. Sharp turns in a powerline leave a larger footprint on the ground than that of a straight line.
- All three routes pass over watercourses, while Route 1 passes through a "No-Go" Zone (Camel Thorns). Alternative Routes 2 & 3 are therefore both more ecologically feasible than Route 1. However, Routes 2 & 3 both pass through areas where protected Tamboti trees occur. Therefore, although the impacts of Routes 2 & 3 on the natural environment will potentially be the same it is imperative that all mitigating measures are implemented to reduce these impacts.
- For all of the above reasons, Alternative Route 1 is not an acceptable alternative, while Alternative Routes 2 & 3 are equally acceptable or recommended alternatives.
- Therefore from an **ecological perspective** the line variant recommendation is: **Alternative Route 2** or **Alternative Route 3** can be used.
- It was concluded that, from a vegetation and fauna perspective, if duly mitigated and planned, the project will not impact significantly on the environment.
- Tamboti trees were observed in the study area, especially in the rocky ridges and rocky areas close to the Mokolo Dam. The rocky ridges or slopes have a fair presence of Tamboti trees (*Spirostachys africana*) spread throughout them. According to the provincial ordinances of the Limpopo Province the Tamboti is a protected tree and permits need to be obtained from the Provincial Department of Environment Affairs. The following are specific GPS coordinates along Alternative Route 2 where Tamboti trees were observed:
 - S23° 59' 35,9"; E27° 40' 41,2"
 - S23° 59' 37,3"; E27° 40' 41,3"
 - S24° 00' 29,1"; E27° 41' 01,3"
 - S24° 00' 32,6"; E27° 41' 06,6"
 - S24° 00' 31,8"; E24° 41' 05,8"
 - S24° 00' 46,8"; E27° 41' 29,2"
- The rocky area with an unusually high concentration of camel thorn trees (*Acacia erioloba*) makes this a highly sensitive and unique micro ecosystem. Furthermore, camel thorn trees are protected by law. It is therefore imperative that this sensitive area be seen as a "No-Go" area and entirely avoided. For this reason, no mitigating measures are seen as been able to reduce the impact on the site, save the one of total avoidance. The localised area of camel thorns is in the vicinity of the entrance to the Mokolo Nature Reserve and located in the corridor of Route Alternative 1.

General GPS coordinates of red data / protected species:

- Sensitive area of camel thorn trees: S24° 00.499'; E27° 42.117'
- Sensitive area of marula trees: S24° 02.188'; E27° 41.835'

Heritage Resources:

- The Phase I Heritage Impact Assessment for the Eskom Project revealed none of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) for the Eskom Project Area.
- If any heritage resources of significance are exposed during the Eskom Project the South African Heritage Resources Authority (SAHRA) should be notified immediately, all development activities must be stopped and an

archaeologist accredited with the Association for Southern African Professional Archaeologist (ASAPA) should be notified in order to determine appropriate mitigation measures for the discovered finds. This may include obtaining the necessary authorisation (permits) from SAHRA to conduct the mitigation measures.

- From a **heritage** point of view, all **3 alignments (Route Alternatives 1,2 and 3) are suitable options**, should the proposed mitigation be implemented.

Bird Impact:

The construction of the proposed new 33kV Bulge-Toulon power line should pose a limited threat to the birds. The power line poses a **medium-high** collision risk, mostly to water associated species, and those species attracted to open habitats, particularly old lands. The line will pose a **medium** electrocution risk, in particular to vultures. If alternative 1 is used for the power line, the habitat transformation impacts should be **low**, but if alternative 2 or 3 is used, the habitat transformation impacts will be **medium**, as it will entail the clearing of undisturbed woodland.

Recommendations

- The span that crosses drainage lines and old lands should be marked with Bird Flight Diverters on the earth wire of the line, five metres apart, alternating black and white
- The poles should be fitted with bird perches on top of the poles to draw birds, particularly vultures, away from the potentially risky insulators.
- From a **bird impact perspective**, all **three alignments (Route Alternatives 1, 2 and 3)** are suitable options, should the proposed mitigation be implemented.

CONCLUSION

Alternative routes have been investigated for the project. From a bird impact as well as heritage viewpoint there is no preferred alternative route. From a purely ecological viewpoint, Route Alternatives 2 or 3 can be used. The final decision between Route 2 or 3 should be made on the accumulative weight of other parameters such as feedback from public participation, land tenure issues, construction costs, etc.

Alternative 3 is proposed as the preferred route from the viewpoint of impact on the landowners and agricultural activities.

Is an EMPr attached?

The EMPr must be attached as Appendix F.

YES	NO
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SECTION F: APPENDIXES

The following appendixes must be attached as appropriate:

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

Appendix E: Comments and responses report

Appendix F: Environmental Management Programme (EMPr)

Appendix G: Other information