



## environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

(For official use only)

**File Reference Number:**

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NEAS DEA/EIA/0000113/2011 DEA 12/12/20/2094

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.

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## 1. INTRODUCTION

South Africa's new Environmental Impact Assessment (EIA) regulations came 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 replaced 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

An application for environmental authorisation is submitted to the National Department of Environmental Affairs (DEA) in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), read with the Environmental Impact Assessment Regulations, 2010 (GNR 543 of 2010) (EIA Regulations).

Relevant to this project is 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.

This document constitutes the Basic Assessment Report prepared in support of an environmental authorisation application. In addition to the statutory provisions in the NEMA more fully referred to herein below, other legislation and guidelines that have been considered in the preparation of the Report, includes relevant legislation on all levels including the constitutional, national, provincial and local level. A brief summary of the relevant legislation is outlined below.

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## 2.1 The Constitution of the Republic of South Africa (Act 108 of 1996)

Section 2 of the Constitution of the Republic of South Africa (Act 108 of 1996) (CA) states that: "This Constitution is the supreme law of the Republic; law or conduct inconsistent with it is invalid, and the obligations imposed by it must be fulfilled." Section 24 of the CA, states that everyone has the right to an environment that is not harmful to their health or well-being and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:

- prevent pollution and ecological degradation;
- promote conservation; and
- secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

Section 24 guarantees the protection of the environment through reasonable legislative (and other measures) and such legislation is continuously in the process of being promulgated. Section 33(1) concerns administrative justice which includes the constitutional right to administrative action that is lawful, reasonable and procedurally fair. This Basic Assessment Report was accordingly prepared, submitted and considered within the constitutional framework set by inter alia section 24 and 33 of the Constitution.

## 2.2 The National Environmental Management Act (107 of 1998) and the Environmental Impact Assessment Regulations, 2010

The overarching principle of the National Environmental Management Act 1998 (Act 107 of 1998) (NEMA) is sustainable development. It defines sustainability as meaning the integration of social, economic and environmental factors into planning, implementation and decision making so as to ensure the development serves present and future generations.

Section 2 of NEMA (Act no 107 of 1998) provides for National Environmental Management Principles. These principles include inter alia:

- Environmental management must place people and their needs at the forefront of its concern.
- Development must be socially, environmentally and economically sustainable.
- Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated.
- Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing must be pursued.
- The participation of all Interested and Affected Parties (I&APs) in environmental governance must be promoted.
- Decisions must take into account the interests, needs and values of all I&APs.
- The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.
- The environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage.

The Environmental Impact Assessment (EIA) process to be undertaken in respect of the authorisation process of the proposed project is in compliance with the NEMA read with the Environmental Impact Assessment Regulations of 2010 (Government Notice No's R543, 544, 545 and 546 of 2010). The proposed development involves 'listed activities', as identified in terms of the NEMA and in terms of section 24(1), the potential consequences for or impacts on the environment of *inter alia* listed activities must be considered, investigated, assessed and reported on to the competent authority except in respect of those activities that may commence without having to obtain an environmental authorisation in terms of the NEMA.

As stated above, an environmental authorisation application has been submitted to the DEA for consideration. The following activities as listed were identified as applicable to the proposed construction of the project:

<b>Relevant notice:</b>	<b>Activity No:</b>	<b>Description of each listed activity as per project description:</b>
GNR 544 of 18 June 2010	10	The construction of facilities or infrastructure for the distribution of electricity outside urban areas with a capacity of 132kV.

GNR 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.
GNR 546 of 18 June 2010	14	The clearance of an area of 5 hectare or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation.

### 2.3 National Water Act (Act No 36 of 1998) (NWA)

In terms of the NWA, the national government, acting through the Minister of Water and Environmental Affairs (previously the Minister of Water Affairs and Forestry), is the public trustee of South Africa's water resources, and must ensure that water is protected, used, development, conserved, managed and controlled in a sustainable and equitable manner for the benefit of all persons (section 3(1)).

In terms of the NWA a person may only use water without a license under certain circumstances. All other use, provided that such use qualify as a use listed in section 21 of the Act, require a water use license. A person may only use water without a license if such water use is permissible under Schedule 1 (generally domestic type use) if that water use constitutes a continuation of an existing lawful water use (water uses being undertaken prior to the commencement of the NWA, generally in terms of the Water Act of 1956), or if that water use is permissible in terms of a general authorisation issued under section 39 (general authorisations allow for the use of certain section 21 uses provided that the criteria and thresholds described in the general authorisation is met). Permissible water use furthermore includes water use authorised by a license issued in terms of the NWA.

Section 21 of the NWA indicates that "water use" includes:

- taking water from a water resource (section 21(a));
- storing water (section 21(b));
- impeding or diverting the flow of water in a water course (section 21(c));
- engaging in a stream flow reduction activity contemplated in section 36 (section 21(d));
- engaging in a controlled activity which has either been declared as such or is identified in section 37(1) (section 21(e));
- discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit (section 21(f));
- disposing of waste in a manner which may detrimentally impact on a water resource (section 21(g));
- disposing in any manner of water which contains waste from, or which has heated in, any industrial or power generation process (section 21 (h));
- altering the bed, banks, course or characteristics of a water course (section 21(i));
- removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people (section 21(j)); and
- using water for recreational purposes (section 21(k)).

Of relevance is, that the four Alternative Routes traverse two major water courses (Mokolo River and Poer se Loop) along with a few seasonal streams and drainage lines. Whichever route is finally decided upon, river crossings will still be necessary and mitigation measures are recommended to prevent any impact on water courses.

- Hence, no construction of any sort should take place within any aquatic and riparian habitats encountered, as these habitats are viewed as sensitive.
- There will therefore be *no impact on any watercourse or waterflow with regards to impeding flow or altering flow, as discussed in Section 21 c & l, or any of the listed water uses of the Water Act and relevant General Authorisations.*
- It is suggested that the applicant is complying with all aspects of the Water Act and General Authorisations, including all of the above points mentioned and there would therefore be **no need to obtain a water use license or register as a water user in terms of the General Authorisations.**
- It should however be noted, that If there are any activities which relates to section 21 water uses of the National Water Act 1998 (Act No. 36 of 1998), the applicant will need to get authorisation from the Department before such activities commences.

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## 2.4 The National Heritage Resources Act (Act 25 of 1999)

The National Heritage Resources Act (Act No 25 of 1999, Art 3) outlines the following types and ranges of heritage resources that qualify as part of the National Estate, namely:

- (a) places, buildings structures and equipment of cultural significance;
- (b) places to which oral traditions are attached or which are associated with living heritage;
- (c) historical settlements and townscapes;
- (d) landscapes and natural features of cultural significance;
- (e) geological sites of scientific or cultural importance;
- (f) archaeological and palaeontological sites;
- (g) graves and burial grounds including-
  - (i) ancestral graves;
  - (ii) royal graves and graves of traditional leaders;
  - (iii) graves of victims of conflict;(iv) graves of individuals designated by the Minister by notice in the Gazette;
  - (v) historical graves and cemeteries; and
  - (vi) other human remains which are not covered by in terms of the Human Tissues Act, 1983 (Act No 65 of 1983);
- (h) sites of significance relating to the history of slavery in South Africa;
- (i) movable objects, including -
  - (i) objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
  - (ii) objects to which oral traditions are attached or which are associated with living heritage;
  - (iii) ethnographic art and objects;
  - (iv) military objects;
  - (v) objects of decorative or fine art;
  - (vi) objects of scientific or technological interest; and
  - (vii) books, records, documents, photographs, positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No 43 of 1996).

The National Heritage Resources Act (Act No 25 of 1999, Art 3) also distinguishes nine criteria for places and objects to qualify as 'part of the national estate if they have cultural significance or other special value ...'. These criteria are the following:

- a) its importance in the community, or pattern of South Africa's history;
- b) its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- c) its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- d) its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- e) its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- f) its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- g) its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- h) its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa;
- (i) sites of significance relating to the history of slavery in South Africa

The current application requires a Phase 1 Heritage Impact Assessment by a qualified archaeologist/cultural heritage management consultant. Report attached in Appendix D2. In addition, a Palaeontological Assessment was conducted of which the results are available in 2.2.4 and Appendix D4 of this report.

## 2.5 National Environmental Management: Biodiversity Act (Act 10 of 2004)

The National Environmental Management Biodiversity Act (Act No. 10 of 2004) (NEMBA) aims to provide for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998; the protection of species and ecosystems that warrant national protection; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bio prospecting involving indigenous biological resources; the establishment and functions of a South African National Biodiversity Institute; and for matters connected therewith.

The NEMBA provides for the publishing of various lists of species and ecosystems by the Minister of Water and Environmental Affairs as well as by a Member of the Executive Council responsible for the conservation of biodiversity of a province in relation to which certain activities may not be undertaken without a permit. In terms of Section 57 of the NEMBA, no person may carry out any restricted activity involving any species which has been identified by the

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Minister as “critically endangered species”, “endangered species”, “vulnerable species” or “protected species” without a permit. The NEMBA defines “restricted activity” in relation to such identified species so as to include, but not limited to, “hunting, catching, capturing, killing, gathering, collecting, plucking, picking parts of, cutting, chopping off, uprooting, damaging, destroying, having in possession, exercising physical control over, moving or translocating”.

The Minister has made regulations in terms of section 97 of the NEMBA with regards to Threatened and Protected Species which came into effect on 1 June 2007. Furthermore, the Minister published lists of critically endangered, endangered, vulnerable and protected species in terms of section 56(1) of the NEMBA.

## 2.6 National Forests Act (Act 84 of 1998)

The project may involve the cutting, disturbing, damaging or destroying of any protected trees declared in terms of section 12 of the National Forest Act (NFA) (Act 84 of 1998). If this is proven during the EIA a license in terms of section 15 of the NFA will be required from the relevant provincial office of the Department of Agriculture, Forestry and Fisheries in order to cut them. In general all protected trees must be recorded during a walk down phase (once final route is pegged) and the presence of protected trees in the corridor must be confirmed.

Relevant to this project is that Red data species and protected species found in the area include Camel thorn (*Acacia erioloba*), Leadwood (*Combretum imberbe*) and Marula (*Sclerocarya birrea* subsp. *caffra*). In addition a small grove of Camel Thorns (*Acacia erioloba*) on both sides of the D1882 sand road in the vicinity of the Mokolo River should be viewed as a ‘No-Go’ zone. The route should be planned to avoid the groves. GPS coordinates taken from the road: S24°06.822'; E27°48.301'. Should the camel thorns be impacted, then a permit is needed.

## 2.7 National Veld and Forest Fire Act (Act 101 of 1998)

The National Veld and Forest Fire Act (Act 101 of 1998) places an obligation on the owner of property to ensure compliance and hence creation of fire-breaks and consider amongst other the following:

- Fire rating
- Consultation of adjoining owners and the fire protection association (if any)
- be present at such burning or have an agent attend.

The fire break should:

- be wide and long enough to prevent or to have a reasonable chance of preventing a veldfire from spreading to or from neighbouring land;
- not cause soil erosion; and be reasonably free of inflammable material capable of carrying a veldfire across it.

Servitudes are registered for all Eskom sub-transmission (33 to 132kV) power lines and a way leave agreement is obtained for the reticulation power lines (11 and 22 kV). The Act defines ‘owner’ as a lessee or other person who controls the land in question in terms of a contract, testamentary document, law or order of a High Court. Hence, the requirements for creating firebreaks or joining Fire Protection Agencies are applicable as far as where Eskom has a substation and not for power lines.

## 2.8 The Limpopo Environmental Management Act (LEMA), 2003 (Act no 7 of 2003)

The Limpopo Environmental Management Act (LEMA), 2003 (Act no 7 of 2003) took the place of the former Nature Conservation ordinances. The district offices of the Department of Economic Development, Environment & Tourism, Limpopo Province are designated to deal with compliance in terms of LEMA and the protected plants in terms thereof or applicable permits applications.

## 2.9 National Environmental Management: Waste Act (Act 59 of 2008) (NEMWA)

The NEMWA commenced on 1 July 2009 and as a result of its commencement the relevant provisions in the Environment Conservation Act 73 of 1989 (ECA) in respect of waste management, were repealed.

Section 19 of the NEMWA provides for listed waste management activities and states in terms of section 19(1), the Minister may publish a list of waste management activities that have, or are likely to have a detrimental effect on the environment. Such a list was published in GN 718 of 3 July 2009 (GN 718).

In accordance with section 19(3), the Schedule to GN 718 provides that a waste management license is required for those activities listed therein prior to the commencement, undertaking or conducting of same. In addition, GN 718

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differentiates between Category A and Category B waste management activities. Category A waste management activities are those which require the conducting of a basic assessment process as stipulated in the EIA Regulations, 2006 promulgated in terms of the NEMA as part of the waste management license application and Category B waste management activities are those that require the conducting of a scoping and environmental impact assessment process stipulated in the EIA Regulations, 2006 as part of the waste management license application. No activity in respect of which a waste management license might be required under NEMWA, is envisaged for this project.

### 2.10 Civil Aviation Technical Standards (CATS)

Eskom has to adhere to Civil Aviation Technical Standards (CATS) regarding power lines. Power lines, overhead wires and cables are considered as obstacles and the detail shall be communicated to the Commissioner at an early planning stage. The Commissioner shall require the route of the power line, the co-ordinates (*latitude and longitude in degree, minute, seconds and tenth of seconds format*) of turning points in the line, the maximum height of the structures above ground level and the name of the power line. The Commissioner shall evaluate the route and require those sections of the line (if any), which is considered a danger to aviation to be marked or rerouted.

There is no specified definite distance between power lines and runways. The distances depends on various factors such as height of lines, surrounding topography, runway approach, length of airstrip, size of planes landing at aerodrome, etc. A directory of airfields that lists registered airfields around the country ("Airfields Directory for Southern Africa") is available and could be obtained from Aviation Direct cc (Tel 011 465 2669 or 011 465 5291).

The South African Civil Aviation Authority (SACAA) suggests that Eskom follows the following procedure for each project:

- Send map showing power line routes with pertinent GPS points (or.kmz points – google earth) along power line route.
- Highlight any airstrips we are aware of.
- Then SACAA (Contact Mr. Chris Isherwood) will then give feedback as to distances from airstrip, possible alterations in routes, etc.

## 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 12/12/20/2094 on 25 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 additional site investigations.
- The National Heritage Resources Act 25 of 1999 in addition requires that all heritage resources, that is, all places or objects of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance be protected. Fossil heritage of national and international significance is found within all provinces of the RSA. Therefore a **Palaeontological Assessment** was also commissioned due to a request from SAHRA.

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- The **Public Participation Programme (PPP)** started in November 2010 and continued until April 2012. 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.
  - Several **one-on-one meetings were conducted with affected landowners** to address their specific requirements. This resulted in changes to the alignment of the final proposed power line route.
  - 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 **29 May 2012** to the following stakeholders for their comment :
    - Department of Water Affairs: Water Resources & Water Quality Management
    - South African Heritage Resources Authority/ LIHRA
    - 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
    - Agri Lephalale
    - Waterberg Biosphere Reserve
    - Waterberg Nature Conservancy
    - Mokolo River Nature reserve
    - Waterberg District Municipality
    - Lephalale Local Municipality
    - Eskom Transmission
    - Eskom Distribution Northern Region
    - Landowners
  - The **due date for comment to the draft Basic Assessment Report was 10 July 2012** .
  - Subsequently, a **final Basic Assessment Report (BAR)** was compiled and submitted to DEA on **10 August 2012**. This report includes all concerns raised to the draft BAR and responses thereto. The Consultants (EAP) ensured that all concerns raised are addressed in appropriate detail in the final Basic Assessment Report.



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## SECTION A: ACTIVITY INFORMATION

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 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 detail<sup>1</sup>:*

#### 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 65km 132kV power line from the authorised Bulge Rivier substation to the new Dorset substation. Inclusive to this application is the construction of the following:

- Construct a 132kV power line from the authorised Bulge rivier substation to the new Dorset substation.
- Construct an access/ construction road for the new 132kV line.
- Obtain a servitude area of 31metres wide for the line.

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

#### 1.2 Locality and Regional Context

Eskom is planning the construction of a 132kV power line from the authorised Bulge River substation to the new Dorset substation. At the time of the study Dorset Substation was under construction, while work on the Bulge River Substation had not yet started.

The study area for the power line servitude is situated in the Limpopo Province, close to the small towns of Vaalwater, Matlabas and Elmeston. With Lephalale (Ellisras) further to the north. The area is south of Lephalale, north of Vaalwater and north of the Waterberg mountain range and the Marakele National Park. It is within the area south and east of the Mokolo Dam and Mokolo Dam Nature Reserve (previously Hans Strijdom Dam and Hans Strijdom Nature Reserve). The study area runs roughly in a east-west direction.

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. 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.

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<sup>1</sup> 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.

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To facilitate these functions the following three types of physical elements or zones were 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 are situated immediately north and northwest of the study area, fall within the core area.

Regarding Service Infrastructure in the core areas:

- 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 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 report on the status of the ecology 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 to the north and west of the study 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. In fact, approximately 50% of the proposed power line route runs on the border of the Transitional Zone of the Waterberg Biosphere Reserve. This section is adjacent to the dirt road between Hermanusdoorns and Witfontein.

Taking the zonation of the Waterberg Biosphere Reserve into consideration, the Eskom power line route was designed to limit impact to the Waterberg Biosphere Reserve. The majority of the proposed project falls in Transition Zone 2 where infrastructure could be allowed. In fact, as mentioned, to limit impact to the WBR, approximately 50% of the proposed power line route runs on the border of the Transitional Zone of the Waterberg Biosphere Reserve.

The **affected properties** for the **proposed Alternative 4** are on the farms Bulge Rivier 198 KQ portion 2, 6, Mokolo Rivier Private Nature Reserve 660 KQ Cons, Hermanusdoorns 650 KQ portion 0, Hermanusdoorns 204 KQ portion 5, Welgevonden 186 KQ portion 0 en 1, Groenfontein 207 KQ portion 5, Keerom 208 KQ portion 0, Hanover 181 KQ portion 0, 3, Goudfontein 171 KQ portion 0, 1, 2, Welgevonden 180 KQ portion 0, Schuinskloof 175 KQ portion 1, 2, 3, Rietbokhoek 4 KR portion 1, 2, Rem, Zeekgat 5 KR portion 1, 2, Steenbokfontein 9 KR portion Rem, 3, 4, Dwarsfontein 51 KR Rem, Jacobshoogte 777 KR portion 0, Brakfontein 16 KR portion 1 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, 2328CC, 2428AA.

(Refer to Appendices A1-A7 for copies of the Locality map and the route maps). The proposed alternative 4 for the project is found at approximately:

**Bulge rivier substation:**

Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
27° 40.237' E	24° 6.806' S

**Proposed Alternative 4 Route (65.4km):**

250m intervals	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
1	27° 40.326' E	24° 6.744' S
2	27° 40.472' E	24° 6.731' S
3	27° 40.619' E	24° 6.717' S
4	27° 40.766' E	24° 6.703' S
5	27° 40.913' E	24° 6.690' S
6	27° 41.060' E	24° 6.676' S
7	27° 41.206' E	24° 6.662' S
8	27° 41.353' E	24° 6.649' S
9	27° 41.500' E	24° 6.635' S
10	27° 41.646' E	24° 6.621' S
11	27° 41.793' E	24° 6.607' S
12	27° 41.899' E	24° 6.702' S
13	27° 42.004' E	24° 6.797' S
14	27° 41.986' E	24° 6.918' S
15	27° 41.937' E	24° 7.045' S
16	27° 41.888' E	24° 7.173' S
17	27° 41.838' E	24° 7.300' S
18	27° 41.977' E	24° 7.335' S
19	27° 42.120' E	24° 7.367' S
20	27° 42.263' E	24° 7.399' S
21	27° 42.407' E	24° 7.431' S
22	27° 42.550' E	24° 7.463' S
23	27° 42.614' E	24° 7.362' S
24	27° 42.718' E	24° 7.345' S
25	27° 42.857' E	24° 7.391' S
26	27° 42.919' E	24° 7.298' S
27	27° 42.961' E	24° 7.168' S
28	27° 43.003' E	24° 7.038' S
29	27° 43.070' E	24° 6.953' S
30	27° 43.209' E	24° 6.998' S
31	27° 43.348' E	24° 7.043' S
32	27° 43.487' E	24° 7.088' S
33	27° 43.626' E	24° 7.133' S
34	27° 43.765' E	24° 7.178' S
35	27° 43.904' E	24° 7.223' S
36	27° 44.044' E	24° 7.268' S
37	27° 44.183' E	24° 7.313' S
38	27° 44.322' E	24° 7.358' S
39	27° 44.461' E	24° 7.403' S
40	27° 44.600' E	24° 7.448' S
41	27° 44.739' E	24° 7.493' S
42	27° 44.879' E	24° 7.538' S
43	27° 45.018' E	24° 7.583' S
44	27° 45.157' E	24° 7.628' S
45	27° 45.296' E	24° 7.673' S
46	27° 45.435' E	24° 7.718' S
47	27° 45.468' E	24° 7.790' S
48	27° 45.375' E	24° 7.895' S
49	27° 45.281' E	24° 8.000' S
50	27° 45.188' E	24° 8.105' S
51	27° 45.094' E	24° 8.210' S
52	27° 45.001' E	24° 8.314' S

53	27° 45.009' E	24° 8.398' S
54	27° 45.144' E	24° 8.454' S
55	27° 45.278' E	24° 8.510' S
56	27° 45.412' E	24° 8.566' S
57	27° 45.546' E	24° 8.622' S
58	27° 45.681' E	24° 8.679' S
59	27° 45.815' E	24° 8.735' S
60	27° 45.949' E	24° 8.791' S
61	27° 46.083' E	24° 8.847' S
62	27° 46.217' E	24° 8.904' S
63	27° 46.355' E	24° 8.949' S
64	27° 46.461' E	24° 8.915' S
65	27° 46.514' E	24° 8.788' S
66	27° 46.567' E	24° 8.662' S
67	27° 46.620' E	24° 8.536' S
68	27° 46.673' E	24° 8.409' S
69	27° 46.747' E	24° 8.293' S
70	27° 46.829' E	24° 8.180' S
71	27° 46.911' E	24° 8.068' S
72	27° 46.993' E	24° 7.955' S
73	27° 47.075' E	24° 7.843' S
74	27° 47.157' E	24° 7.730' S
75	27° 47.230' E	24° 7.613' S
76	27° 47.269' E	24° 7.482' S
77	27° 47.303' E	24° 7.351' S
78	27° 47.345' E	24° 7.223' S
79	27° 47.452' E	24° 7.129' S
80	27° 47.558' E	24° 7.036' S
81	27° 47.664' E	24° 6.942' S
82	27° 47.771' E	24° 6.848' S
83	27° 47.910' E	24° 6.816' S
84	27° 48.057' E	24° 6.822' S
85	27° 48.204' E	24° 6.828' S
86	27° 48.352' E	24° 6.835' S
87	27° 48.499' E	24° 6.841' S
88	27° 48.646' E	24° 6.847' S
89	27° 48.794' E	24° 6.852' S
90	27° 48.937' E	24° 6.880' S
91	27° 49.067' E	24° 6.944' S
92	27° 49.196' E	24° 7.009' S
93	27° 49.325' E	24° 7.075' S
94	27° 49.455' E	24° 7.140' S
95	27° 49.584' E	24° 7.205' S
96	27° 49.716' E	24° 7.264' S
97	27° 49.851' E	24° 7.319' S
98	27° 49.986' E	24° 7.374' S
99	27° 50.121' E	24° 7.430' S
100	27° 50.251' E	24° 7.493' S
101	27° 50.377' E	24° 7.564' S
102	27° 50.515' E	24° 7.519' S
103	27° 50.654' E	24° 7.474' S
104	27° 50.794' E	24° 7.429' S
105	27° 50.932' E	24° 7.383' S
106	27° 51.026' E	24° 7.443' S
107	27° 51.093' E	24° 7.564' S
108	27° 51.160' E	24° 7.684' S
109	27° 51.241' E	24° 7.728' S
110	27° 51.346' E	24° 7.633' S
111	27° 51.451' E	24° 7.538' S
112	27° 51.556' E	24° 7.443' S
113	27° 51.660' E	24° 7.348' S
114	27° 51.765' E	24° 7.252' S
115	27° 51.870' E	24° 7.157' S

116	27° 51.975' E	24° 7.062' S
117	27° 52.080' E	24° 6.967' S
118	27° 52.185' E	24° 6.872' S
119	27° 52.290' E	24° 6.776' S
120	27° 52.404' E	24° 6.695' S
121	27° 52.542' E	24° 6.646' S
122	27° 52.680' E	24° 6.598' S
123	27° 52.818' E	24° 6.549' S
124	27° 52.955' E	24° 6.500' S
125	27° 53.093' E	24° 6.451' S
126	27° 53.230' E	24° 6.403' S
127	27° 53.368' E	24° 6.354' S
128	27° 53.506' E	24° 6.305' S
129	27° 53.643' E	24° 6.257' S
130	27° 53.781' E	24° 6.208' S
131	27° 53.919' E	24° 6.159' S
132	27° 54.056' E	24° 6.111' S
133	27° 54.194' E	24° 6.062' S
134	27° 54.332' E	24° 6.016' S
135	27° 54.474' E	24° 6.050' S
136	27° 54.617' E	24° 6.085' S
137	27° 54.760' E	24° 6.119' S
138	27° 54.903' E	24° 6.153' S
139	27° 55.045' E	24° 6.188' S
140	27° 55.188' E	24° 6.222' S
141	27° 55.331' E	24° 6.256' S
142	27° 55.445' E	24° 6.213' S
143	27° 55.535' E	24° 6.106' S
144	27° 55.626' E	24° 5.999' S
145	27° 55.717' E	24° 5.893' S
146	27° 55.837' E	24° 5.849' S
147	27° 55.929' E	24° 5.745' S
148	27° 56.018' E	24° 5.637' S
149	27° 56.107' E	24° 5.529' S
150	27° 56.196' E	24° 5.421' S
151	27° 56.285' E	24° 5.313' S
152	27° 56.374' E	24° 5.205' S
153	27° 56.463' E	24° 5.097' S
154	27° 56.552' E	24° 4.989' S
155	27° 56.641' E	24° 4.881' S
156	27° 56.730' E	24° 4.773' S
157	27° 56.795' E	24° 4.654' S
158	27° 56.837' E	24° 4.524' S
159	27° 56.878' E	24° 4.394' S
160	27° 56.920' E	24° 4.264' S
161	27° 56.961' E	24° 4.135' S
162	27° 57.003' E	24° 4.005' S
163	27° 57.044' E	24° 3.875' S
164	27° 57.086' E	24° 3.745' S
165	27° 57.128' E	24° 3.615' S
166	27° 57.169' E	24° 3.485' S
167	27° 57.211' E	24° 3.355' S
168	27° 57.252' E	24° 3.225' S
169	27° 57.294' E	24° 3.096' S
170	27° 57.441' E	24° 3.108' S
171	27° 57.588' E	24° 3.121' S
172	27° 57.735' E	24° 3.134' S
173	27° 57.881' E	24° 3.147' S
174	27° 58.028' E	24° 3.159' S
175	27° 58.175' E	24° 3.172' S
176	27° 58.322' E	24° 3.185' S
177	27° 58.468' E	24° 3.201' S
178	27° 58.610' E	24° 3.237' S

179	27° 58.753' E	24° 3.215' S
180	27° 58.861' E	24° 3.139' S
181	27° 58.933' E	24° 3.021' S
182	27° 59.006' E	24° 2.904' S
183	27° 59.079' E	24° 2.786' S
184	27° 59.152' E	24° 2.668' S
185	27° 59.266' E	24° 2.628' S
186	27° 59.413' E	24° 2.646' S
187	27° 59.559' E	24° 2.663' S
188	27° 59.705' E	24° 2.681' S
189	27° 59.851' E	24° 2.699' S
190	27° 59.996' E	24° 2.693' S
191	28° 0.139' E	24° 2.661' S
192	28° 0.282' E	24° 2.629' S
193	28° 0.426' E	24° 2.596' S
194	28° 0.569' E	24° 2.564' S
195	28° 0.712' E	24° 2.532' S
196	28° 0.855' E	24° 2.500' S
197	28° 0.999' E	24° 2.468' S
198	28° 1.142' E	24° 2.435' S
199	28° 1.285' E	24° 2.403' S
200	28° 1.428' E	24° 2.371' S
201	28° 1.572' E	24° 2.339' S
202	28° 1.715' E	24° 2.307' S
203	28° 1.858' E	24° 2.275' S
204	28° 2.001' E	24° 2.242' S
205	28° 2.144' E	24° 2.210' S
206	28° 2.288' E	24° 2.178' S
207	28° 2.431' E	24° 2.146' S
208	28° 2.574' E	24° 2.119' S
209	28° 2.716' E	24° 2.156' S
210	28° 2.857' E	24° 2.193' S
211	28° 2.999' E	24° 2.231' S
212	28° 3.141' E	24° 2.268' S
213	28° 3.282' E	24° 2.305' S
214	28° 3.424' E	24° 2.343' S
215	28° 3.566' E	24° 2.380' S
216	28° 3.702' E	24° 2.428' S
217	28° 3.819' E	24° 2.510' S
218	28° 3.937' E	24° 2.591' S
219	28° 4.054' E	24° 2.673' S
220	28° 4.172' E	24° 2.756' S
221	28° 4.289' E	24° 2.837' S
222	28° 4.403' E	24° 2.923' S
223	28° 4.507' E	24° 3.019' S
224	28° 4.611' E	24° 3.115' S
225	28° 4.717' E	24° 3.206' S
226	28° 4.864' E	24° 3.201' S
227	28° 5.012' E	24° 3.196' S
228	28° 5.159' E	24° 3.191' S
229	28° 5.306' E	24° 3.186' S
230	28° 5.451' E	24° 3.166' S
231	28° 5.593' E	24° 3.157' S
232	28° 5.736' E	24° 3.190' S
233	28° 5.872' E	24° 3.168' S
234	28° 6.011' E	24° 3.197' S
235	28° 6.152' E	24° 3.237' S
236	28° 6.285' E	24° 3.286' S
237	28° 6.372' E	24° 3.385' S
238	28° 6.509' E	24° 3.435' S
239	28° 6.632' E	24° 3.505' S
240	28° 6.734' E	24° 3.602' S
241	28° 6.837' E	24° 3.699' S

242	28° 6.939' E	24° 3.797' S
243	28° 7.066' E	24° 3.742' S
244	28° 7.195' E	24° 3.676' S
245	28° 7.324' E	24° 3.611' S
246	28° 7.452' E	24° 3.544' S
247	28° 7.581' E	24° 3.479' S
248	28° 7.710' E	24° 3.413' S
249	28° 7.839' E	24° 3.347' S
250	28° 7.970' E	24° 3.309' S
251	28° 8.110' E	24° 3.353' S
252	28° 8.249' E	24° 3.397' S
253	28° 8.389' E	24° 3.441' S
254	28° 8.528' E	24° 3.485' S
255	28° 8.668' E	24° 3.529' S
256	28° 8.808' E	24° 3.572' S
257	28° 8.947' E	24° 3.616' S
258	28° 9.087' E	24° 3.660' S
259	28° 9.230' E	24° 3.688' S
260	28° 9.376' E	24° 3.707' S
261	28° 9.522' E	24° 3.727' S

**Dorset substation:**

Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
28° 9.633' E	24° 3.742' S

### 1.3 Project Details

#### 1.3.1 Need for the project

A need has been identified to strengthen several reticulation feeders between Vaalwater and Ellisras. Currently the network is experiencing under voltages and is incapable of handling additional loads due to the contingency constraints of the network. Outages in the network occur due to the fact that feeders exceed the maximum length. It is therefore of cardinal importance to split some of the rural lines to prevent outages. The feeder area of the Vaalwater-Bulge Rivier, Theunispans-Elmeston, Waterberg-Afguns en Flamingo-Sentrum would therefore be divided into smaller areas. The construction of the authorised Bulge Rivier substation and the construction of the new Dorset substation and the feeder line are part of the proposed master plan. Should this project be implemented then it should not be necessary to construct any new infrastructure for the next 15 years. Failure to strengthen the network will result in Eskom not being able to deliver the requested demand. If this project is not implemented then the network will suffer outages that will only worsen in time.

Eskom emphasised that the proposed projects would ensure a strengthening of the power supply of the entire macro area. The whole purpose of these projects is to enable Eskom to provide a reliable service to the relevant communities and farms within the macro area.

In summary the advantages to customers in the macro area:

- Upgrade the current supply from Radial feed to Ring feed, Currently Radial feed from Warmbad Substation. Ring feed will create an alternative supply from Matimba Power station. All substations in the project will form part of an integrated ring supply network.
- Place the High Voltage (132kV) sources closer to the customers (Bulge and Dorset substations) and shorten the Medium Voltage (22kV) networks to improve the quality of supply.

**Therefore, the current EIA application is only part of a 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 Bulge Rivier substation.
- Construct a ±65km 132kV power line from Bulge Rivier substation to Dorset substation.
- Construct an access/ construction road for the new 132kV line.

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- Obtain a servitude area of 31metres wide for the 132kV line (Refer to the Eskom Scope of works, in Appendix C1, for more information).

### 1.3.2 Project components

The proposed project requires the construction of an approximately 65km of 132kV line from the authorised (to be constructed) Bulge Rivier substation to the new Dorset Substation. Inclusive to this application is the construction of the following:

1. *Construct a 132kV line from the authorised (to be constructed) Bulge Rivier substation to the new (in construction) Dorset substation.*

It is proposed to construct a 132kV line from the authorised Bulge Rivier substation east towards Dorset substation near Visgat. The proposed structure for the 132kV power line, is a monopole steel structure. In general, these pylons could be placed 220-350 meters apart, for the length of the line. The pylons for a power line 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 OSH-Requirements of 6.3m and 7.5m.

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 is not planted in a slab - 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.

Should the pylons be 21m high above ground then the planting depth of the pylon could be calculated as follows: For a pylon that need to be 21m above ground, the planting depth will be 0.6 meters plus 10% of the height of the pylon above ground = 0.6 meters plus 2.1 meters = pylon is planted 2.7 meters deep. Should stays be needed then the stays will be at a 45° angle to the pylon and planted 21meters from the pylon into the ground.

Where the site is relatively flat, single pylons without stays will be used, except for where the power line has to change direction. Stays will not be used except at turns in the route.

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 Appendices C2 and C3 in the BAR for visuals of the monopole steel structure (pylon).

#### **The route for the line has four alternatives that are discussed as follows:**

(Refer to the maps in Appendix A).

Alternative 1: The route for the line is proposed to run from Bulge Rivier substation (at A-B) in an easternly direction adjacent to the R517 between Vaalwater and Lephalale. From there the route will turn north onto the Hermanusdorings dirt road (D1882) towards Witfontein (A towards G). Before the dirt road reaches the R33, the route will turn north from C to D. From there the route turns east, crosses the R33 and follows the dirt road to Visgat (D1005) and then road D1162 to Dorset (substation) (D-E-H-F).

Alternative 2: This alternative is proposed to run the same section as Route Alternative 1 from A-B-C, but will continue directly east towards G until it reaches the R33. At G the route will turn north onto the R33 towards D. From there the route will follow the same alignment as Route Alternative 1 from D-E-F, except for a shortcut between E-F.

Alternative 3: Alternative 3 runs from the Bulge Rivier substation all along farm borders towards the Hermanusdoorings dirt road. Firstly in a northernly direction, then in an easternly direction, then southwest towards the R517. (A-I-J-K). From there (K) in an easternly direction towards B, adjacent to the R517 towards Vaalwater. From there the route will turn north onto the Hermanusdorings dirt road (D1882) towards Witfontein (B towards G). Before the dirt road reaches the R33 (G), the route will turn northeast from L-M, southeast from M-N and northeast from N-D and run along farmborders. From there the route turns east, crosses the R33 and follows the dirt road to Visgat (D1005) and then road D1162 to Dorset (substation) (D-E-H-F).

Alternative 4: Alternative 4 runs the same route as Alternative 3 from the Bulge Rivier substation towards the Hermanusdorings dirt road all along farm borders, except for one small section. Firstly in a northernly direction, then in an easternly direction (A-I), then between I-J all along the border of Bulge Rivier 198KQ Portion 6. From J-K-B, the



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same alignment will be followed as in Route Alternative 3. From B the route will follow the Hermanusdorings road (D1882) towards Witfontein. At O-P the route will run to the south of the dirt road to avoid rocky areas. From P-L-M-Q-R-D the route will follow farm borders. From there the route turns east, crosses the R33 and follows the dirt road to Visgat (D1005) and then road D1162 to Dorset (substation) (D-E-H-F). (Refer to the maps in Appendix A).

*The National Road P198/1 (R33); the Provincial Road P84/1 (R517); and District roads D1882; D1005; and D1162 are affected by the proposed servitudes, should any of the route alternatives be constructed.*

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.

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

Eskom relies on the goodwill of landowners and interested and affected parties to obtain rights of way, or servitudes for power lines. Hence, landowners are consulted during the construction of new power lines and existing landowners are notified when vegetation clearance is due to be performed. Eskom obtains right of way by negotiating a right of way or registering a servitude. The difference between these is detailed below:

*Servitude:* A servitude is a real right which Eskom obtained in order to construct its infrastructure upon the affected property and it is registered in the Deeds Office against the title deed of the affected property. The effected owner normally gets compensated for this right according to market related values. A servitude stays effective even if a property is transferred to another owner. Rights to obtain a servitude is negotiated for 33kV, 88kV and 132kV power lines.

*Way Leave Agreement:* A way leave agreement is a personal right, which Eskom obtained in order to construct its infrastructure, such as rural power lines, upon the affected property. The way leave document contains clauses to the effect that the agreement is also binding on the successors in title. These rights are not registered in the Deed Office and Eskom does not pay compensation for these rights. The argument for this is that Eskom normally obtains way leave agreements only for minor reticulation type of power line projects (11kV and 22kV lines) from which a property owner can benefit by utilising the available energy.

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 power lines is 31 meters wide, which implies 15,5 meters on either side of the power line.

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

Access to properties for the purpose of construction will be arranged with landowners. The existing roads will be used as far as possible. Relevant is the fact that the alternatives are adjacent to existing impact (roads) for most of the alignment. New access will therefore only be required at the sections away from the roads. Should a temporary construction road be unavoidable, then an area of 8m will be selectively cleared, 4m on either side of the center line of the power line. During construction all vehicle movement must be along existing roads, adjacent to the fences of the applicable properties, as far as is feasible.

#### 1.4 Consideration for servitudes

The process of negotiations can commence as soon as the Environmental Impact Assessment recommend 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 area affected by the line. A process of negotiations will follow between landowner(s) and Eskom appointed negotiators. After agreement has been reached, Eskom and the landowner will sign the documents. The valuations will be tabled before an Eskom tender committee for approval. Eskom pays the consideration as determined by the professional evaluator on a before and after basis. Servitude rights for a servitude in general terms will be obtained by means of an "Option to Acquire a Servitude". Interest will be paid according to the laid down principle by the National Treasury Act.

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 power line 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 power line. Eskom has the right to enter the servitude 24 hours per day to maintain the line in so much as following the laid down farm access protocol.

Power for rural supply cannot be supplied directly from an 132kV line. There is however indirect benefit in the construction of the line for the community, in that the supply would be strengthened with a feed to the substations that feed the rural lines. 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 from landowners/users 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 environmental authorisation 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;
- (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

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*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 ACTIVITY ALTERNATIVES:**

#### **2.1.1 Electricity Distribution**

The outcome of this project will ensure the injection of supply into the Eskom Distribution Network. The addition of the proposed 132kV line from the authorised Bulge Rivier substation towards the new Dorset substation will ensure sufficient supply to the network.

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

#### **2.1.2 Agriculture**

The construction of power lines with the resulting clearance of servitudes can lead to a loss in agricultural land. The proposed construction of the power line 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.
- Should the construction of the power line 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 power line. After construction the access road could be revegetated and normal agricultural activities could continue under the power line 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 any other land use 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. This project is part of Eskom's implementation of their Master Plan for the extension of electrical infrastructure. Should this application not be approved then the supply to the broader area will not be reliable and this can result in blackouts and major disturbances in energy provision. In the future, new development might cause overloading of the already stressed existing system which can cause major disruptions of power supply to different areas at different times. The No-go option would not solve the current demand for electricity. The No-Go development alternative could therefore not be considered the responsible way to manage the site(s).

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## 2.2 LOCATION ALTERNATIVES

The project consists of the construction of an approximately 65km of 132kV power line between the authorised Bulge Rivier substation and the new Dorset substation. Alternative routes for the power line were considered. Refer to Appendix A for the project maps indicating the route Alternatives. Specialist input was obtained to investigate the impact of the various alternative routes that could accomplish the purpose of the project. The specialist input is summarised as follows:

### 2.2.1 Ecological Status Report

#### The ecological status report identified the following:

(Refer to the full Ecological Status Report in Appendix D1)

- The study area falls within the Savanna Biome. Three vegetation types are encountered in the area. Namely, Central Sandy Bushveld; Western Sandy Bushveld and Waterberg Mountain Bushveld.
- Red data species and protected species found in the area include Camel thorn (*Acacia erioloba*), Leadwood (*Combretum imberbe*) and Marula (*Sclerocarya birrea* subsp. *caffra*).
- A small grove of Camel Thorns on both sides of the D1882 sand road in the vicinity of the Mokolo River should be viewed as a 'No-Go' zone. The route should be planned to avoid the groves. (GPS coordinates taken from the road: S24°06.822'; E27°48.301'). Should the camel thorns be impacted, then a permit is needed.
- 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 temminckii*) and Southern African hedgehog (*Atelerix frontalis*).
- The soils in the proposed power line servitude routes and immediate vicinity are predominantly shallow to deep sandy and gravelly soils with a low clay content. The colours of which are generally red to yellowish. A number of highlying areas and slopes have a high presence of large surface and sub-surface rocks.
- Large areas of the bushveld in the region are undisturbed, with a number of formal nature reserves, private game ranches and lodges. Other land-uses in the area include agriculture in the form of pivot-irrigated, cultivated lands and cattle farming. Urbanisation and human development of the immediate region are 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 (Go-Slow 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.
- These measures include staying out of No-Go zones (highly sensitive areas such as the camel thorn grove); not placing any pylons closer than 30m from the edge of river banks or 10m from the edge of drainage lines; an ongoing management programme to mechanically control alien plant species that invade the disturbed soils around the newly erected pylons; to not use chemicals in the control of weeds; to inspect the power line corridor every year (before and after the summer rain season) for soil erosion and if found to rehabilitate; to use wide spacing of pylons in the rocky areas to limit the physical footprint on the actual ground; and to remove all left over construction materials, rubble etc. upon completion of the project.
- 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

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

- Having taken all aspects of the investigation into account the following line variant is recommended - **Alternative Route 4 (A-B<sub>1</sub>-C<sub>2</sub>-C<sub>1</sub>-D-H-F)**. However, between map points (C<sub>1</sub> – D) both sections of Alternative Routes 4 & 3 are equally ecologically acceptable and either may be used across this section. (Refer to map in specialist report on the ecological environment, in Appendix D1)

### **Assessment of impacts on the various distinctive ecological units in the study area:**

#### **Regional vegetation**

##### Significance of Impacts

- Surface changes within the regional vegetation of the undulating plains will result in the loss of some biophysical attributes, albeit slight. These effects are for the most part permanent, especially within the corridor of the power lines and substation sites. However, the impacts are likely to have a low negative affect on sensitive species or Red Data species. Representative habitat is still widely present in the surrounding regions and in good condition and diversity. The implementation of mitigating measures would suffice in limiting localised impacts, as well as allowing for effective control and reduction of impacts.

##### Mitigation of impacts

- Due to the long (65km) distance covered by the power line corridors between Bulge River Substation and Dorset Substation it may be necessary to set up temporary storage and accommodation facilities along the route. If so, areas of flat, open lands should be selected. This need to be old, previously cultivated lands that are open and not wooded. No area should be selected where it would be necessary to cut down any trees or clear any shrub land whatsoever. Any selected temporary site still needs to be within the 100m power line corridor. All mitigating and management measures as laid out for temporarily facilities under “Bulge River Substation” need to be adhered to.
- No site within a rocky area or within 300m of a river or stream may be used for temporary accommodation or storage.
- Positioning of the foundation slabs for the pylons must be a minimum of 10m away from the edge of all drainage lines.
- No trees outside of the power line corridor of 8m to be removed.
- Disturbed surface areas in the construction phase to be rehabilitated. No open trenches to be left. No mounds of soils created during construction to be left.
- 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.
- An ongoing programme to be implemented to mechanically control alien plant species that invade the disturbed soils around the newly erected pylons. This should be done in such as way as to allow the natural grasses and pioneer plants to colonise the disturbed areas.
- Mechanical control of alien species to be implemented within two months of completion of construction of the power line. Thereafter ever six months.
- Surface area under power lines to be mowed and not ploughed.
- No chemical control (herbicides) to be used in the control of alien plants or indigenous plants, except on tree and bush stumps in 8m corridors directly under power lines.
- Removal of all construction material and equipment after construction.
- Removal of all waste construction material to an approved waste disposal site.

#### **Rivers and seasonal streams**

##### Significance of impacts

- Rivers and wetlands are always seen as sensitive and should be avoided at all cost. In this instance there is no other choice but to cross over two such water courses. Namely, the Mokolo River and Poer se Loop. Mitigating measures are necessary, the implementation of which will ensure that almost no negative impact in terms of the ecological environment are felt.

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### Mitigation of impacts

- The two major water courses (Mokolo River and Poer se Loop) along with a few seasonal streams and drainage lines that cross the corridors for the power lines, need to be completely avoided and no pylons may be placed directly within any one of these water courses.
- No temporary or other construction facilities to be erected or stored within 200m of the banks of the Mokolo River or the Poer se Loop stream.
- Positioning of any pylons need to be a minimum of 30m from the edge of the river banks or outside of the 1 in 100 year floodline.
- Positioning of the foundation slabs for the pylons must be a minimum of 10m away from the edge of all drainage lines.
- Under no circumstances may a pylon be placed directly in the bed of a river or drainage line.
- No temporary ablution facilities to be placed within 200m of the banks of any of the rivers or seasonal streams.
- No temporary ablution facilities to be placed within 200m of any drainage line, even if they are dry.
- Only proper portable, chemical ablution facilities to be used and these to be positioned only within the 31m power line servitudes.
- Portable ablution facilities only to be serviced by registered companies and on a regular basis. Under no circumstances may any effluent or sewage to be dumped in the open veld.
- 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.

### Rocky areas

#### Significance of impacts

- Surface changes within the rocky areas will result in greater loss of biophysical attributes than in those of the regional vegetation of the undulating plains. Fortunately the rocky areas encountered in the power line corridors area spread over a large area and are not as sensitive, or unique, with regard to species diversification as would be the case of isolated rocky outcrops or ridges. Effects are mostly permanent and the significance of these impacts is therefore deemed high. Implementation of mitigating measures is considered necessary.

#### Mitigation of impacts

- A few rocky areas have been identified along the proposed servitude routes. These areas are considered moderately 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 corridor under the power lines.
- Only a single, basic vehicle track to be constructed as an access road under pylons moving through the rocky area.
- Access roads need to be kept to an absolute minimum.
- No trees to be cut down or roads to be created to access the power line corridor from the public road by vehicle. Or to create shortcuts into this region. Any vehicles needing to access the power lines running through the rocky area will need to do so from out of the less sensitive plains along the corridor itself.
- No temporary storage facilities, toilets, dwellings, etc. of any kind to take place within this rocky area. Not even within the demarcated power line corridor.
- The longest possible distance between pylons should be used in an effort to limit the footprint size on the rocky area.
- The power line must run as straight as possible through and over rocky areas. This in an effort to limit sharp turns that literally create a larger physical footprint on the ground.
- 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.

- 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 power line. Thereafter ever six months.
- No chemical control of alien plant species to be used.

### Camel thorns

#### Significance of impact

- Immediately east of the Mokolo River is a small grove of camel thorn trees (*Acacia erioloba*), which should be considered highly sensitive, due to the conservation status of the tree species and not the uniqueness of the micro ecosystem. This area needs to be handled as a “No-Go” area and 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.

#### Mitigation of impact

- There are no possible mitigating measures and the area must be approached as a “No-Go” area.

### 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					Alternative Route 2				
	A-B	B-C	C-D	D-E	E-F	A-B	B-G	G-D	D-H	H-F
Areas of high sensitivity	0	1	0	0	0	0	1	0	0	0
No-Go areas	0	1	0	0	0	0	1	0	0	0
Rivers and streams	2	1	0	0	1	2	1	0	0	1
Rocky outcrops	0	1	0	0	1	0	1	0	0	1
Wetlands	0	0	0	0	0	0	0	0	0	0
Sub-Total	2	4	0	0	2	2	4	0	0	2
Total	8					8				

Ecologically sensitive criteria	Alternative Route 3					Alternative Route 4				
	A-B <sub>1</sub>	B <sub>1</sub> -C <sub>1</sub>	C <sub>1</sub> -D	D-H	H-F	A-B <sub>1</sub>	B <sub>1</sub> -C <sub>2</sub>	C <sub>2</sub> -C <sub>1</sub>	C <sub>1</sub> -D	D-F
Areas of high sensitivity	0	1	0	0	0	0	1	0	0	0
No-Go areas	0	1	0	0	0	0	1	0	0	0
Rivers and streams	1	1	0	0	1	1	0	0	0	1
Rocky outcrops	0	1	0	0	1	0	1	0	0	1
Wetlands	0	0	0	0	0	0	0	0	0	0
Sub-Total	1	4	0	0	2	1	3	0	0	2
Total	7					6				

- When the alternative power line routes are compared with each other regarding the possible number of ecological sensitive regions they could impact on, the results are the same for Routes 1 & 2 (both with a total of 8). Alternative Routes 3 & 4 have lower impact with Alternative Route 4 having the lowest (total of 6). The fundamental difference giving Alternative Route 4 the lowest calculated impact on ecologically sensitive regions is found on the route deviation C<sub>2</sub>-C<sub>1</sub> (see ecological sensitivity maps). It is along this section of the proposed power line routes that the other alternative routes move through much rockier areas, while Route 4 is less rocky, more open and moves through more flat areas. The rockiness of the area increases to the north side of the public sand road (D1882). Keep in mind that rocky areas have a medium/high sensitivity rating prior to mitigating measures been implemented and that they need to be avoided wherever possible.

- The alternative routes also differ slightly across the route section A-B (see ecological sensitivity maps). Here Routes 1&2 are the same, crossing over two rivers and potentially obstructing entrances to game and other farms. While Routes 3&4 follow another route which only crosses one major river and doesn't potentially impact on entrances to game and other farms. For these reasons Routes 3&4 have lower ecological impact ratings over this section of the route.
- The section of Alternative Route 1 (E-E<sub>1</sub>) near the Dorset Substation, is seen as having a greater impact on the environment than the other three routes that follow the more disturbed route along the road (E-H-F), on their way to the Dorset Substation (F).
- Between map points C<sub>1</sub> and D (see ecological sensitivity maps) Alternative Routes 3 & 4 take different routes, albeit through the same general terrain. Across this specific section there is no difference in the potential ecological impact of Routes 3 & 4. In other words, across this specific section the ecological recommendation is that either route is acceptable and other factors need to be taken into consideration in determining the final route (eg. Cost of construction; agreements with landowners, etc.).
- All the alternative routes cross over drainage lines en route. These have been investigated during field trips, but have not been mentioned in determining the recommended route due to the fact that they balance out between the alternative routes and therefore carry no decisive weight in the decision process. Obviously, relevant mitigating measures need to be implemented when such drainage lines are encountered during the construction phase and ongoing inspection of the power lines.
- Other factors have also been taken into account during investigations. Such as the number of sharp turns a route takes compared to a straight line between the two end points and the actual surface area in the 8m power line corridor that potentially needs to be totally cleared of any trees or shrubs. Sharp turns are significant because the actual footprint on the ground at a turn in a power line is much larger than along a straight line. Generally speaking the shorter and straighter a corridor is able to be constructed the better.
- For all of the above reasons, **Alternative Route 4 (A-B<sub>1</sub>-C<sub>2</sub>-C<sub>1</sub>-D-H-F)** is the ecologically recommended alternative. However, between map points (C<sub>1</sub> – D) both sections of Alternative Routes 4 & 3 are ecologically acceptable and either may be used.

## 2.2.2 Bird Impact Assessment

### The Bird Impact Assessment indicated the following:

(Refer to the full Bird Impact Assessment Report in Appendix D3)

#### Habitat transformation impact

- The habitat surrounding the proposed power line comprises mostly undisturbed woodland, with limited existing impacts which consist mostly of a number of reticulation lines, fences and dirt roads. As a result it supports a number of power line sensitive species, particularly raptor species currently Red Data listed. 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 and 2. Alternative 3 and 4 have a few sections where it deviates from existing dirt roads, which will have a bigger impact on the natural woodland vegetation. If alternative 2 is selected, the impact of the clearing of vegetation for the new line would be slightly less than if the line was partially constructed in undisturbed woodland, as would be the case with alternatives 3 and 4, and to a much lesser extent with alternative 1. 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, especially if **alternative 2** is used. If **alternative 1** is used, the impact would be **medium-low**, as it would involve more extensive clearing of undisturbed woodland. With **alternative 3 and 4**, the impact will be **medium**, as it would require more extensive clearing of woodland than the other.

#### Collisions

- The majority of species listed in Table 2 of the BIA (attached in Appendix D3) are all vulnerable to collisions with power lines. In the case of water-associated birds such as the Black Stork, Yellow-billed Stork and African Marsh-Harrier the drainage lines, and specifically the pools in the larger rivers such as the Mokolo and Malmanies, which are in the study area, might potentially hold some attraction to these species. The new line will cross these



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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 *Scopus umbretta*. 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

- A mono-pole steel pole will be used for the new 132kV line. 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 metres. This is relevant as birds such as vultures are able to touch both the conductor and the earthed pole simultaneously potentially resulting in a phase – earth electrocution. This is particularly likely when more than one bird sits on the same pole.
- 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 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**. It should be mentioned that the pole design holds no inherent electrocution risk for other large non-gregarious species such as eagles, as they almost never perch together in large numbers next to each other.

#### Conclusions

The construction of the proposed 132kV Bulge-Dorset 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. The proposed construction of the new power line should have a **low** habitat transformation impact from an avifaunal perspective, especially if **alternative 2** is used. If **alternative 1** is used, the impact would be **medium-low**, as it would involve more extensive clearing of undisturbed woodland. With **alternative 3 and 4**, the impact will be **medium**, as it would require more extensive clearing of woodland than the other.

#### Recommendations

- Power line: 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 (see Appendix B Sensitivity map in the specialist report on bird impact for the area to be marked with Bird Flight Diverters). Appendix C indicates the preferred Bird Flight Diverters to be used.
- Poles: 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 four alignments** (Route Alternatives 1, 2, 3 and 4) 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:-

(Refer to Appendix D2 of the BAR for the full report)

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, 3 and 4** are suitable, for the construction of the project.

#### Recommendation

It is possible that this Phase I HIA study may have missed heritage resources in the Eskom Project Area. If any heritage resources of significance is exposed during the construction of the power lines 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.

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## 2.2.4 Palaeontological Impact Assessment

### The main findings of the Palaeontological Impact Assessment are as follows:-

(Refer to Appendix D4 of the BAR for the full report)

The National Heritage Resources Act 25 of 1999 requires that all heritage resources, that is, all places or objects of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance are protected. **Fossil heritage** of national and international significance is found within all provinces of the RSA. Heritage resources may not be excavated, damaged, destroyed or otherwise impacted by any development without prior assessment and without a permit from the relevant heritage resources authority.

### Description of rocks / lithostratigraphy

The affected area is situated in an area present in the Waterberg Group consisting of red brown to yellow-white sandstone, coarse conglomerates, tuffs, mudrocks, lava and grit. No fossils have been found in the Waterberg Group which overly the older Bushveld Igneous Complex. The palaeontological sensitivity is generally ZERO to LOW.

#### *Area affected*

The construction of a 65 km, 132kV power line from the Bulge Rivier substation to the new Dorset substation. An area of approximately 65km and construction road of 8m wide, with pylons 220-350m apart and planted at a depth between 2 – 3m deep. It covers the area south of Lephalale, north of Vaalwater and north of the Waterberg mountain range and the Marakele National Park. It is within the area south and east of the Mokolo Dam – and Nature Reserve.

#### *Sensitivity and importance*

Palaeontological sensitivity = ZERO to LOW.

### Recommendation

- There is no objection to the construction of a 65km 132kV power line from Bulge River substation to the new Dorset substation, construction road of 8m, and 31m wide servitude.
- Preferred choice: Alternative 4 as it has less overall impact as Alternatives 1 & 2; were designed to run through more 'disturbed' corridors and Alternative 3 has slight impact on entrances to properties and agricultural activities.
- The following should be conserved: if any palaeontological material is exposed during digging, excavating, drilling or blasting and SAHRA must be notified. All development activities must be stopped and a palaeontologist should be called in to determine proper mitigation measures.

## 2.3 CONCLUSION

Alternative routes have been investigated for the project. From a heritage viewpoint there is no preferred alternative route, although the palaeontological assessment supports Alternative 4. From a bird impact perspective, Route Alternative 2 will have the least impact, but all four alignments (Route Alternatives 1, 2, 3 and 4) are suitable options, should the proposed mitigation be implemented. From a purely ecological viewpoint, Route Alternative 4 is slightly preferred. The final decision between Route 3 or 4 should be made on the accumulative weight of other parameters such as feedback from public participation, land tenure issues, construction costs, etc.

**Currently, Alternative 4 is preferred** from the viewpoint of impact on the landowners and their activities. This has been confirmed in one-on-one discussions with all affected landowners.

The **affected properties** for the **proposed Alternative 4** are on the farms Bulge Rivier 198 KQ portion 2, 6, Mokolo Rivier Private Nature Reserve 660 KQ Cons, Hermanusdoorns 650 KQ portion 0, Hermanusdoorns 204 KQ portion 5, Welgevonden 186 KQ portion 0 en 1, Groenfontein 207 KQ portion 5, Keerom 208 KQ portion 0, Hanover 181 KQ portion 0, 3, Goudfontein 171 KQ portion 0, 1, 2, Welgevonden 180 KQ portion 0, Schuinskloof 175 KQ portion 1, 2, 3, Rietbokhoek 4 KR portion 1, 2, Rem, Zeekgat 5 KR portion 1, 2, Steenbokfontein 9 KR portion Rem, 3, 4, Dwarsfontein 51 KR Rem, Jacobshoogte 777 KR portion 0, Brakfontein 16 KR portion 1 in the Lephalale Local Municipality in the Limpopo Province.

**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 Alternatives 1, 2, 3 and 4.

### 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 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.

List alternative sites, if applicable.

Alternative: N/A	Longitude (E):		Latitude (S):	
Alternative S1 <sup>2</sup> (preferred or only site alternative)	°	'	°	'
Alternative S2 (if any)	°	'	°	'

**In the case of linear activities:**

Alternative: Refer to tables below	Longitude (E):		Latitude (S):	
Alternative S4 (Preferred alternative 4)				
• Starting point of the activity	27°	40.326' E	24°	6.744' S
• Middle/Additional point of the activity	27°	53.781' E	24°	6.208' S
• End point of the activity	28°	9.633' E	24°	3.742' S

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

**Bulge rivier substation:**

Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
27° 40.237' E	24° 6.806' S

**Proposed Alternative 4 Route (65.4km):**

250m intervals	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
1	27° 40.326' E	24° 6.744' S
2	27° 40.472' E	24° 6.731' S
3	27° 40.619' E	24° 6.717' S
4	27° 40.766' E	24° 6.703' S
5	27° 40.913' E	24° 6.690' S
6	27° 41.060' E	24° 6.676' S
7	27° 41.206' E	24° 6.662' S
8	27° 41.353' E	24° 6.649' S
9	27° 41.500' E	24° 6.635' S
10	27° 41.646' E	24° 6.621' S
11	27° 41.793' E	24° 6.607' S
12	27° 41.899' E	24° 6.702' S
13	27° 42.004' E	24° 6.797' S
14	27° 41.986' E	24° 6.918' S
15	27° 41.937' E	24° 7.045' S
16	27° 41.888' E	24° 7.173' S
17	27° 41.838' E	24° 7.300' S
18	27° 41.977' E	24° 7.335' S
19	27° 42.120' E	24° 7.367' S
20	27° 42.263' E	24° 7.399' S
21	27° 42.407' E	24° 7.431' S
22	27° 42.550' E	24° 7.463' S
23	27° 42.614' E	24° 7.362' S
24	27° 42.718' E	24° 7.345' S
25	27° 42.857' E	24° 7.391' S
26	27° 42.919' E	24° 7.298' S
27	27° 42.961' E	24° 7.168' S

<sup>2</sup> "Alternative S.." refer to site alternatives.

28	27° 43.003' E	24° 7.038' S
29	27° 43.070' E	24° 6.953' S
30	27° 43.209' E	24° 6.998' S
31	27° 43.348' E	24° 7.043' S
32	27° 43.487' E	24° 7.088' S
33	27° 43.626' E	24° 7.133' S
34	27° 43.765' E	24° 7.178' S
35	27° 43.904' E	24° 7.223' S
36	27° 44.044' E	24° 7.268' S
37	27° 44.183' E	24° 7.313' S
38	27° 44.322' E	24° 7.358' S
39	27° 44.461' E	24° 7.403' S
40	27° 44.600' E	24° 7.448' S
41	27° 44.739' E	24° 7.493' S
42	27° 44.879' E	24° 7.538' S
43	27° 45.018' E	24° 7.583' S
44	27° 45.157' E	24° 7.628' S
45	27° 45.296' E	24° 7.673' S
46	27° 45.435' E	24° 7.718' S
47	27° 45.468' E	24° 7.790' S
48	27° 45.375' E	24° 7.895' S
49	27° 45.281' E	24° 8.000' S
50	27° 45.188' E	24° 8.105' S
51	27° 45.094' E	24° 8.210' S
52	27° 45.001' E	24° 8.314' S
53	27° 45.009' E	24° 8.398' S
54	27° 45.144' E	24° 8.454' S
55	27° 45.278' E	24° 8.510' S
56	27° 45.412' E	24° 8.566' S
57	27° 45.546' E	24° 8.622' S
58	27° 45.681' E	24° 8.679' S
59	27° 45.815' E	24° 8.735' S
60	27° 45.949' E	24° 8.791' S
61	27° 46.083' E	24° 8.847' S
62	27° 46.217' E	24° 8.904' S
63	27° 46.355' E	24° 8.949' S
64	27° 46.461' E	24° 8.915' S
65	27° 46.514' E	24° 8.788' S
66	27° 46.567' E	24° 8.662' S
67	27° 46.620' E	24° 8.536' S
68	27° 46.673' E	24° 8.409' S
69	27° 46.747' E	24° 8.293' S
70	27° 46.829' E	24° 8.180' S
71	27° 46.911' E	24° 8.068' S
72	27° 46.993' E	24° 7.955' S
73	27° 47.075' E	24° 7.843' S
74	27° 47.157' E	24° 7.730' S
75	27° 47.230' E	24° 7.613' S
76	27° 47.269' E	24° 7.482' S
77	27° 47.303' E	24° 7.351' S
78	27° 47.345' E	24° 7.223' S
79	27° 47.452' E	24° 7.129' S
80	27° 47.558' E	24° 7.036' S
81	27° 47.664' E	24° 6.942' S
82	27° 47.771' E	24° 6.848' S
83	27° 47.910' E	24° 6.816' S
84	27° 48.057' E	24° 6.822' S
85	27° 48.204' E	24° 6.828' S
86	27° 48.352' E	24° 6.835' S
87	27° 48.499' E	24° 6.841' S
88	27° 48.646' E	24° 6.847' S
89	27° 48.794' E	24° 6.852' S
90	27° 48.937' E	24° 6.880' S

91	27° 49.067' E	24° 6.944' S
92	27° 49.196' E	24° 7.009' S
93	27° 49.325' E	24° 7.075' S
94	27° 49.455' E	24° 7.140' S
95	27° 49.584' E	24° 7.205' S
96	27° 49.716' E	24° 7.264' S
97	27° 49.851' E	24° 7.319' S
98	27° 49.986' E	24° 7.374' S
99	27° 50.121' E	24° 7.430' S
100	27° 50.251' E	24° 7.493' S
101	27° 50.377' E	24° 7.564' S
102	27° 50.515' E	24° 7.519' S
103	27° 50.654' E	24° 7.474' S
104	27° 50.794' E	24° 7.429' S
105	27° 50.932' E	24° 7.383' S
106	27° 51.026' E	24° 7.443' S
107	27° 51.093' E	24° 7.564' S
108	27° 51.160' E	24° 7.684' S
109	27° 51.241' E	24° 7.728' S
110	27° 51.346' E	24° 7.633' S
111	27° 51.451' E	24° 7.538' S
112	27° 51.556' E	24° 7.443' S
113	27° 51.660' E	24° 7.348' S
114	27° 51.765' E	24° 7.252' S
115	27° 51.870' E	24° 7.157' S
116	27° 51.975' E	24° 7.062' S
117	27° 52.080' E	24° 6.967' S
118	27° 52.185' E	24° 6.872' S
119	27° 52.290' E	24° 6.776' S
120	27° 52.404' E	24° 6.695' S
121	27° 52.542' E	24° 6.646' S
122	27° 52.680' E	24° 6.598' S
123	27° 52.818' E	24° 6.549' S
124	27° 52.955' E	24° 6.500' S
125	27° 53.093' E	24° 6.451' S
126	27° 53.230' E	24° 6.403' S
127	27° 53.368' E	24° 6.354' S
128	27° 53.506' E	24° 6.305' S
129	27° 53.643' E	24° 6.257' S
130	27° 53.781' E	24° 6.208' S
131	27° 53.919' E	24° 6.159' S
132	27° 54.056' E	24° 6.111' S
133	27° 54.194' E	24° 6.062' S
134	27° 54.332' E	24° 6.016' S
135	27° 54.474' E	24° 6.050' S
136	27° 54.617' E	24° 6.085' S
137	27° 54.760' E	24° 6.119' S
138	27° 54.903' E	24° 6.153' S
139	27° 55.045' E	24° 6.188' S
140	27° 55.188' E	24° 6.222' S
141	27° 55.331' E	24° 6.256' S
142	27° 55.445' E	24° 6.213' S
143	27° 55.535' E	24° 6.106' S
144	27° 55.626' E	24° 5.999' S
145	27° 55.717' E	24° 5.893' S
146	27° 55.837' E	24° 5.849' S
147	27° 55.929' E	24° 5.745' S
148	27° 56.018' E	24° 5.637' S
149	27° 56.107' E	24° 5.529' S
150	27° 56.196' E	24° 5.421' S
151	27° 56.285' E	24° 5.313' S
152	27° 56.374' E	24° 5.205' S
153	27° 56.463' E	24° 5.097' S

154	27° 56.552' E	24° 4.989' S
155	27° 56.641' E	24° 4.881' S
156	27° 56.730' E	24° 4.773' S
157	27° 56.795' E	24° 4.654' S
158	27° 56.837' E	24° 4.524' S
159	27° 56.878' E	24° 4.394' S
160	27° 56.920' E	24° 4.264' S
161	27° 56.961' E	24° 4.135' S
162	27° 57.003' E	24° 4.005' S
163	27° 57.044' E	24° 3.875' S
164	27° 57.086' E	24° 3.745' S
165	27° 57.128' E	24° 3.615' S
166	27° 57.169' E	24° 3.485' S
167	27° 57.211' E	24° 3.355' S
168	27° 57.252' E	24° 3.225' S
169	27° 57.294' E	24° 3.096' S
170	27° 57.441' E	24° 3.108' S
171	27° 57.588' E	24° 3.121' S
172	27° 57.735' E	24° 3.134' S
173	27° 57.881' E	24° 3.147' S
174	27° 58.028' E	24° 3.159' S
175	27° 58.175' E	24° 3.172' S
176	27° 58.322' E	24° 3.185' S
177	27° 58.468' E	24° 3.201' S
178	27° 58.610' E	24° 3.237' S
179	27° 58.753' E	24° 3.215' S
180	27° 58.861' E	24° 3.139' S
181	27° 58.933' E	24° 3.021' S
182	27° 59.006' E	24° 2.904' S
183	27° 59.079' E	24° 2.786' S
184	27° 59.152' E	24° 2.668' S
185	27° 59.266' E	24° 2.628' S
186	27° 59.413' E	24° 2.646' S
187	27° 59.559' E	24° 2.663' S
188	27° 59.705' E	24° 2.681' S
189	27° 59.851' E	24° 2.699' S
190	27° 59.996' E	24° 2.693' S
191	28° 0.139' E	24° 2.661' S
192	28° 0.282' E	24° 2.629' S
193	28° 0.426' E	24° 2.596' S
194	28° 0.569' E	24° 2.564' S
195	28° 0.712' E	24° 2.532' S
196	28° 0.855' E	24° 2.500' S
197	28° 0.999' E	24° 2.468' S
198	28° 1.142' E	24° 2.435' S
199	28° 1.285' E	24° 2.403' S
200	28° 1.428' E	24° 2.371' S
201	28° 1.572' E	24° 2.339' S
202	28° 1.715' E	24° 2.307' S
203	28° 1.858' E	24° 2.275' S
204	28° 2.001' E	24° 2.242' S
205	28° 2.144' E	24° 2.210' S
206	28° 2.288' E	24° 2.178' S
207	28° 2.431' E	24° 2.146' S
208	28° 2.574' E	24° 2.119' S
209	28° 2.716' E	24° 2.156' S
210	28° 2.857' E	24° 2.193' S
211	28° 2.999' E	24° 2.231' S
212	28° 3.141' E	24° 2.268' S
213	28° 3.282' E	24° 2.305' S
214	28° 3.424' E	24° 2.343' S
215	28° 3.566' E	24° 2.380' S
216	28° 3.702' E	24° 2.428' S

217	28° 3.819' E	24° 2.510' S
218	28° 3.937' E	24° 2.591' S
219	28° 4.054' E	24° 2.673' S
220	28° 4.172' E	24° 2.756' S
221	28° 4.289' E	24° 2.837' S
222	28° 4.403' E	24° 2.923' S
223	28° 4.507' E	24° 3.019' S
224	28° 4.611' E	24° 3.115' S
225	28° 4.717' E	24° 3.206' S
226	28° 4.864' E	24° 3.201' S
227	28° 5.012' E	24° 3.196' S
228	28° 5.159' E	24° 3.191' S
229	28° 5.306' E	24° 3.186' S
230	28° 5.451' E	24° 3.166' S
231	28° 5.593' E	24° 3.157' S
232	28° 5.736' E	24° 3.190' S
233	28° 5.872' E	24° 3.168' S
234	28° 6.011' E	24° 3.197' S
235	28° 6.152' E	24° 3.237' S
236	28° 6.285' E	24° 3.286' S
237	28° 6.372' E	24° 3.385' S
238	28° 6.509' E	24° 3.435' S
239	28° 6.632' E	24° 3.505' S
240	28° 6.734' E	24° 3.602' S
241	28° 6.837' E	24° 3.699' S
242	28° 6.939' E	24° 3.797' S
243	28° 7.066' E	24° 3.742' S
244	28° 7.195' E	24° 3.676' S
245	28° 7.324' E	24° 3.611' S
246	28° 7.452' E	24° 3.544' S
247	28° 7.581' E	24° 3.479' S
248	28° 7.710' E	24° 3.413' S
249	28° 7.839' E	24° 3.347' S
250	28° 7.970' E	24° 3.309' S
251	28° 8.110' E	24° 3.353' S
252	28° 8.249' E	24° 3.397' S
253	28° 8.389' E	24° 3.441' S
254	28° 8.528' E	24° 3.485' S
255	28° 8.668' E	24° 3.529' S
256	28° 8.808' E	24° 3.572' S
257	28° 8.947' E	24° 3.616' S
258	28° 9.087' E	24° 3.660' S
259	28° 9.230' E	24° 3.688' S
260	28° 9.376' E	24° 3.707' S
261	28° 9.522' E	24° 3.727' S

**Dorset substation:**

Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
28° 9.633' E	24° 3.742' S

**4. PHYSICAL SIZE OF THE ACTIVITY**

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

Alternative: <u>N/A</u>	Size of the activity:
Alternative A1 <sup>3</sup> (preferred activity alternative)	m <sup>2</sup>
Alternative A2 (if any)	m <sup>2</sup>
Alternative A3 (if any)	m <sup>2</sup>

or, for linear activities:

Alternative:	Length of the activity:

<sup>3</sup> "Alternative A.." refer to activity, process, technology or other alternatives.

Alternative A1		60.7km
Alternative A2		64.7km
Alternative A3		63.4 km
Alternative A4 (preferred activity alternative)		65.4km

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

Alternative:		Size of the site/servitude:
Alternative A1		31m x 60 700m = 1 881 700m <sup>2</sup>
Alternative A2		31m x 64 700m = 2 005 700m <sup>2</sup>
Alternative A3		31m x 63 400m = 1 965 400m <sup>2</sup>
Alternative A4 (preferred activity alternative)		31m x 65 400m = 2 027 400m <sup>2</sup>

## 5. SITE ACCESS

Does ready access to the site exist?	YES	NO
If NO, what is the distance over which a new access road will be built	m	
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 could be cleared, should it be necessary, underneath the line to enable the construction activities. Should a temporary construction road be unavoidable, then an area of 8m will be cleared of major trees and bushes, 4m on either side of the proposed alignment of the lines.		

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.

## 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?	unknown
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?	unknown
What is the expected value of the employment opportunities during the development phase?	unknown
What percentage of this will accrue to previously disadvantaged individuals?	unknown
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):

<b>NEED:</b>		
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 power line.	

<b>DESIRABILITY:</b>		
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 3 and Alternative 4 were proposed, partly because they impact less on the entrances to properties and the activities of landowners.	

<b>BENEFITS:</b>		
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 will be unreliable and in future this can result in	

	major disturbances and 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 project is designed to ensure firm supply to the broader area. Should this not be achievable then future supply will be unreliable and this can result in major power disturbances. 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:
<b>Legislation</b> 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
If yes, what estimated quantity will be produced per month?	2,5m <sup>3</sup>	
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)?		
The solid waste will be transported off site by the contractor and returned to Eskom Stores where the scrap will be handed over to buyers (scrap dealers). Mostly the waste is steel that is <b>recycled</b> and taken to the Eskom stores. Other waste is normally used cement bags and this is disposed of in the construction hole for the pylon. The bags will be mixed into the cement and used to fill the excavated hole of the pylon. Any <b>other waste that cannot be recycled</b> (this is minimal) will be transported to an appropriate landfill site licensed in terms of section 20 (b) of the National Environment Management Waste Act, 2008 (Act No 59 of 2008). The disposal of any construction waste will be the responsibility of the developer and should be done at least twice a week. A letter of agreement between the developer and the Permit Holder of the waste disposal site shall be provided to the DWA. These measures are included as requirements in the EMPr under the headings "Appointment of Contractors" and "Waste Management". Also refer to the other mitigation measures under the same headings.		
Will the activity produce solid waste during its operational phase?	YES	NO
If yes, what estimated quantity will be produced per month?	0m <sup>3</sup>	
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 <sup>3</sup>	
Will the activity produce any effluent that will be treated and/or disposed of on site?	YES	NO
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? According to the applicant and their contractors, accommodation for the construction workers is mostly rented in the nearest town. Sewage disposal will therefore be through the Municipality's main sewer line. Should <i>accommodation in a construction camp be unavoidable</i> , then the measures as stipulated in the EMPr must be adhered to. Included as requirement in the EMPr, under heading " <i>Waste Management</i> " is the following: The disposal of chemical toilets should be at a registered or licensed sewage disposal facility. Proof of agreement between the applicant and the sewage disposal facility for such disposal, confirming that there will be enough capacity to accommodate additional waste, should be submitted to the Department of Water Affairs.	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
If yes, is it controlled by any legislation of any sphere of government?	YES	NO
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:		
No significant emissions are released. Studies undertaken on behalf of Eskom confirmed that calculations of electric and magnetic field levels created by overhead power lines, where the public may be exposed, are well within the ICNIRP guidelines. Note that ICNIRP refers to Non-ionising Radiation Protection which receives world-wide support and is endorsed by the Department of Health in South Africa.		

#### 11(d) Generation of noise

Will the activity generate noise?	YES	NO
If yes, is it controlled by any legislation of any sphere of government?	YES	NO

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)

municipal	water board	groundwater	river, stream, dam or lake	other	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	
Does the activity require a water use permit from the Department of Water Affairs?					YES	NO
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.						

*Relevant to this project:*

- The water used to supply the site with potable water is sourced/purchased from farmers in the area with pre-existing rights. The contractor should deliver the water to the site in an applicable water tanker. These requirements are included in the EMP under the headings “Construction site” and “Ground and Surface Water”.
- The water used during construction is minimal. The cement and ground are compacted in layers around the pylons using a small amount of water. This water is sourced/purchased from farmers in the area with pre-existing rights.
- According to the applicant and their contractors, dust suppression is not required due to the following reasons:
  - The servitude areas receive minimal bush clearance. Indigenous vegetation which does not interfere with the safe operation of the power line is left undisturbed. Further to the above, vegetation is not ploughed, but mowed and therefore no areas are left without vegetation cover.
  - In terms of access roads, existing roads are used and the impact to these roads is insignificant. The reason is that construction material is minimal (a pylon - planted approximately 330m apart, cement - to plant the pylon, and cable - for the overhead wires). Therefore a small number, of construction vehicles deliver the material to the site. Speed of above 30km/hour will not be exceeded. A limited/ insignificant amount of dust is therefore emitted in the atmosphere. In other words, there will be no significant construction, ground-clearing, leveling or grading of soils, moving or compacting of soils which are often associated with other forms of construction, but not with erecting of powerlines.

## 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: <b>Attached to the application form</b>		
All specialist reports must be contained in Appendix D.		

Property description/ physical address:	The <b>affected properties</b> for the <b>proposed Alternative 4</b> are on the farms Bulge Rivier 198 KQ portion 2, 6, Mokolo Rivier Private Nature Reserve 660 KQ Cons, Hermanusdoorns 650 KQ portion 0, Hermanusdoorns 204 KQ portion 5, Welgevonden 186 KQ portion 0 en 1, Groenfontein 207 KQ portion 5, Keerom 208 KQ portion 0, Hanover 181 KQ portion 0, 3, Goudfontein 171 KQ portion 0, 1, 2, Welgevonden 180 KQ portion 0, Schuinskloof 175 KQ portion 1, 2, 3, Rietbokhoek 4 KR portion 1, 2, Rem, Zeekgat 5 KR portion 1, 2, Steenbokfontein 9 KR portion Rem, 3, 4, Dwarsfontein 51 KR Rem, Jacobshoogte 777 KR portion 0, Brakfontein 16 KR portion 1 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
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: <ul style="list-style-type: none"> <li>an indication of the project site position as well as the positions of the alternative sites, if any;</li> <li>road access from all major roads in the area;</li> <li>road names or numbers of all major roads as well as the roads that provide access to the site(s);</li> <li>all roads within a 1km radius of the site or alternative sites; and</li> <li>a north arrow;</li> <li>a legend; and</li> <li>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)</li> </ul>	

Section B Copy No. (e.g. A):	<b>Alternative 1, Alternative 2, Alternative 3 and Alternative 4</b>
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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, Alternative 3 or Alternative 4 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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### Alternative S4:

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
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2.7 Undulating plain
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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)?

	Alternative S1:		Alternative S2:		Alternative S3:		Alternative S4:	
	YES	NO	YES	NO	YES	NO	YES	NO
Shallow water table (less than 1.5m deep)	YES	NO	YES	NO	YES	NO	YES	NO
Dolomite, sinkhole or doline areas	YES	NO	YES	NO	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	YES	NO	YES	NO	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	YES	NO	YES	NO	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	YES	NO	YES	NO	YES	NO	YES	NO
Soils with high clay content (clay fraction more than 40%)	YES	NO	YES	NO	YES	NO	YES	NO
Any other unstable soil or geological feature	YES	NO	YES	NO	YES	NO	YES	NO
An area sensitive to erosion	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 <sup>E</sup>	Natural veld with scattered aliens <sup>E</sup>	Natural veld with heavy alien infestation <sup>E</sup>	Veld dominated by alien species <sup>E</sup>	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 <sup>A</sup>
5.6 Retail commercial & warehousing
5.7 Light industrial
5.8 Medium industrial <sup>AN</sup>
5.9 Heavy industrial <sup>AN</sup>
5.10 Power station
5.11 Office/consulting room
5.12 Military or police base/station/compound
5.13 Spoil heap or slimes dam <sup>A</sup>
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 <sup>A</sup>
5.22 Train station or shunting yard <sup>N</sup>
5.23 Railway line <sup>N</sup>
5.24 Major road (4 lanes or more) <sup>N</sup>
5.25 Airport <sup>N</sup>
5.26 Harbour
5.27 Sport facilities
5.28 Golf course
5.29 Polo fields
5.30 Filling station <sup>H</sup>
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
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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
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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 proposed power line corridors. However, there will be no impact (or interference) between the two whatsoever. The same applies to a small school in the nearby vicinity.	
If YES, specify:	

**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: Refer to the Heritage Impact Assessment in Appendix D2. Summary below.		
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, Alternative 3 and Alternative 4 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.

In addition a desktop **Palaeontological Study** was conducted to assess the **fossil heritage** of national and international significance. Heritage resources may not be excavated, damaged, destroyed or otherwise impacted by any development without prior assessment and without a permit from the relevant heritage resources authority. No fossils have been found in the Waterberg Group which overly the older Bushveld Igneous Complex. The palaeontological sensitivity is generally ZERO to LOW.

There is no objection to the construction of a 65km 132kV power line from Bulge River substation to the new Dorset substation, construction road of 8m, and 31m wide servitude.

The preferred choice is Alternative 4 as it has less overall impact as Alternatives 1 & 2; were designed to run through more 'disturbed' corridors and Alternative 3 has slight impact on entrances to properties and agricultural activities.

**The following measures are proposed to mitigate any possible impact:**

If any palaeontological material is exposed during digging, excavating, drilling or blasting and SAHRA must be notified. All development activities must be stopped and a palaeontologist should be called in to determine proper mitigation measures.



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## 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

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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
- South African Heritage Resources Agency
- 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 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
- Agri Lephalale
- Waterberg Biosphere Reserve
- Waterberg Nature Conservancy
- Mokolo River Nature Reserve
- Waterberg District Municipality
- Lephalale Local Municipality
- Eskom Transmission
- Eskom Distribution Northern Region
- Landowners

List of authorities from whom comments have been received:

Limpopo Department of Economic Development, Environment and Tourism: Environmental Impact Management  
 Eskom Transmission: Land Management  
 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

## 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
If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):		
<b>Refer to Section D1 (on next page) and Appendix E 6-9 for relevant information.</b>		

- The **Public Participation Programme (PPP)** started in November 2010 and continued until April 2012. 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**.
- **Meetings** were conducted with Farmers' associations, namely the Transvaal Farmers' Union as well as Agri Limpopo. The landowners are represented by both these associations.
- 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.
- **One-on-one meetings** were conducted with **affected landowners** to address their specific requirements. This resulted in changes to the alignment of the final power line route.
- 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 29 May 2012** to the following stakeholders for their comment :
  - Department of Water Affairs: Water Resources & Water Quality Management
  - South African Heritage Resources Agency
  - 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

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- 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 **due date for comment on the draft Basic Assessment Report was 3 July 2012** .
  - Subsequently, a **final Basic Assessment Report (BAR)** was compiled and submitted to DEA on **10 August 2012**. This report includes all concerns raised to the draft BAR and responses thereto. The Consultants (EAPs) ensured that all concerns raised are addressed in appropriate detail in the final Basic Assessment Report.

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## 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 an Appendix):*

### COMMENTS RECEIVED BY INTERESTED AND AFFECTED PARTIES DURING THE ADVERTISING FOR THE BASIC ASSESSMENT REPORT (NOTIFICATION PHASE)

The Public Participation Programme allowed for informed and responsible decision-making by all interested and affected parties. Refer to Appendix E6: Comments and Responses Report and Appendices E7 – E8 for copies of written comment.

#### 1 Comments received in the notification phase

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:

##### 1.1 The following IAPs registered:

- The Fold, SA Children's Home, Micky Prince, Bergsig 196KQ Re
- Hermanusdoorns Shareblock Ltd, John Hill
- Leopard Leap Lodge, Jan and Maya Oosterhoff, Donkerhoek 615LQ
- Witfontein Game Farm (Pty) Ltd, Berthold von Sethe, Witfontein 154KQ
- Waterberg Nature Conservancy, Richard Wadley
- Ruimtevreug Boerdery Edms Bpk, KP Van der Walt en AC Greyling, Steenbokfontein 9KR Portions 1,3
- Limpopo Department of Economic Development, Environment and Tourism: Waterberg District, Environmental Impact Management
- Mogolriver Game Farm (Pty) Ltd/ Mokolo River Nature Reserve, Adam Gunn
- Ama Amanzi Game Lodge (Pty) Ltd, Michiel & Issabella Van Baalen-Kerklaan, Goudfontein KQ171 Re
- LD Schmutz, Hanover 181KQ
- Elana Greyling
- Daan Erasmus, Manamane 201KQ
- Hermanusdoorns Shareblock Ltd, Andre Vosloo
- Hermanusdoorns Shareblock Ltd, Renske Hofmeyr
- Chris Allanson, Hermanusdoorns 204KQ Portions 4,5,
- Hermanusdoorns Shareblock Ltd, Marisa Bellini, Jennifer Rupert
- Hermanusdoorns Shareblock Ltd, AS du Plessis
- Hermanusdoorns Shareblock Ltd, Louisa Gericke
- Hermanusdoorns Shareblock Ltd, Stewart Stephen
- Hermanusdoorns Shareblock Ltd, Mariette & Gabriel Stoltz
- Hermanusdoorns Shareblock Ltd, PA Groenewald
- Agri Lephale/ Agri Limpopo
- SATLU; TLU Vaalwater

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## 1.2 Verbal Comment received

### Meeting with Transvaal Farmers' Union (TLU, Vaalwater)

Eskom Northern Region, Polokwane Office, and the environmental consultants, requested an opportunity to speak at a monthly meeting of the Transvaal Farmers' Union, Vaalwater on 25 January 2011. The purpose of this being to communicate the different Eskom projects planned within the macro area between Vaalwater and Ellisras. This meeting formed part of the community consultation processes. Documents in Afrikaans (their preferred language for communication), containing a concise project description together with colour copies of the proposed routes had been distributed to all the attendees.

Comments:

- The attendees requested progress with regards to their request that Eskom hire the relevant servitude widths from the landowners instead of purchasing the servitudes rights.

*Responses:*

*Eskom explained that meetings had been held in this regard with Eskom's top management and it was concluded that payment would continue to take place in accordance with the current expropriation and servitude legislation. There is however significant effort from Eskom to establish effective communication channels with the landowners and provide an overall improved service. Mr Xander Neethling from Eskom undertook to obtain an official response from Eskom in this regard.*

- The attendees stressed that the Waterberg Biosphere must be included in the community consultation Programmes.
- It was confirmed that the Nylstroom-Vaalwater Road would in future be managed by SANRAL. Mr Nothnagel from their Polokwane office is the correct person to liaise with.
- The farmers requested that all notifications of the projects are placed in their local newspapers as follows: Mogol Pos for the Bulge Rivier Projects and the Warmbad Pos for the Nylstroom-Vaalwater Project.

- *Responses:*

*Eskom emphasised that the proposed projects would ensure a strengthening of the power supply of the entire macro area. The whole purpose of these projects is to enable Eskom to provide a reliable service to the relevant communities and farms within the macro area.*

*Advantages to customers in the macro area:*

- *Upgrade the current supply from Radial feed to Ring feed, Currently Radial feed from Warmbad Substation. Ring feed will create an alternative supply from Matimba Power station. All substations in the project will form part of an integrated ring supply network.*
- *Place the High Voltage (132kV) sources closer to the customers (Bulge and Dorset substations) and shorten the Medium Voltage (22kV) networks to improve the quality of supply.*

### Meeting with Agri Limpopo

Eskom Northern Region, Polokwane Office, and the negotiator had the opportunity to meet with Agri Limpopo and an affected landowner on 20 April 2011. The purpose of this being to communicate the different Eskom projects planned within the macro area between Vaalwater and Ellisras. The main issues discussed were the manner of negotiations and compensation for servitude areas.

*Response:*

*The process of negotiations can commence as soon as the Environmental Impact Assessment recommend 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 area affected by the line. A process of negotiations will follow between landowner(s) and Eskom appointed negotiators. After agreement has been reached, Eskom and the landowner will sign the documents. The valuations will be tabled before an Eskom tender committee for approval. Eskom pays the consideration as determined by the professional evaluator on a before and after basis. Servitude rights for a servitude in general terms will be obtained by means of an "Option to Acquire a Servitude". Interest will be paid according to the laid down principle by the National Treasury Act.*

*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*

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and maintain a power line 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 power line. Eskom has the right to enter the servitude 24 hours per day to maintain the line in so much as following the laid down farm access protocol.

Power for rural supply cannot be supplied directly from an 132kV line. There is however indirect benefit in the construction of the line for the community, in that the supply would be strengthened with a feed to the substations that feed the rural lines. 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 from landowners/users 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 environmental authorisation has been issued and the option document has been signed by the affected landowner.

### 1.3 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 E5 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:**

(Refer to Appendix E8 for the comment that was provided at the meeting)

#### **Welgevonden 186KQ Ptns 0,1; Groenfontein 207KQ Ptn 3. Mr SP van der Merwe**

Mr van der Merwe confirms some site-specific issues that should be accommodated in the placement of any power line on his property i.e. existing irrigation, flight paths of light aeroplanes, protected trees etc. He is not in support of the route and proposed an alignment on the opposite side of the road.

*Response:*

*The EIA team had meetings with the landowner and a sensitive placement of the line to the southern side of the road is under discussion. Alternative 4 is supported by the landowner.*

#### **Hanover 181KQ; Welgevonden KQ180. Mr WH Ernst**

*Comment:*

He confirmed the site specific issues i.e the dwelling on farm Hanover and dams adjacent to the road; a koppie etc. He proposed a route in the same alignment as the current proposed Alt 4.

*Response:*

*The EIA team had discussions with the landowner and the sensitive placement of the line is discussed with them. Alternative 4 is supported by the landowner.*

#### **Michiel Van Baalen, Ama Amanzi Game Lodge (Pty) Ltd, Goudfontein 171KQ RE**

*Comment:*

Landowner protested to alternative 1, as the line will be along the entire left side (from N to S) of their farm and therefore has negative impact on their businesses and the value of the farm. The line will make a big part of their farm useless, since the farm is narrow and they are developing the farm into a game lodge. They market mainly to overseas tourists. They prefer option (alternative) 2 along the R33 national road as this option will have the least impact on their business.

*Response:*

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*Alternative 2 (along the R33) will impact significantly on other landowners due to the required distance of powerlines from national roads. Alternative 1 has less impact to this regard. The EIA team investigated Alternatives 3 and 4 subsequent to the open day and several discussions with affected landowners.*

**KP Van der Walt & AC Greyling, Ruimtevreug Boerdery Edms Bpk, Steenbokfontein 9KR Portions 1,3**

Comment:

*The landowner prefers the power line to the north of the road. He actually prefers not to accommodate any line. Will discuss with other directors.*

Response:

*The alignment is altered to run on the northern side of the road over portion 3. The specific circumstances will be discussed with the landowner(s) on site and a sensitive and accommodating placement will be finalised with them.*

**The Fold, SA Children's Home, Harry and Peggy Parham, Bergsig 196KQ Re**

Comment:

Any construction would be detrimental to the playing fields at the home.

Response:

*The proposed Route Alternative 4 from Bulge Rivier substation towards Hermanusdoorns is aligned to the northern side of the R517 tar road and will not impact on this landowner.*

**Waterberg Nature Conservancy; Vaalwater Community Forum, Richard Wadley**

Comment:

He is pleased by the constructive approach adopted by affected landowners and the reciprocal attitude of Eskom representatives with regards to the proposed line. The most contentious section is between points C-D. Even the proposed alternative route, via point G, presents some difficulties, because of the proximity of boreholes and windmills along the Hermanusdoorns road between C-G. A landowner proposed an alternative route: from point D, the line would run west along the northern boundary of farms 171, and then south-west down the common boundary of 171 and 181 until joining the preferred route at the Hermanusdoorns road.

The direct C-D route will adversely affect several landowners and should not be pursued. The alternative, C-G-D is possibly viable depending how serious is the impact on boreholes (if at all) between C-G.

The third proposal along 171/181 appears promising, but not all of those affected landowners were present at the open day.

Response:

*The above comment in addition to the comment from affected landowners resulted in the design of Route alternatives 3 and 4. Subsequently Route Alternative 4 is proposed as the route with least impact, and in specific to landowners.*

**Malmanie Game Farm, Mr K Heiling, Malmanierivierdrift 199KQ**

Comment:

Landowner comments that the line should follow the boundary along the farm fence and not along the road.

Response:

*This property is not affected by the proposed Route Alternative 4.*

**PC Oosthuizen, Bergsig 196KQ Ptn 3**

Comment:

The line should run on the boundary of the farm and not on the tar road in front of La Rive Hotel.

Response:

*The proposed Route Alternative 4 is not adjacent to the R517 but follows an alignment further to the north, from Bulge Rivier sub running east to the Hermanusdoorns dirt road. This property is not directly affected by the proposed Route Alternative 4.*

**JH Vermeulen, Rietbokhoek 4KR Ptn 2**

Comment:

During construction all vegetation cleared (branches etc.) should be removed; No fences to be cut; no unauthorised access to farm unless arranged; no new gates; access allowed between 8h00 and 16h00; new line to follow same corridor as existing line; no fires allowed on farm during construction; all waste to be removed after construction.



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Response:

Mitigation measures in line with the above are stipulated in the EMP. Discussions between the landowner and the negotiator will address site-specific requirements such as the above. These agreements/requirements will be noted, as part of the option document.

**Wally Meadon, Grootwater 176KQ**

Comment: None

Response: Landowner not affected by the proposed Route Alternative 4.

**JJ van Heerden, Grootwater 176KQ Ptn 2; Kafferfontein 180KQ; Welgevonden 180KQ**

Comment:

This is rented property that will be impacted on by the Route Alternative 2. The main activity is hunting and the power line will adversely affect this property.

Response:

Subsequent to the open day Route Alternative 3 and 4 were proposed of which Route Alternative 4 is the preferred option. This property is not affected.

**CL Pienaar, Kafferfontein 180KQ Ptn 1 and 2**

Comment:

Borehole etc. to be adversely affected. Route alternative 2 preferred.

Response:

Subsequent to the open day, Route Alternative 3 and 4 were proposed of which Route Alternative 4 is the preferred option. This landowner is not affected by the proposed route.

**JJ Nel, Grootwater 176KQ**

Comment:

Line should not impact on boreholes; any damage to areas cleared should be repaired and revegetated.

Response:

Mitigation measures as the above are stipulated in the EMP. Subsequent to the open day, Route Alternatives 3 and 4 were proposed of which Route Alternative 4 is the preferred option. This landowner is not affected.

**Stoffel Snyman/ Leon Jacobs, Jacobshoogte (Consolidated from Brakfontein 15KR ptns 3,4 and Dwarsfontein10KR ptns 1)**

Comment:

It is recommended that the new power line be constructed adjacent to an existing line to the south of the dirt road between Dorset substation and Visgat.

Response:

Route Alternative 4 is proposed to follow the above recommended alignment.

**GJP Buys, Visgat 64KR**

Comment:

It is recommended that the new power line be constructed adjacent to an existing line on the dirt road from Dorset substation towards Visgat.

Response:

Route Alternative 4 is proposed to follow the above recommended alignment.

**1.4 Written Comment received**

(Refer to Appendix E7 for copies of the comment)

**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.

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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.

*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.*

### **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. In addition RAL has been notified of the project. The National Road P198/1 (R33), and the Provincial Roads P84/1 (R517); and other roads D1882; D1005; and D1162 are affected by the proposed route servitudes.*

*It is expected that Eskom Land and Rights will apply for exemption from some of the requirements. The specific requirements from RAL should be obtained.*

### **Limpopo Department of Economic Development, Environment and Tourism: Environmental Impact Management**

*Comment:*

The Provincial Department acknowledges receipt of a copy of the application that is submitted to DEA (Dept of Environmental Affairs). Comments will be provided after the submission of the draft Basic Assessment Report.

*Response:*

*Noted.*

### **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. Route Alternatives 1 and 2 were proposed to run mostly along roads. Upon further investigation these routes impacted significantly on landowners for certain sections of the routes. Subsequently, Route Alternatives 3 and 4 were proposed as a result of discussions with landowners in the project area. It was*

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recommended to run the line mostly on the chosen roads, but to deviate along farm borders for a few sections of the route.

Subsequent comment:

Mr. Gunn confirmed that the “preferred alternative” (options 3 and 4) should not go through Mokolo River Nature Reserve (that is adjacent to the Bulge rivier substation site to the northern side of the R517). Mokolo River Nature Reserve is a sensitive area and one which is in the final stages of being declared as a NEMPA protected area. In addition, options 1 and 2 follow the principle of placing the lines along the route of least environmental impact ie: next to the road and following existing infrastructure. Options 1 and 2 must therefore be the best options from an environmental perspective.

*Response: The team responsible for this EIA had a meeting with the directors of Mokolo River Nature Reserve on site and agreed on a more sensitive alignment for the power line. This is reflected in the alignment of Route Alternative 4 traversing on the borders of the Mokolo River Nature Reserve. They confirmed their requirements with the negotiator for the project.*

### **Michiel & Issabella Van Baalen- Kerklaan, Ama Amanzi Game Lodge (Pty) Ltd, Goudfontein 171KQ RE**

Comment:

The owners officially protested against the line as proposed by Route Alternative 1.

*Response:*

*Noted.*

### **KP Van der Walt (& AC Greyling), Ruimtevreug Boerdery Edms Bpk, Steenbokfontein 9KR Portions 1,3**

Comment:

Requested information on the servitude width and the compensation.

*Response:*

*Eskom Distribution compensates for a servitude of 31m wide. The servitude will be registered which provides Eskom with the rights to construct and maintain a power line on the applicable property. The applicable land is therefore not purchased. All normal activity on the farm/land can continue as usual. The power line will be approximately 19 m above ground level and is therefore “giraffe-friendly”. Pylons will be placed approximately 18m from the road reserve- this will be confirmed during the negotiations with landowners.*

Subsequent comment:

The landowner objected to the placement of the power line on his property (portion 3) to the southern side of the road (near Visgat). He prefers the power line to the north of the road adjacent to the existing power line and road.

*Response:*

*The alignment is altered to run on the northern side of the road over portion 3. The specific circumstances will be discussed with the landowner on site and a sensitive and accommodating placement will be finalised with him.*

### **LD Schmutz, Hannover 181KQ**

Comment:

Mr Schmutz farms with game and indicates that any future activities for e.g. the moving of fences should be planned not to result in a loss of game. He requests clarity regarding the portions of Hannover that are affected by the proposed route.

*Response:*

*The requirements of landowners (as above) should be stipulated in the option document that will be signed upon successful negotiations with the affected landowners. All comment/requirements received during the EIA will be submitted to the negotiator for the project.*

*Both sides of the Hermanusdoorns – Witfontein road (a corridor) are being investigated for the proposed power line from Bulge sub to Dorset sub. At the time of the compilation of the draft BAR, Alternative 4 is submitted as the final proposed route and is to the southern side of the road.*

### **Elana Greyling**

Comment:

1. When has the Bulge rivier sub been built? Who did the public participation?
2. Please confirm the alternative routes.
3. What is the attitude of the applicant to the fact that the project is within a protected area?

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4. Is this project in any way connected to the solar project that is planned in this area?
  5. Where were the notifications posted?

Response:

1. *The construction of the Bulge rivier substation has been authorised by the Department of Environmental Affairs, but has not been constructed yet. The details thereto can be obtained from the Department or from Eskom Distribution Northern Region (the applicant).*
2. *At the time of the above comment, two alternatives were proposed and investigated. In line with feedback from landowners and IAPs, another 2 alternatives were investigated.*
3. *The construction of the project is needed to strengthen the electricity network in the broader area. Outages in the network occur due to the fact that feeders exceed the maximum length. It is therefore of cardinal importance to split some of the rural lines to prevent outages. A need has been identified to strengthen several reticulation feeders between Vaalwater and Ellisras. The applicant is aware of the fact that the proposed project is within the Waterberg Biosphere Reserve. The EIA investigated the Eskom power line project taking the zonation of the Waterberg Biosphere Reserve into consideration. The route alternatives were designed to limit impact to the Waterberg Biosphere Reserve. The majority of the proposed project falls in Transition Zone 2 where infrastructure could be allowed. In fact, as mentioned, to limit impact to the WBR, approximately 50% of the proposed power line route runs on the border of the Transitional Zone of the Waterberg Biosphere Reserve.*
4. *This EIA project is not directly connected to the solar project. Independent power producers are in contact with Eskom to supply the grid.*
5. *On 2 December 2010 the onsite-notices were placed at several locations in the project area. A notification was placed in the newspaper on 10 November 2010. Letters of notification were posted, emailed and faxed on 5 November 2010. Invitations to the public information day were submitted on 10 February 2011 to all the IAPs and landowners. On 26 June 2011 a letter (with maps of the routes) was submitted to all affected landowners to confirm the routes with them and request comment thereto. In addition to the above mentioned, one-on-one discussions are being conducted with landowners to establish their requirements.*

#### **Daan Erasmus, Councillor (ANC) Lephalale Municipality**

Comment:

Mr. Erasmus is the owner of Manamane 201 KQ and objects that a servitude, that is in existence for 40 years, is not being used for the new power line. He is of the opinion that these landowners had 40 years to plan their activities around this servitude and now a new servitude is being proposed. This new servitude will be detrimental to landowners.

Response:

*According to information received from the applicant, the "servitude" that is being referred to has not been authorised. Organised Agriculture has objected to this route. The mentioned servitude is from Warmbaths to Ellisras and is not feasible for this current EIA project that investigates a connection between Bulge rivier sub and Dorset sub.*

#### **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 and no information is available on the other affected properties.

Response:

*Noted.*

*Eskom will need to obtain a servitude of 31 meters wide to construct the power line. The power line 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 power line and maintain the line over the applicable property. Compensation is paid to the landowner for the servitude rights and payment for the servitude will be made upon registration of the servitude. The property 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 landowners are in process.*

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### Chris Allanson, Hermanusdoorns 204KQ Portions 4&5

Comment:

#### Concerns

1. Aesthetically, the line will be extremely ugly
2. Destruction of protected indigenous trees i.e. Tamboti
3. Question the need for +- 18m pylons rather than say 10 high
4. Question the safety of wild game with the 7 or 8 stay wires required for each pylon
5. Question why the proposed line will cross to the East side of the Witfontein road at Hermanusdoorns and then cross back West at Grootwater. Favouritism to certain landowners?
6. The gravel road will deteriorate during the construction period
7. Concern over possible veld fires started by construction gangs – cooking & smoking

#### Recommendations

1. Reduce the height of the intended pylons
2. Protected trees should be “topped” rather than destroyed
3. Where passing through game areas the entire line should be fenced off and that portion of land should be purchased by Eskom
4. Maintain the position to the West side of the Witfontein road rather than crossing the road twice
5. The gravel road must be properly maintained during the construction period and handed over in a good condition on completion
6. Ban on- site cooking and smoking during the construction period

Response:

1. *It is proposed to use a single steel pole to substantially limit the visual impact of the line. The design of the power line has to adhere to strict safety measures. The pylons for a power line 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 OSH-Requirements of 6.3m and 7.5m. The line will have to be approximately 19 m above ground level to be “giraffe-friendly”. Where the site is relatively flat, single pylons without stays will be used, except for where the power line has to change direction. Stays will not be used except at turns in the route. Should stays be needed then the stays will be at a 45° angle to the pylon and planted 21meters from the pylon into the ground.*
2. *Mitigation measures to limit impact to natural habitat and in specific protected habitat is included in the EMPr and discussed in the section on the expected impacts of the project. The procedures for vegetation clearance and maintenance within servitudes, 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. In addition, 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.*
3. *Game farms, nature reserves, and other reserves managed by the state brings about new challenges to Eskom Holdings such as restriction of access, safety of Eskom staff and of the game, and the interaction of game and electrical infrastructure. Mitigation measures to limit impact to game farms etc. are proposed in the EMPr and in this report. Any specific requirements regarding access, should be negotiated with Eskom.*
4. *Eskom relies on the goodwill of landowners and interested and affected parties to obtain servitudes for power lines. Hence, landowners are consulted during the construction of new power lines. Ultimately, the final decision between the Route alternatives should be made on the accumulative weight of all parameters such as feedback from public participation, land tenure issues, construction costs, ecological sensitivity etc.*
5. *Mitigation measures to limit erosion are included in this report and in the EMPr. Landowners should in addition identify their specific requirements to be included in the option document that stipulates their conditions for agreement to the servitude.*
6. *Fire protection standards are included in the EMPr.*

### Michiel & Issabella Van Baalen- Kerklaan, Ama Amanzi Game Lodge (PTY) LTD, Goudfontein KQ171 Re

Comment:

They strongly protest, to alternative 1 (and 3), as the line will be along the entire left side (from N to S) of their farm and therefore have an extreme negative impact on their businesses and the value of the farm. The line will make a big

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part of their farm useless, since the farm is narrow and they are developing the farm into a game lodge. They market mainly to international tourists and they do not expect power lines in the bush.

Furthermore it will impact their other business, as they grow cucumbers and green peppers, which they comment will grow significantly less underneath the power line. They are worried about the health risks, since it is proven in studies all over the world, that it is very unhealthy to live underneath a power line.

As the line will have a big negative influence on the revenue of the lodge and vegetables, it will also have an impact on employability in the area as they will not be able to employ more people.

Questions:

1. Which type of pole will be used?
2. How high is the voltage of the lines?
3. How far is the magnetic field extending?
4. Is there an alternative route to the 2 existing ones possible?
5. When is the final route determined?
6. Is the landowner compensated for the land which is used and how much?
7. What are the known health risks of living and farming in proximity to a power line?

Response:

1. *A monopole steel structure*
2. *The line is a 132kV power line*
3. *Response to 3 and 7:*
  - *There has been several debates about the biological effects of exposure to electric and magnetic fields (EMF) and their possible detrimental effects on human and animal health. However, after more than 20 years of research, it has not been conclusively demonstrated that any such detrimental effects exist.*
  - *It is widely agreed by responsible experts that research should continue and in 1990 a National EMF forum, linked to the International EMF Research Coordinators Group, was established, with Eskom as a member. Activities in South Africa, particularly exposure guidelines, are now monitored by a Working Group of the South African Forum for Radiation Protection.*
  - *Electric fields of the intensity encountered close to transmission power lines, cannot damage crops. Studies on the effects of EMF on farm animals have also concluded that they have no influence on the reproduction, meat, milk and egg production or the development of their offspring.*
  - *Some of the epidemiological studies in children with leukemia have suggested that there may be an association between some types of cancer in children living close to transmission power lines. Further, it has not so far been possible to prove conclusively that magnetic fields can cause cancer or promote cancer growth.*
  - *In 1998, a working group of experts gathered by the EMF RAPID Program met to review the research that has been done on the possible health risks associated with EMF. This group reviewed all of the studies that have been done on the subject, and then voted on whether they believed that exposure to EMF might be a health risk. A majority of the scientists on this working group voted that the epidemiology studies of childhood leukemia provide enough evidence to classify EMF as a "possible human carcinogen". Other products also classified as possible carcinogens by the same group, are coffee and saccharin.*
  - *In the Northern Cape Eskom has constructed nests for vultures above the 400kV structures and clear of the dangerous hardware. The vultures took up their new nests and managed to breed successfully with no biophysical harm to their hatchlings. The nests are approximately 1 metres from the hardware of the transmission power lines.*
  - *The above studies indicate that transmission lines with high voltages will not impact negatively on human or animal health. In summary, there is no evidence that distribution power lines with voltages of 132kV and lower will impact negatively on human or animal health. For this project, lines of 132kV will be constructed. A distribution power line will never be closer than 15,5 metres from the nearest structure. In addition, according to current knowledge, no harmful effects will result from living next to mini-substations/substations.*
4. *Two additional routes have been investigated. The final proposed route is alternative 4 that will impact on the northern border of Goudfontein KQ171 Re.*
5. *The final route is recommended in this draft BA report, but will ultimately be decided and authorised after submission of the final BAR to Dept of Environmental Affairs.*
6. *Refer to 1.2 Meeting with Agri Limpopo for response.*

Subsequent Comment:

They prefer option (alternative) 2 along the R33 national road as this option will have the least impact on their

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business. Thereafter, alternative 4 is the next preferred option that will have minor impact to their business.

*Response:*

*Alternative 2 (along the R33) will impact significantly on other landowners due to the required distance of power lines from national roads. Alternatives 1,3 and 4 have less impact to this regard. Of these options, Alternative 4 has the least impact on this landowner and will impact for a short section on the northern border of his property. Eskom relies on the goodwill of landowners and interested and affected parties to obtain servitudes for powerlines. The landowners in the corridor of Alternative 4 have provided their conditional support for this route. None of the other alternatives received the same support and therefore it is the proposed option.*

#### **Hermanusdoorns Shareblock Ltd, John Hill**

**Comment:**

Hermanusdoorns Shareblock Limited (Reg 91/06901/06), lodged an objection to the proposed Route Alternatives 1 and 2. They are the landowners of the farms Hermanusdoorns 650KQ RE ptn; Mana Mane 201KQ RE ptn 4; La Rive 592KQ. The shareblock consists of 100 shareholders with approximately 80 individual dwellings belonging to the individual shareholders built on the land.

The business of the company is the operation and maintenance of a game farm for the leisure of the shareholders.

The board wishes to object on the following preliminary grounds:

- Existing structures in the alignment
- Vegetation clearance in the servitude area will detract from the sense of place and destroy the wilderness experience and lead to a devaluation of current investments.
- Part of the Eskom veld-management practices include burning to control bush encroachment which might result in soot on the lines leading to supply interruptions.
- They utilize helicopters to assist in game capture exercises, the smooth operation of which would be hampered by a power line running through the area.
- Maintenance activities by Eskom on the servitude would increase the risk of poaching as well as security, further compounded by Broadband Infracore sharing the same servitude.
- The farm is a game farm and is thus part of a Sensitive Environmental Area within the Waterberg Biosphere Reserve with a concern that the clearing of vegetation below the power lines could cause damage to the vegetation or soil or lead to the introduction of alien invasive species together with negatively affecting the visual aesthetics and sense of place of the area.
- There are a number of Protected Trees listed under the National Forests Act 1998, ( Act No 84 of 1998 ) that occur directly in the area that the servitude and bush clearance area are currently planned viz *Sclerocarya birrea subsp. caffra* (Marula) and *Combretum imberbe* (Leadwood).
- In addition over 200 bird species have been recorded on the farm including pylon sensitive birds and vulnerable red data birds including some "Near Threatened" species, as well as "vulnerable" species.
- The South side of the R 517 contains a number of individual landowners (other than Hermanusdoorns Shareblock Limited) who have dwellings potentially within the servitude area which would have to be demolished – Bulge Rivier Police Station, The Fold Childrens Home, farmhouse belonging to a citrus farmer etc. There are far fewer such dwellings on the Northern side of the R517, and there would then be no need for the power line to cross the R517 twice as the location of the substation is in any case on the Northern side of the R517.

*Response:*

*Hermanusdoorns Shareblock, situated to the southern side of the R517, is not affected by the proposed route, Alternative 4. Their comments are however noted.*

*With reference to comments on vegetation clearance and the impact thereof:*

- *Eskom Distribution does not make use of the practice to burn fire breaks, since this is not a legal requirement. Rather, it relies on the maintenance of vegetation in accordance to its Vegetation Management Standard to reduce the risk of fires starting from Eskom infrastructure.*
- *Eskom Distribution Division does not remove the grass below power lines since this does not pose a safety risk and will create the potential for erosion, causing environmental degradation and hence legal liability. It will furthermore be an economically unsustainable exercise for Eskom given the amount of power lines throughout South Africa.*
- *It is suggested that any existing servitude roads as well as existing roads must be used during construction and maintenance of the power lines.*

- *The procedures for vegetation clearance and maintenance within overhead power line 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 power line, should be left undisturbed.*
- *In addition refer to the mitigation measures stipulated in this document to limit the impact of alien vegetation, visual impact; impact to natural habitat etc.*

**Hermanusdoorns Shareblock Ltd**

**Marisa Bellini and Jennifer Rupert, Willie Kriel, AS du Plessis, Renske Hofmeyr, Wynand Mulder, Louisa Gericke, Steward and Jennifer Stephen, Mariette and Gabriel Stoltz, PA Groenewald, SJ Stols**

Comment: The above owners supplied comment in line with those received from the board of Hermanusdoorns Shareblock Ltd.

Response: *Hermanusdoorns Shareblock is not affected at this point in time by the proposed route, namely Alternative 4. Their comments are however noted.*

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

Comment:

1. The proposed power line 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. *The routes are designed to follow the corridors of existing impact. Route Alternative 1 and 2 were proposed directly adjacent to the roads. Route Alternatives 3 and 4 follow the same corridor of impact, with adjustments to accommodate the impact to activities (also agricultural activities) of landowners. Route Alternative 4 was proposed to run for certain sections directly along farm borders. This route 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 EMPr).*
3. *Mitigation measures are proposed and stipulated in Section D:2 and Appendix F (the EMPr).*
4. *Mitigation measures to protect sensitive areas are proposed and stipulated in Section D:2 and Appendix F (the EMPr).*

**Malmanie Game Farm, Mr K Heiling**

Comment:

The owner objects to the proposed route crossing their property. They are to the southern side of the Vaalwater road (R517).

Response:

*The route (alternatives 3 and 4) is proposed to the northern side of the Vaalwater road and will not impact on this landowner. The EAP confirmed this with the landowner.*

**Dwarsfontein 51KR; Brakfontein 16KR**

Comment:

The landowner is satisfied with the Route Alternative 4 on the southern side of the Visgat-Dorset road where it impacts on his property. They request to be further consulted with regards to the planning of the line.

Response: *Negotiations between the landowner and the negotiator will address site-specific requirements such as the positions of the pylons, on the property in question. Compensation for the use of the servitude will also be addressed. Alternative 4 is supported.*



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**Ka'Ingo Private Game Reserve, Mr Nick Callichy  
Welgevonden 186KQ Ptn 4**

**Comment:**

They object to the power line route to run on the southern border of their property.

The proposed route inside the southern fence of Ka'Ingo's property will disturb a very sensitive area on Ka'Ingo's property and severely impact on the property owner's main and sole source of income. As such the proposed route goes against the general feedback that have already been received from the affected landowners.

The project will impact on:

- The main gate to the reserve and the lodge.
- Ka'Ingo's main business activity being game farming and tourism is entirely dependent on its guests being able to enjoy access to the natural fauna and flora in its undisturbed and natural form. Construction and maintenance of the power line will destroy the natural fauna and flora on the property.
- Ka'Ingo is in process to be declared an official private nature reserve.
- The adjacent neighbour owns property on both sides of the road and has in the past already indicated his willingness to accommodate the route on either side of the road.

**Response:**

*The ongoing public participation programme requested comments from all affected landowners. The feedback in general is that powerline routes should not traverse properties/ sensitive areas, but keep to disturbed corridors. The dirt road between Hermanusdoorns and Witrivier was identified as such.*

*The EIA team entered into discussions with the affected property owners for the total route and reached a situation at this point in time where 99% of the proposed route had been finalised. Mr van der Merwe (west of Ka'Ingo) is willing to accommodate the route on his property and similarly, Mr van Zyl (east of Ka'Ingo) is willing to accommodate the route. Subsequent to the above comment from Ka'Ingo the route was proposed to the southern side of the dirt road.*

## **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 E6: Comments and Responses Report and Appendix E9 for copies of written comment received in response to the draft BAR)

### **KP Van der Walt, Ruimtevreug Boerdery Edms Bpk, Steenbokfontein 9KR Portions 1,3**

**Comment:**

Mr van der Walt studied the basic Assessment report and is concerned about the validity of the specialist studies. He pointed out that no specialist requested permission to enter his farm. He enquired about the study approach used by the specialists. Mr van der Walt is of the opinion that a generalisation applicable to all farms cannot be based on a sampled area, as every farm has its own characteristics.

**Response:**

*Response provided by Bird specialist for the project:*

*Mr van der Walt's basic objection is that a generalisation cannot be made as to the expected impacts, the species affected as well as the specific mitigation measures due to the fact that every farm has its own unique characteristics.*

*The study approach is to identify the relevant factors to establish the risk for the study area as a whole. Regarding the impacts on birds, the study area is relatively homogenous, with easily definable bird habitat. This was confirmed with helicopter flights, visits by vehicle and high-resolution satellite imagery.*

*According to the specialist and based on the extensive experience he has gained with power line projects he disagrees with the statement that the study approach could not lead to valid findings. The methodology followed assured a compromise between the requirements of robust data vs. the reality of limiting economic factors. The specialist is convinced that more intensive data gathering on the mentioned farm (or any other farm) would not lead to different findings or recommendations.*

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*Response provided by fauna and flora specialist for the project:*

*The first step in the study approach is to do a literature study for relevant studies in the same area. The current status of the veld-types is investigated and relevant sources to use are SANBI (South African National Biodiversity Institute) and Mucina & Rutherford's 'Veldtypes of South Africa' (2006 & 2010). Other specialists in the field are consulted as well as the database of herbariums to view the plant species collected in the area. Subsequently the potential for Red Data species in the area is identified. The main source of information is the detailed work "Red List of South African Plants, 2009". Further to the above, satellite imagery and aerial photographs are studied- (Google earth). All of the above is used to build a basic picture of the study area. No assumptions or recommendations are made at this stage.*

*The area will be investigated i.e. visits by vehicle and site visits by foot. In this case it was in addition investigated by helicopter flights. The identified sensitive areas or "hotspots" will further be visited and further examined. The possibility of red data plant and animal species will be explored as well as sensitive habitats. The area is also scrutinised for protected trees. All of the above is compiled into recommendations/mitigation to stipulate areas to be avoided e.g. trees, rivers, wetlands, vegetation etc. Under certain circumstances it is not possible to stipulate total avoidance e.g. a river which has to be crossed by a power line. There are laws that regulate these circumstances and reports are scrutinised by the Departments of Water Affairs and Environmental Affairs.*

*Relevant to the project:*

*Most of the area is homogenous and uniform in terms of plant species, plant communities etc. The whole area was investigated and not only a sample of it. Nothing sensitive was identified on the property of the commenting landowner. No protected trees were identified on this property. The spruit (water course), Poer se Loop, to the northern side of the road has been identified as 'medium/high sensitive'. Mitigation measures have been proposed for all watercourses.*

*The specialist is a horticulturalist and ecologist with years experience in EIAs, especially in the bushveld (Savanna Biome). He trusts that the results of the investigations will result in recommendations which will limit impact to the environment. He acknowledges that a study might not be always perfect and therefore welcomes feedback from landowners.*

*Response provided by heritage specialist for the project:*

*With reference to the Mr van der Walt's comment the following: Both sides of the road were investigated. It was not necessary to enter the farms in certain instances as there is a corridor next to the fences with relatively little plant growth. This made it possible to investigate a 100 m corridor as needed.*

*In such areas one can easily see whether sites of cultural significance do exist. Although one may not see individual potsherds and stone tools, one has to realise that such finds would be out of context and therefore not important. This is discussed in the report where it is indicated that it will not have an effect on any possible development.*

## **CONCLUSION OF PUBLIC PARTICIPATION PROGRAMME FOR THE BASIC ASSESSMENT REPORT**

The Environmental Impact Assessment included a thorough 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 includes proceedings of the PPP and communication with registered Interested & Affected Parties (IAPs). Notification of the availability thereof was sent to all IAPs on 29 May 2012 with the due date for comment on 10 July 2012.

Subsequently, a final Basic Assessment Report (BAR) was compiled and submitted to DEA on 10 August 2012. This report includes all concerns raised to the draft BAR and responses thereto. The Consultants (EAP) ensured that all concerns raised are addressed in appropriate detail in the final Basic Assessment Report.

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## 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 power line should take into account the ecological sensitivity of the site.

Relevant to the project is the following:

- The vegetation is fairly uniform and therefore for the greater part the vegetation of the study area is seen as moderately sensitive.
- Red data species and protected species found in the area include Camel thorn (*Acacia erioloba*), Leadwood (*Combretum imberbe*) and Marula (*Sclerocarya birrea* subsp. *caffra*).
- There are a few camel thorn (*Acacia erioloba*) trees growing just east of the Mokolo River on both sides of the sand road (D1882). Camel thorns are protected trees and this small grove should be viewed as a “No-Go” zone and totally avoided.
- 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*).
- There are a few areas of rockiness along the power line corridors, but these should not be confused with rocky outcrops (koppies) or rocky ridges. Notwithstanding, these rocky areas, although not highly sensitive, should still be viewed as sensitive and approached with care.
- Rivers and wetlands, along with their associated vegetation should all be viewed as sensitive. Two main rivers or streams fall within and/or cross the power line corridors. Namely, the Mokolo River and Poer se Loop. The proper implementation and management of mitigating measures are crucial. A number of drainage lines move across the power line corridors and also need to be avoided. No wetlands were found to be present in the study area.
- 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 (Go-Slow 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.

#### Mitigation for impact on natural habitat

Proper planning will limit the impact of the power lines 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.
- The Mokolo River and Poer se Loop are seen as being sensitive. Pylons should not be placed closer than 30m from the edge of river banks or 10m from the edge of drainage lines.
- An ongoing management programme to mechanically control alien plant species that invade the disturbed soils around the newly erected pylons is recommended.
- The power line corridor should be inspected every year (before and after the summer rain season) for soil erosion and if found, to rehabilitate; to not use chemicals in the control of weeds; and to remove all left over construction materials, rubble etc. upon completion of the project.
- A small grove of Camel Thorns on both sides of the D1882 sand road in the vicinity of the Mokolo River should be viewed as a 'No-Go' zone. The route should be planned to avoid the groves. GPS coordinates taken from the road: S24°06.822'; E27°48.301'. Should there be impact on any of the camel thorns, then a permit is needed.
- In general only one application requesting one permit per power line corridor is necessary. All the protected trees, in this corridor, 2m and above, should be indicated on a map.
- The rocky regions should be viewed as sensitive although not as "No-Go" zones. It is recommended to use wide spacing of pylons in the rocky areas to limit the physical footprint on the actual ground.
- 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 small area of camel thorns or the Mokolo River simply because there are no possible mitigating measures to reduce the negative impact and the area must be seen as a "No-Go" zone.
- Having taken all aspects of the investigation into account the following line variant is recommended - **Alternative Route 4 (A-B<sub>1</sub>-C<sub>2</sub>-C<sub>1</sub>-D-H-F)**. However, between map points (C<sub>1</sub> – D) both sections of Alternative Routes 4 & 3 are equally ecologically acceptable and either may be used across this section. Refer to map in specialist report on the ecological environment.

### **Social Impact**

- The construction of new power lines 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. In terms of the Interim Protection of Informal Land Rights Holders, 1996 (Act 31 of 1996), 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 power lines should be designed to accommodate the needs of landowners and landusers.

- The design for the power line 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 power lines or roads are in general more acceptable than traversing through pristine area.
- For the above reasons the Route alternatives 1 and 2 had been proposed adjacent to existing disturbance (e.g. from the Bulge Rivier sub along the existing provincial R517 road; then along the D1182 sand road; along the R33; along D1005; and D1162 sand roads). This route was not supported by some landowners partly due to the impact thereof on their activities and entrances.
- Subsequently Route Alternatives 3 and 4 were proposed to, for some sections of the route, follow an alignment away from the roads.

- During the course of the EIA, all affected landowners were identified and consulted with regarding the proposed project.
- Alternative 4 is proposed as the route with the least impact to landowners considering that it is mostly all along roads with its existing impact. The route deviates for small sections from the roads, due to landowner preferences. These deviations limit impact to their activities. All landowners indicated their agreement to the route or their willingness to enter into further negotiations.
- 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.
- A negotiator has been appointed by the applicant to consult with land owners/land rights holders. Further negotiations are taking place to confirm the details for the acquisition of the servitudes and compensation thereof. 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:
- Two main rivers or streams fall within and/or cross the power line corridors. Namely, the Mokolo River and Poer se Loop. The proper implementation and management of mitigating measures are crucial.
- There are a few seasonal drainage routes that run across and through the servitudes. 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 power line, 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 are 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.
- All construction activities and movement of people and machinery to remain within the designated power line corridor.
- 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.

- 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 provided at the construction site.
- 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 regularly at the appropriate landfill site licensed in terms of section 20 (b) of the National Environment Management Waste Act, 2008 (Act No 59 of 2008). Proof thereof to be kept by contractor.
- A copy of the service agreement, to verify the disposal sites that will be accepting the waste, should be submitted to the Dept of Water Affairs.
- 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, portable chemical ablution facilities to be used and these to be positioned only within the 31m power line servitudes.
- 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 any of the rivers or seasonal streams.
- 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

- Rivers and drainage lines are always seen as sensitive and should be avoided at all cost. In this instance two major water courses (Mokolo River and Poer se Loop) along with a few seasonal streams and drainage lines cross the corridors for the power lines. These need to be completely avoided and no pylons may be placed directly within any one of these water courses.
- No temporary or other construction facilities to be erected or stored within 200m of the banks of the Mokolo River or the Poer se Loop stream.
- Positioning of any pylons need to be a minimum of 30m from the edge of the river banks or outside of the 1 in 100 year floodline.
- Positioning of the foundation slabs for the pylons must be a minimum of 10m away from the edge of all drainage lines.
- Under no circumstances may a pylon be placed directly in the bed of a river or drainage line.
- 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 power line are dominated by relatively flat to low undulating plains of mixed bushveld. The general gradient along the corridors is low (typically 1-2%), with steeper gradients (3-4%) sometimes been encountered, such as in the vicinity of the Mokolo River.
- Neither drainage nor erosion are 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:
- Two major water courses (Mokolo River and Poer se Loop) along with a few seasonal streams and drainage lines cross the corridors for the power lines. These need to be completely avoided and no pylons may be placed directly within any one of these water courses. Mitigation measures as previously indicated are relevant:
  - No temporary or other construction facilities to be erected or stored within 200m of the banks of the Mokolo River or the Poer se Loop stream.
  - Positioning of any pylons need to be a minimum of 30m from the edge of the river banks or outside of the 1 in 100 year floodline.
  - Positioning of the foundation slabs for the pylons must be a minimum of 10m away from the edge of all drainage lines.
  - Under no circumstances may a pylon be placed directly in the bed of a river or drainage line.
  - Construction must be limited to drier periods.
- Due to the physical nature of the power lines, 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 power line 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/ power line, should be left undisturbed.
- Only a few areas of rockiness have been identified along the proposed servitude routes. These areas are considered moderately sensitive and should be approached with caution.
- These areas are not seen as "No-Go" areas, 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 corridor under the power lines.
- Only a single, basic vehicle track to be constructed as an access road under pylons moving through the rocky area.
- Access roads need to be kept to an absolute minimum.
- No trees to be cut down or roads to be created to access the power line corridor from the public road by vehicle. Or to create shortcuts into this region. Any vehicles needing to access the power line running through the rocky area will need to do so from out of the less sensitive plains along the corridor itself.
- No temporary storage facilities, toilets, dwellings, etc. of any kind to take place within this rocky area. Not even within the demarcated power line corridor.
- The longest possible distance between pylons should be used in an effort to limit the footprint size on the rocky area.
- The power line must run as straight as possible through and over rocky areas. This in an effort to limit sharp turns that literally create a larger physical footprint on the ground.

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- 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 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.
  - 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.
  - Specifications (as identified in the Environmental Management Programme) for topsoil storage and replacement, to ensure sufficient soil coverage as soon as possible after construction activities, 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). A copy of the service agreement, to verify the disposal sites that will be accepting the waste, should be submitted to the Dept of Water Affairs.
- Proper and adequate containers (rubbish bins) to be put in campsites for the temporary disposal of food waste and general litter generated by construction workers. These containers need to close securely to avoid items (eg. paper and plastic) been blown into the veld, or been pushed over and rummaged through by wild animals such as monkeys. Proper waster management is essential.
- Containers for food and general waste to be removed weekly to avoid bins overflowing their capacity.
- Under no circumstances may any sewage, waste food or general litter be dumped in the veld.
- 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,



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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 Programme (EMPr) for the control of environmental impacts at the site camps.
- The EMPr 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.
- Camp site, storage facilities and other necessary temporary structures to be erected within the immediate area demarcated for the Bulge River substation and the Dorset substation. With the possibility of another one (maximum two) temporary sites within the power line corridors due to the distance between the substations.

### **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 power lines. The excavated area for the pylons could be approximately 3 meters deep by 1,5 meters wide. 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.

- No open fires to be allowed in the power line corridors or adjacent areas.
- No open fires to be allowed outside of the Bulge River and Dorset substations sites.
- 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.
- In the campsite a designated area for camp fires and cooking needs to be made. Should open fires be used then an area of at least 2m by 2m needs to be cleared of any 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.
- 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.
- No fires may be made for the burning of vegetation and waste.
- Fires shall not be made for the purpose of chasing or disturbing indigenous fauna.
- Construction workers should be barred from collecting firewood or any medicinal and protected plant species.
- No firearms should be allowed at the construction sites.

**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:**

- Sweeping of construction sites and clearing of building rubble and debris must take place regularly.
- According to the applicant and their contractors, dust suppression is not required due to the following reasons:
  - The servitude areas receive minimal bush clearance. Indigenous vegetation which does not interfere with the safe operation of the power line is left undisturbed. Further to the above, vegetation is not ploughed, but mowed and therefore no areas are left without vegetation cover.
  - In terms of access roads, existing roads are used and the impact to these roads is insignificant. The reason is that construction material is minimal (a pylon - planted approximately 330m apart, cement - to plant the pylon, and cable - for the overhead wires). Therefore a small number, of construction vehicles deliver the material to the site. Speed of above 30km/hour will not be exceeded. A limited/ insignificant amount of dust is therefore emitted in the atmosphere. In other words, there will be no significant construction, ground-clearing, leveling or grading of soils, moving or compacting of soils which are often associated with other forms of construction, but not with erecting of powerlines.

**Impact on natural habitat**

The construction of the power line 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 132kV line. The total servitude width is 31 meters.
- Site-specific measures for the specific properties 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.

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- During the construction phase, camp site, storage facilities and other necessary temporary structures to be erected within the immediate area demarcated for the Bulge River substation and the Dorset substation. With the possibility of another one (maximum two) temporary sites within the power line corridors due to the distance between the substations.
  - No material or machinery to be stored or placed in the open veld outside the designated area of the power line corridors.
  - No camp sites or other temporary structures to be erected outside the designated areas of the power line corridors.
  - No concrete to be allowed to be mixed in the veld.
  - All construction activities and movement of people and machinery to remain within the designated power line corridor.
  - Temporary access roads for vehicles carrying equipment, materials, etc. into the power line corridors need to be kept to an absolute minimum. None of these access roads may cross through sensitive areas.
  - Work corridor to be limited to 20 metres along the route of the servitudes.
  - 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 power line. Clearing for tower positions must be the minimum required for the specific tower.
  - A small grove of Camel Thorns on both sides of the D1882 sand road in the vicinity of the Mokolo River should be viewed as a 'No-Go' zone. The route should be planned to avoid the groves. GPS coordinates taken from the road: S24°06.822'; E27°48.301'. Should there be impact on any of the camel thorns, then a permit is needed.
  - A few rocky areas have been identified along the proposed servitude routes. These areas are considered moderately 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 corridor under the power lines.
  - Only a single, basic vehicle track to be constructed as an access road under pylons moving through the rocky area.
  - Access roads need to be kept to an absolute minimum.
  - No trees to be cut down or roads to be created to access the power line corridor from the public road by vehicle. Or to create shortcuts into this region. Any vehicles needing to access the power lines running through the rocky area will need to do so from out of the less sensitive plains along the corridor itself.
  - No temporary storage facilities, toilets, dwellings, etc. of any kind to take place within this rocky area. Not even within the demarcated power line corridor.
  - The longest possible distance between pylons should be used in an effort to limit the footprint size on the rocky area.
  - The power line must run as straight as possible through and over rocky areas. This in an effort to limit sharp turns that literally create a larger physical footprint on the ground.
  - 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.
  - 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.

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- 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.
  - No chemical control to be used in the control of alien plants or indigenous plants.
  - Damage can result in habitat modification or erosion as a result of the proposed power line 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.
  - Two major water courses (Mokolo River and Poer se Loop) along with a few seasonal streams and drainage lines cross the corridors for the power lines. These need to be completely avoided and no pylons may be placed directly within any one of these water courses.
  - No temporary or other construction facilities to be erected or stored within 200m of the banks of the Mokolo River or the Poer se Loop stream.
  - Positioning of any pylons need to be a minimum of 30m from the edge of the river banks or outside of the 1 in 100 year floodline.
  - Positioning of the foundation slabs for the pylons must be a minimum of 10m away from the edge of all drainage lines.
  - Under no circumstances may a pylon be placed directly in the bed of a river or drainage line.
  - No temporary ablution facilities to be placed within 200m of the banks of any of the rivers or seasonal streams.
  - No temporary ablution facilities to be placed within 200m of any drainage line, even if they are dry.

### **Impact on Birds**

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

#### *Loss of breeding, foraging and roosting habitat through habitat transformation*

During the construction phase and maintenance of power lines 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: (See full report in Appendix D3)

- The habitat surrounding the proposed power line comprises mostly undisturbed woodland, with limited existing impacts which consist mostly of a number of reticulation lines, fences and dirt roads. As a result it supports a number of power line sensitive species, particularly raptor species currently Red Data listed. 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 and 2. Alternative 3 and 4 have a few sections where it deviates from existing dirt roads, which will have a bigger impact on the natural woodland vegetation. If alternative 2 is selected, the impact of the clearing of vegetation for the new line would be slightly less than if the line was partially constructed in undisturbed woodland, as would be the case with alternatives 3 and 4, and to a much lesser extent with alternative 1. 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, especially if alternative 2 is used. If alternative 1 is used, the impact would be medium-low, as it would involve more extensive clearing of undisturbed woodland. With alternative 3 and 4, the impact will be medium, as it would require more extensive clearing of woodland than the other.

### **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**

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No sites of Archeological significance were identified (see full Heritage Impact report in Appendix D2). 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 power lines 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 power lines 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 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 power line.
- The procedures for vegetation clearance and maintenance within overhead power line 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 power line, should be left undisturbed.

### **Loss of agricultural land**

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

### **Mitigation of impact on Agriculture**

The proposed construction of the power line 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 power line impact on any agricultural activities, this impact will only be for a limited period during construction. An access road of 8m wide could be cleared to construct the power line. After construction, normal agricultural activities could continue under the power line 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.

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## 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 power lines.

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

*Collisions:* Collisions are when birds collide with the conductors or earth wires of overhead power lines.

### **Mitigation of impact on birds**

*Relevant to this study:*

#### **Collisions**

- The majority of species, listed in Table 2 of the Bird Impact Assessment Report in Appendix D3, are all vulnerable to collisions with power lines. In the case of water-associated birds such as the Black Stork, Yellow-billed Stork and African Marsh-Harrier the drainage lines, and specifically the pools in the larger rivers such as the Mokolo and Malmanies, which are in the study area, might potentially hold some attraction to these species. The new line will cross these 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 *Scopus umbretta*. 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.
- In summary, 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 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 (see Appendix B Sensitivity map in the Bird impact assessment, for the area to be marked with Bird Flight Diverters). Appendix C indicates the preferred Bird Flight Diverters to be used.

#### **Electrocution**

- A mono-pole steel pole will be used for the new 132kV line. 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 metres. This is relevant as birds such as vultures are able to touch both the conductor and the earthed pole simultaneously potentially resulting in a phase – earth electrocution. This is particularly likely when more than one bird sits on the same pole.
- 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. It should be mentioned that the pole design holds no inherent electrocution risk for other large non-gregarious species such as eagles, as they almost never perch together in large numbers next to each other.
- In summary, the line will pose a medium electrocution risk, in particular to vultures.
- The poles should be fitted with bird perches on top of the poles to draw birds, particularly vultures, away from the potentially risky insulators.

### **Visual impact**

Impact on the aesthetics of an area is related primarily to the visual impact of the proposed power line 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 power line.
- The structures to be used for the power line.

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### **Mitigation of Visual Impact**

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

- In general the recommendations from landowners are that the power line should not traverse any property, but rather run along the public or existing roads. The chosen route should be mostly along primary roads with wide verges or wide gravel roads. Routes with evident visual disturbance caused by existing power lines or roads are more acceptable than traversing through pristine area.
- In line with the above, Route Alternatives 1 and 2 were designed to run through more “disturbed” corridors, i.e. along the The National Road P198/1 (R33), and the Provincial Roads P84/1 (R517); D1882; D1005; and D1162.
- Route Alternative 3 and 4 were designed to follow the same corridor, but with slight deviations to accommodate site specific problems. These deviations were mostly due to impact on entrances to properties and agricultural activities.
- In addition, visual impact could generally be mitigated to some extent by constructing the line with monopole steel structures. Visuals of the structure are included in Appendices C2 and C3 of the BAR. From previous experience the steel poles are known to weather and with time blend into the environment.

### **Access to farms**

Eskom Holdings has a right to enter farms in order to maintain plant and obtain meter readings, therefore the manner of access to land, on which Eskom holds servitudes and electrical infrastructure, should be considered by Eskom as well as Landowners.

Security on farms is important to Landowners who need to ensure that the safety of their family, staff and property is catered for. Coupled to this is the escalating crime rate on farms.

### **Mitigation to establish a protocol for Access to farms**

Approaches to facilitate access to farms for all Eskom staff and contractors (performing work on behalf of Eskom) is stipulated in the Access to Farms (Distribution, Transmission and Generation) Standard 32-1173 of which a copy can be obtained from the local organised agriculture structures.

Protocol measures are i.e. as follows:

- All Eskom staff will carry identity cards containing their photographs, indicating that they are Eskom employees. Landowners may verify presence of Eskom staff telephonically at the Contact Centre, at 08600 37566.
- Eskom contractors will carry identity cards displaying their photographs, indicating that they are contractors. Letters containing contract appointment as well as whom at Eskom to contact will be given to each Contractor. In the case of unplanned activities, the contractor must be in possession of a work order number.
- Eskom vehicles will be clearly marked on the door. Vehicles operating after dark will be fitted with amber rotating lights.
- Vehicles of Eskom contractors must have a magnetic strip on the side containing the words “Eskom contractor”, as well as an amber rotating light.
- No person may climb or crawl over or through fences without the owners’ permission. No person may damage or remove a fence without the owners’ permission.
- Gates should be left in the state the landowner intended. In order to assist with any possible claims, any visitor will keep a log of each gate that is used stating:
  - the position of the gate with reference to towers
  - the state in which it was found (open or closed)
  - the time
  - any other appropriate information (locks, etc.)
- Standard Eskom locks shall be used in all cases and in such a manner that it securely locks the gate. Where dual-use is made of the gate by Eskom Holdings and the land owner, the Eskom lock shall be locked into the chain-link, separate from the farmer’s lock as to permit both parties to gain access without inconveniencing either party. No interference with land owners’ locks will be tolerated. The cutting of land owners’ locks except in extreme emergency will result in disciplinary action.
- Where helicopters are deployed, care should be taken in conjunction with the Line and Servitude Manager and the landowner not to cause any disturbance or harm to livestock such as ostriches or game. The use of helicopters on lines during line patrols does present it’s challenges when all the property owners en route need to be informed

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before the inspection. Notice of such patrols should be communicated via District Agricultural offices a month before.

- Any damage caused to any gate, fence, crop or grazing shall be reported to the Line and Servitude Manager or ECO who will then refer it to the appropriate Eskom Holdings Official for processing. Extreme care must be taken with fires and the use of fires will only be permitted with express approval of the landowner.
- No fauna or flora will be collected or removed from any farm by any visitor without written permission of the Landowner, in which case cognizance will be taken of appropriate provincial legislation pertaining to fauna and flora. Under such cases Eskom Holdings ethical policies and guidelines will be strictly applied.
- Any visitor will at all times refrain from littering and must remove any refuse when leaving.
- Visitors shall as far as possible only use the servitude roads or the roads as determined by the environmental management plan and agreed to with the Land owner. Where this is not possible the landowner's permission shall be obtained for the use of any other roads. In all cases care shall be taken to not cause any damage in the process and driving through the veld must be avoided as far as possible.

#### Planned outages

- Eskom will notify customers at least 10 days in advance through the appropriate media – either in writing, electronically (SMS) or telephonically. The onus rests on the Customer to ensure that all their contact details are updated on the Eskom system. Should its best attempts to communicate fail, the work will proceed regardless.

#### Planned activities such as vegetation control, live-line work and line inspections.

- Eskom will notify customers at least 48 hours in advance through the appropriate media – either in writing, electronically or telephonically. Should its attempts to communicate fail, the work will proceed.

#### Unplanned/unscheduled visits

- Rapid power restoration without any delay is in the interest of both Eskom and the customer. This is dependent on free movement.
- All Eskom staff as well as representatives of Eskom contractors will carry identity cards containing their photographs to indicate whether they are Eskom employees or Eskom contractors. In addition, customers may request a work order number to be verified with the Contact Centre. Vehicles must be clearly marked.

### **Access to Nature / Game reserves**

The mushrooming of game farms in all parts of the country brings about new challenges to Eskom Holdings such as restriction of access, safety of Eskom staff and the interaction of game and electrical infrastructure. The same applies to nature reserves and other reserves managed by the state where wild animals occur. Wild animals pose a safety risk to Eskom staff e.g. lions, tigers, leopards, elephants, rhinoceroses, buffaloes, etc and animals that are at risk of electrocution if introduced or kept in camps where unmitigated Eskom assets exists e.g. giraffes, elephants, rhinoceros.

### **Mitigation for access to nature/game reserves**

- Access to any type of nature reserve requires specific permission, which should be arranged with the appropriate authority or landowners. Because these reserves have both dangerous as well as very expensive game, a designated guide should always accompany visitors. This will ensure the safety of the visitor as well as prevent any claims against Eskom Holdings in the case of death of expensive game.
- An effort should be made through the Regional task team to convince game farm owners and other influential stakeholders (Government & Game farming and Agricultural Union bodies) to buy into the following;
  - The numbering of gates.
  - The labelling of gates stating the following:
    - That it is a game farm
    - List of dangerous animals within enclosure
    - Contact details
  - That all entry and exit points comply with the Certificate of Adequate Enclosure Fencing Specifications.
  - Entrance areas are to be cleared to improve visibility.

#### Routine Field trips by maintenance staff

- Field Services staff must report all new game fences or game farming activities encountered on routine line patrol or fault repair activities to the Land Development section for mapping and to Customer Services Area Managers to



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engage the landowner for corrective action if Eskom was not informed or did not agree to such a change. This is seen as an *ad hoc* way of obtaining information of newly created game farms from normal business activities.

- In particular, helicopter line patrols over game farming areas must be preceded by reasonable notifications to affected landowners as they are usually a disturbance to tourists and hunters visiting game farms. There is a great need to inform game farm owners timeously of planned maintenance activities. All notifications and arrangements regarding access should preferably be confirmed in writing as per section 2.6.
- Game farmers are also not in favour of motorised equipment e.g. chain saws due to noise pollution affecting hunting and game viewing activities. It is thus advisable that prior notification be issued and that their usage be restricted to what is absolutely necessary. As this is a sensitive environment, it is advised that bush clearing be done accordingly in terms of the *Standard for Bush Clearance and Maintenance within Overhead Power line Servitudes (ESKASABG3)*. These requirements are identified in the EMPr.

#### Safety of Eskom personnel

- No Eskom employee must endanger his/her life or the life of another staff member by entering a property where there is a reasonable suspicion that dangerous animals such as lions, tigers, leopards, rhinoceroses, buffaloes, etc., are present. Eskom staff should seek to enter such properties accompanied by security staff from the game farm. It is also advised that Eskom staff working in and around game farms be trained on how to identify dangerous animals and how to behave to ensure the safety of his/her life as well as that of another Eskom employee. Whenever any Eskom employee receives knowledge of the introduction of dangerous animals in an area where Eskom infrastructure exists, such knowledge shall be conveyed to Land Development for mapping, investigation and/or measuring and to the Customer Services Area Manager to engage the land- or game farm owner.

#### Biodiversity impacts

- Awareness about the issues surrounding game farms might bring about requests to have some lines checked for clearances for giraffes and/or others mitigated to prevent elephants and/or rhinoceroses from being electrocuted. Such requests should be sent through to the Land Development section for screening, evaluation, investigation and/or measuring. The latter could also be performed by Field Services staff. If clearances are insufficient in the case of giraffes and/or measures are required to mitigate for elephants and/or rhinoceroses, the request should be forwarded to the Project Engineering section for an engineering solution to be taken in conjunction with the Environmental function.

#### Training

- It is necessary that Eskom staff working in and around game farms be trained on how to identify dangerous animals and how to behave to ensure the safety of his/her life as well as that of another Eskom employee. It is important to note that whilst it might be perfectly fine to run when confronted by a rhinoceros, running when faced by a lion is the most inappropriate behaviour. The wrong behaviour could be fatal and hence identification and behavioural training is necessary.
- Training should include but not be limited to the following:
  - Identification and training on the following dangerous animals; Bees, buffalo, cheetah, elephants, hippopotamus, hyena, leopard, lion, rhinoceros, scorpions, snakes, spider, tiger, wild dog, wildebeest.
  - Behaviour when confronted by dangerous animals
  - General behaviour in parks, game farms; etc.
  - Training Eskom staff on this guide.
  - Training manuals or other reference material to be developed as part of a training package.
  - Training on Eskom rights.
  - Training on the need of certain farms to spray Eskom vehicle tyres; etc for diseases upon entry into e.g. chicken farms.

#### **Impacts associated with fire breaks and servitude maintenance**

The servitude areas has to be maintained to ensure the safety of the Eskom hardware, but in particular the safety of the landowner and his property. Should the servitude not be maintained this can result in danger to the power line as well as damage to the property of the landowner.

#### **Mitigation of the impact associated with fire breaks and servitude maintenance**

- In the case of 33kV, 88kV and 132kV distribution power lines, Eskom obtains the rights to a servitude.

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- A servitude is a real right which Eskom obtained in order to construct its infrastructure upon the affected property and it is registered in the Deeds Office against the title deed of the affected property. The affected owner normally gets compensated for this right according to market related values. The servitude stays effective even if a property is transferred to another owner.
  - The National Veld and Forest Fire Act (Act 101 of 1998) places an obligation on the owner to ensure compliance and hence creation of fire-breaks amongst other. The Act defines owner as follows: “owner” has its common law meaning and includes— (a) a lessee or other person who controls the land in question in terms of a contract, testamentary document, law or order of a High Court;
  - The Eskom understanding is that Eskom needs to ensure compliance to the Act where it has purchased a property (hence being the owner) such as a substation. Eskom is not considered as the owner for rights obtained via a wayleave agreement or servitude. Hence, the requirements for creating firebreaks or joining Fire Protection Agencies are applicable as far as where Eskom has a substation and not for power lines. These opinions were reflected in the specifications – thus, the Vegetation Management Standard does not specify requirements for fire breaks.
  - Fire Risk Management is dealt with under a procedure titled “Distribution Fire Risk Management”, reference SCSASAAJ6. Grass fires are dealt with in this procedure stating that vegetation and equipment must be maintained. A specific procedure deals with fire risk management for substations where the chipped stone needs to be maintained to prevent vegetation growth.
  - Eskom Distribution does not make use of the practice to burn fire breaks, since this is not a legal requirement. Rather, it relies on the maintenance of vegetation in accordance to its Vegetation Management Standard to reduce the risk of fires starting from Eskom infrastructure.
  - Eskom Distribution Division does not remove the grass below power lines since this does not pose a safety risk and will create the potential for erosion, causing environmental degradation and hence legal liability. It will furthermore be an economically unsustainable exercise for Eskom given the amount of power lines throughout South Africa.

### **Impact of project on Tourism**

The promotion of tourism is the key to socio-economic development in this region. But tourism is inseparable from a unique environment, with incomparable natural attributes and potential for nature conservation. The Waterberg Biosphere Reserve has therefore been launched. The significance is that this area with its game reserves and farms receives international exposure, thus attracting foreign revenue because of tourism, resulting in a number of opportunities for entrepreneurs and the potential for job creation. The tourism attractions in the broader area of the project are Marakele National Park, Welgevonden, Mokolo Dam, Kwalata and Lapalala Nature Reserves.

The impact of the project on tourism could be related to the visual impact of the proposed power line. It could be argued that the value of the environment lies in its remoteness and the wilderness feel. It is understood that the visibility of the power line could well impact negatively on the land values since visitors would not be able to escape the sights of human intervention. Should the power line be constructed, the value of the land/all the properties will be substantially decreased. This could culminate in a loss of income and loss of jobs for local labour, which will impact on the whole community.

### **Mitigation of impact on Tourism**

As indicated, the area is an emerging and fast growing tourism destination, with its large reserves and private game farms in the area. It is therefore of importance that the tourism industry should not be hampered by poor quality of supply and bad performance of the power supply network. Most complaints emanate from severe voltage dips and frequent supply interruptions caused by the poor condition of the current network. The proposed project would address the need for firm supply in the area and aid in the growth of the tourism industry. The project would therefore contribute positively towards tourism. Obviously, the sensitive placement of the route is of vital importance. The route is designed according to the preferences of landowners and key stakeholders. Landowners prefer routes with evident visual disturbance caused by existing power lines or roads above traversing through pristine area. This preference culminated in the investigation into the four options for the power line route.

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### **Impact of alien vegetation**

One of the impacts of concern is the introduction of alien plants and the use of chemical herbicides (weed-killers). This impact need to be monitored and managed on an ongoing basis.

- The manner in which the right of way was obtained/registered is an important factor in determining the legal requirements for erosion and weed control.
- The Conservation of Agricultural Resources Act (Act 43 of 1983) places a duty on the land user to control erosion and declared weeds and invader plants. Hence, the standard specifies weed control as a requirement for all power lines: The act defines land user as follows:
- 'land user' means the owner of land, and includes-
  - any person who has a personal or real right in respect of any land in his capacity as fiduciary, fideicommissary, servitude holder, possessor, lessee or occupier, irrespective of whether he resides thereon;
  - any person who has the right to cut trees or wood on land or to remove trees, wood or other organic material from land.
- A servitude is a real right which Eskom obtained in order to construct its infrastructure upon the affected property and it is registered in the Deeds Office against the title deed of the affected property. This places a duty on Eskom to control declared weeds and invader plants.

### **Mitigation of alien vegetation**

- 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 programme for alien vegetation control must be implemented. The implementation thereof is recommended as follows:
- 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 in 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.

### **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) power lines and a way leave agreement is obtained for the reticulation power lines (11 and 22 kV). According to a legal opinion obtained from the Corporate Legal Department, Eskom is not the landowner of power line servitudes or rights of way, but only where Eskom purchased the land for a substation and is in possession of a title deed.

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*Risk of Electrocutation:*

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

**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.
- 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:*

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

*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 landowner's property.
- Security measures are provided in the Environmental Management Programme (EMPr) of the EIA Report.

In addition refer to the mitigation for impacts associated with fire breaks and servitude management and the protocol for access to farms.

## **2.4 IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING AND CLOSURE PHASE**

It is not envisaged that the power line will be decommissioned. This project is part of the future infrastructure to supply the Eskom Distribution network. Should this application not be approved, this can result in major disturbances in energy provision.

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

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

- The power line 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 appropriate landfill site licensed in terms of section 20 (b) of the National Environment Management Waste Act, 2008 (Act No 59 of 2008). A copy of the service agreement, to verify the disposal sites that will be accepting the waste, should be submitted to the Dept of Water Affairs.
- The route of the power line 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.

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### 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.
- This proposed project is part of the infrastructure to supply the Eskom Distribution grid with power.
- Should this application not be approved then supply will be unreliable and in future this can 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.

#### 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	2	Permanent	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	3	Permanent	High	1

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
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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	3	Permanent	Low	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Social Impact	4	Permanent	High	3

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	2	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

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Access to properties	4	Permanent	High	2

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation

Impact Description	Impact	Impact	Impact	Mitigation
Impact on conservation areas/ game farms	4	Permanent	High	2

## Route 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	Permanent	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	3	Permanent	High	1

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
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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	4	Permanent	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	2	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

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Access to properties	4	Permanent	High	2

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation

Impact Description	Impact	Impact	Impact	Mitigation
Impact on conservation areas/ game farms	4	Permanent	High	2

### Route 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	Permanent	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	2	Permanent	Medium	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Risk of Erosion	3	Permanent	High	1

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	3	Temporary	High	1

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 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	3	Permanent	Low	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Social Impact	4	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	2	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

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Access to properties	4	Permanent	High	2

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation

Impact Description	Impact	Impact	Impact	Mitigation
Impact on conservation areas/ game farms	4	Permanent	High	2

#### Route Alternative 4

##### 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	Permanent	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	2	Permanent	Medium	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Risk of Erosion	3	Permanent	High	1

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	High	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impacts on safety and security	3	Temporary	High	1

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 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	3	Permanent	Low	1

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

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Access to properties	3	Permanent	High	2

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation

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Impact Description	Impact	Impact	Impact	Mitigation
Impact on conservation areas/ game farms	3	Permanent	High	2

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:

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. These measures include:

- staying out of No-Go zones/ highly sensitive areas such as the camel thorn grove on both sides of the D1882 sand road in the vicinity of the Mokolo River. The route should be planned to avoid the groves. GPS coordinates taken from the road: S24°06.822'; E27°48.301'. Should the camel thorns be impacted, then a permit is needed.
- not placing any pylons closer than 30m from the edge of river banks or 10m from the edge of drainage lines;
- an ongoing management programme to mechanically control alien plant species that invade the disturbed soils around the newly erected pylons; to not use chemicals in the control of weeds;
- to inspect the power line corridor every year (before and after the summer rain season) for soil erosion and if found to rehabilitate;
- to use wide spacing of pylons in the rocky areas to limit the physical footprint on the actual ground;
- and to remove all left over construction materials, rubble etc. upon completion of the project.
- Having taken all aspects of the investigation into account the following **line variant is recommended - Alternative Route 4 (A-B<sub>1</sub>-C<sub>2</sub>-C<sub>1</sub>-D-H-F)**. However, between map points (C<sub>1</sub> – D) both sections of Alternative Routes 4 & 3 are equally ecologically acceptable and either may be used across this section. (Refer to map in specialist report on the ecological environment in Appendix D1.)

### 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.
- In addition a desktop Palaeontological Study was conducted to assess the fossil heritage of national and international significance. No fossils have been found in the Waterberg Group which overlay the older Bushveld Igneous Complex. The palaeontological sensitivity is generally zero to low.
- If any palaeontological material is exposed during digging, excavating, drilling or blasting and SAHRA must be notified. All development activities must be stopped and a palaeontologist should be called in to determine proper mitigation measures.
- From a heritage point of view, **all 4 alignments (Route Alternatives 1,2,3 and 4) are suitable options**, should the proposed mitigation be implemented.

### Bird Impact:

The construction of the proposed 132kV Bulge-Dorset 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. The proposed construction of the new power line should have a low habitat transformation impact from an avifaunal perspective, especially if alternative 2 is used. If alternative 1 is used, the impact would be medium-low, as it would involve more extensive clearing of undisturbed woodland. With alternative 3 and 4, the impact will be medium, as it would require

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more extensive clearing of woodland than the other.

*Recommendations*

- Power line: 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 (see Appendix B Sensitivity map in the specialist report on bird impact in Appendix D3 for the area to be marked with Bird Flight Diverters). Appendix C indicates the preferred Bird Flight Diverters to be used.
- Poles: 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 four alignments (Route Alternatives 1, 2, 3 and 4)** are suitable options, should the proposed mitigation be implemented.

**CONCLUSION**

Alternative routes have been investigated for the project. From a heritage viewpoint there is no preferred alternative route. From a bird impact perspective, Route Alternative 2 will have the least impact, but all four alignments (Route Alternatives 1, 2, 3 and 4) are suitable options, should the proposed mitigation be implemented. From a purely ecological viewpoint, Route Alternative 4 is slightly preferred. The final decision between Route 3 or 4 should be made on the accumulative weight of other parameters such as feedback from public participation, land tenure issues, construction costs, etc.

**Consequently, Alternative 4 is preferred** from the viewpoint of impact on the landowners and their activities.

Is an EMPr attached?

YES	NO
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The EMPr must be attached as Appendix F.



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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