

# BASIC ASSESSMENT REPORT



## environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA

(For official use only)

**File Reference Number:**

**Application Number:**

**Date Received:**

DEA Ref. Number:	14/12/16/3/3/1/784
NEAS Ref Number:	DEA/EIA/0001597/2012

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. This report format is current as of **1 September 2012**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. 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.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. 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.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. 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.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.

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14. Two (2) colour hard copies and one (1) electronic copy of the report must be submitted to the competent authority.
15. Shape files (.shp) for maps must be included on the electronic copy of the report submitted to the competent authority.

## 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. SCOPE OF PROJECT

The Eskom Conversion Act, 2001 (Act No. 13 of 2001) establishes Eskom as a State Owned Company (SOC) with the Government of South Africa as the only shareholder, represented by the Minister of Public Enterprises. The main objective of Eskom is to "provide energy and related services including the generation, transmission, distribution and supply of electricity, and to hold interests in other entities".

The proposed project is part of a broader scope of work to improve Eskom's network performance. The existing Distribution networks are exceeding their maximum power transfer capability. Currently the network is experiencing under voltages and is incapable of handling additional loads due to the contingency restraints of the network. As part of its assessment of a range of electricity supply options, Eskom is investigating the feasibility of constructing a new Chickadee 88kV powerline between the Ermelo and Uitkoms Substations.

A Basic Assessment (BA) process for this proposed powerline route is currently being undertaken by Texture Environmental Consultants (DEA Ref 14/12/16/3/3/1/784).

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To date, two route alternatives have been identified for further investigation. The proposed layout and best route will be determined through environmental and specialist studies as well as public opinion.

The proposed project entails the construction of a new 88kV Chickadee Powerline from the Ermelo substation located in Ermelo Town to the Uitkoms substation (approximately 20.9 km) in the Msukaligwa Local Municipality in the Mpumalanga Province.

The scope of work includes :

- Identification of potential alternative corridor routes for a 20.9km 88kV chickadee power line between the existing Ermelo substation to the existing Uitkoms substation;
- The project involves identification of a 100m corridor within which Eskom would be able to locate a 31m servitude for the powerline between Ermelo substation and Uitkoms substation. The servitude is required for maintenance purposes.
- Identification of potential corridors to construct an access/ construction road of 8 meters wide for the line.

The applicant is Eskom Distribution, Mpumalanga Operating Unit, Land Development with contact person Ms. Betty Ngobeni, Environmental Management in Witbank.

### 3. 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 107 of 1998 (NEMA), and the Environmental Impact Assessment Regulations published in GNR 543/2010 - GNR 546/2010 of 18 June in terms of section 24(5) of the Act.

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.

#### 3.1 *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.

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### 3.2 *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:

Listed Activity	Activity/Project Description
<u>GN R544/2010 Item 10</u> The construction of facilities or infrastructure for the distribution of electricity outside urban areas with a capacity of more than 33kV but less than 275kV.	Construction of the 88KV power line from Ermelo substation to Uitkoms substation
<u>GN R546/2010 Item 4</u> The construction of a road wider than 4 metres with a reserve less than 13,5 metres. (activity to be confirmed).	Construction of an access or construction road of 8 meters wide.
<u>GN R546/2010 Item 14</u> The clearance of an area of 5 hectares or more of vegetation where 75% or more of the vegetative cover constitutes indigenous vegetation. (activity to be confirmed)	Clearance of indigenous vegetation of a 31m wide servitude x 22 000m of powerline = 682 000m <sup>2</sup> = 6,82ha

### 3.3 *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

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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)).

### **Potential Water Uses in the Powerline Servitudes**

Both of the Alternative Powerline Routes traverse a few streams and drainage lines. Whichever route is finally decided upon, river crossings will still be necessary. Some of these rivers (actually small streams) originate in the immediate region of the study area and are not even recognisable as rivers, but more as drainage lines, where they transect the powerline corridors, while other streams such as the Witpuntspruit, are much larger. The largest stream (or small river) in the study area is the Witpuntspruit, which along with its' tributaries eventually flows into the Vaal River. There are no foreseen issues or complications in crossing the streams or drainage lines where they transect the powerline corridors. Due to the span of the line between pylons (200-350m), it is easy enough to stay well outside of the floodplains and riparian vegetation of the watercourses in question. In such cases there is no need for a Water Use Licence (WUL) or a General Authorisation (GA).

However, of concern are certain areas where the powerline servitudes run parallel in close proximity to the Witpuntspruit, or within the floodplain of the spruit itself. These areas include most of the medium / high sensitivity areas. There are a few areas where other small streams flowing into the Witpuntspruit converge, creating a larger floodplain. During the summer rain season, due to the flatness of the terrain, these floodplain areas can become flooded, creating seasonal wetland areas. These floodplain areas are classified as wetland types and cannot be avoided by the powerline corridors. There is also a wetland area near to Uitkoms Substation and Camden Powerstation that needs to be kept in mind during the construction and maintenance of the powerline. These areas are seen as potential ‘water uses’ and it is strongly recommended that a formal Water Use Licence Application (WULA) be completed and submitted for the project (Figure below).

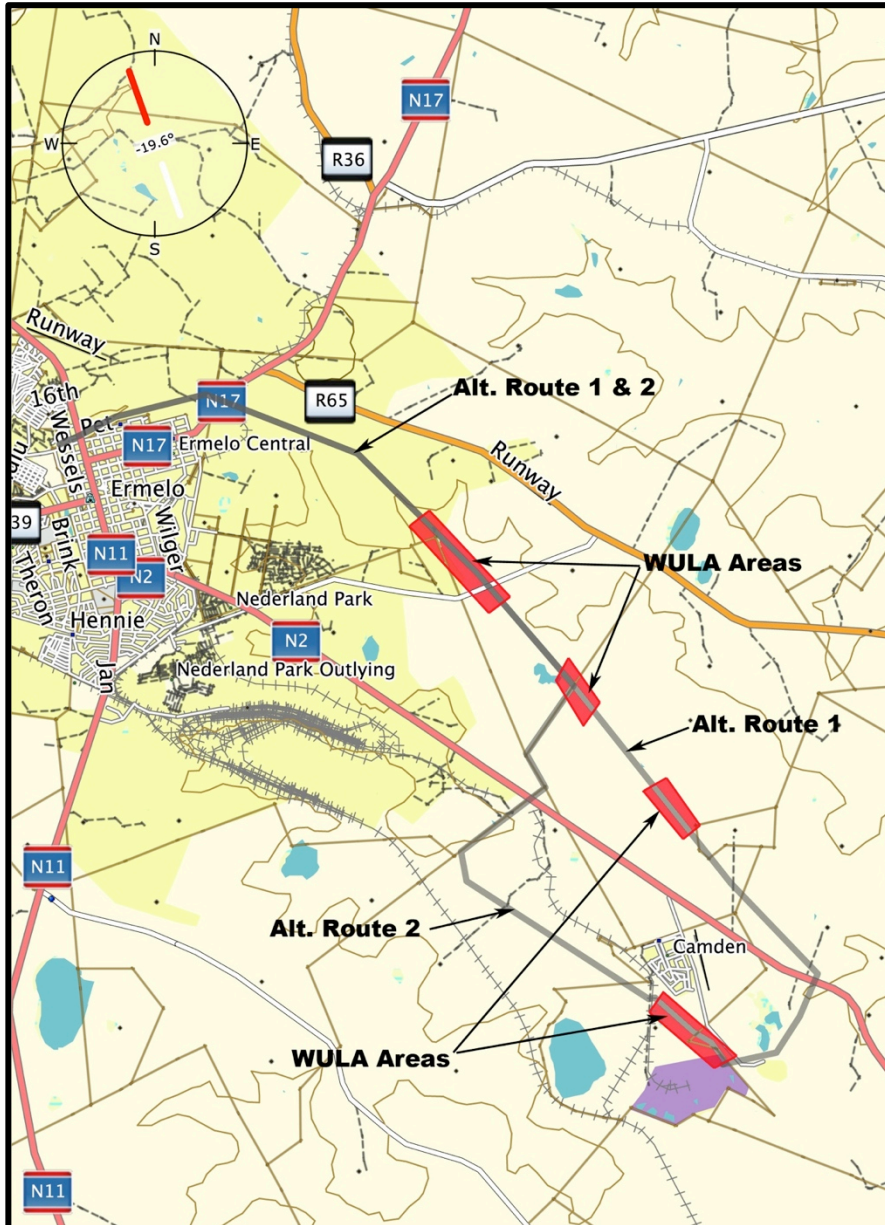


Figure: WULA areas

**Legal Requirements Regarding Impact on Watercourses**

The National Water Act (Act 36 of 1998) (NWA) sees river crossings, floodplains or wetlands, where there is a need to erect pylons within the demarcated sensitive areas, as a Water Use that will either need to be registered (General Authorisation) or a water use licence applied for (WULA), depending on the circumstances and impacts. It is important to understand that the term 'Water Use' or the definition thereof in the NWA, does not simply mean 'using water' for drinking, etc. but also refers to any physical impacts on (or in) the water, watercourse, riparian vegetation, floodplain, wetland, etc.

Further investigations, reports and applications will need to be done in this regard, as Water Use applications, registrations and authorisations was not required in the initial specialist studies. However, a general indication is given as to which river crossings and/or wetland areas will probably need a Water Use Licence Application (WULA). The water uses are all covered in the NWA. In the case of overhead powerlines, special attention needs to be given to Section 21 (c) and (i) of the NWA, as well as to General Authorisations in regard to Section 21 water uses.

### 3.4 *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 and summary of results in 2.3.2.3. In addition, a Palaeontological Assessment was conducted of which the results are available in 2.3.2.4 and Appendix D4 of this report.

### 3.5 *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



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the NEMBA, no person may carry out any restricted activity involving any species which has been identified by the 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.

### 3.6 *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 no Red data species and protected species were found in the area.

### 3.7 *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.

### 3.9 *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 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 2010 EIA Regulations 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 2010 EIA Regulations 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.

### 3.10 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 as well as co-ordinates of telecommunication towers.
- Highlight any airstrips.
- SACAA (Contact Mr. Chris Isherwood) will then give feedback as to distances from airstrip, possible alterations in routes, etc.

Of relevance to this project is that no telecommunication tower is required as no new substation would be constructed.

## 4. 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 2012.
- An **application** for a Basic Assessment was submitted to DEA and the project was issued on 10 December 2012 with the following reference numbers: DEA Ref. Number 14/12/16/3/3/1/784 and NEAS Ref Number DEA/EIA/0001597/2012.
- 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. 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.
- Input from an **avifauna specialist** was obtained to determine the impact of the proposed project on birds.
- During the months of February - April 2013 the EAP, the ecologist, the bird impact specialist and the archaeologist/cultural heritage management consultant conducted additional site investigations.
- The first phase of the **Public Participation Programme** (PPP) commenced in February 2013 and continued until May 2013. 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 24 April 2013 was sent to all IAPs on 8 April 2013. 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.

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- **One-on-one meetings** were conducted with **landowners** to assist in the identification of potential powerline corridors and site locations.
- 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 (I&APs).
- In addition, An **Environmental Management Programme (EMPr)** was compiled to ensure that
  - mitigation measures are identified and implemented to avoid or minimise the expected negative environmental impact and enhance the potential positive impact associated with the project;
  - the developer, construction workers and the operational and maintenance staff are well acquainted with their responsibilities in terms of the environment;
  - communication channels to report on environment related issues are in place.
- On **20 May 2013** the **draft Basic Assessment Report** was submitted for comment to the following:
  - Regional Department of Water Affairs: Water Resources & Water Quality Management
  - South African Heritage Resources Authority (submitted via SAHRIS)
  - Mpumalanga Department of Economic Development, Environment and Tourism: Environmental Services
  - Mpumalanga Department of Agriculture: Land Use and Soil Management
  - Mpumalanga Department of Mineral Resources
  - SA National Road Agency Ltd
  - Mpumalanga Department of Public Works, Roads And Transport
  - Mpumalanga Department of Rural Development and Land Reform: Land Claims Commissioner
  - Mpumalanga Department of Rural Development and Land Reform: State Land Administration
  - Department of Human Settlements and Traditional Affairs
  - Department of Community Services
  - Agri Mpumalanga/ Mpumalanga Landbou
  - Mpumalanga Tourism and Parks Agency
  - Endangered Wildlife Trust
  - Landbou Unies
  - SA Civil Aviation Authority
  - Gert Sibande District Municipality
  - Msukaligwa Local Municipality
  - Eskom Transmission
  - Eskom Distribution
  - Landowners
- The **due date for comment** to the draft Basic Assessment Report is **3 July 2013**. This allows for a comment period of 40 days.
- Subsequently, a **final Basic Assessment Report (BAR)** will be compiled.

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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. PROJECT DESCRIPTION

*Describe the project associated with the listed activities applied for*

#### 1.1 Background

The Eskom Conversion Act, 2001 (Act No. 13 of 2001) establishes Eskom as a State Owned Company (SOC) with the Government of South Africa as the only shareholder, represented by the Minister of Public Enterprises. The main objective of Eskom is to "provide energy and related services including the generation, transmission, distribution and supply of electricity, and to hold interests in other entities".

The proposed project is part of a broader scope of work to improve Eskom's network performance. The existing Distribution networks are exceeding their maximum power transfer capability. Currently the network is experiencing under voltages and is incapable of handling additional loads due to the contingency restraints of the network. As part of its assessment of a range of electricity supply options, Eskom is investigating the feasibility of constructing a new Chickadee 88kV powerline between the Ermelo and Uitkoms Substations.

A Basic Assessment (BA) process for this proposed powerline route is currently being undertaken by Texture Environmental Consultants (DEA Ref 14/12/16/3/3/1/784).

To date, two route alternatives have been identified for investigation. The proposed layout and best route will be determined through environmental and specialist studies as well as public opinion.

The proposed project entails the construction of a new 88kV Chickadee Powerline from the Ermelo substation located in Ermelo Town to the Uitkoms substation (approximately 22 km) in the Msukaligwa Local Municipality in the Mpumalanga Province.

The scope of work includes:

- Identification of potential alternative corridor routes for a 22km 88kV chickadee power line between the existing Ermelo substation to the existing Uitkoms substation;
- The project involves identification of a 100m corridor within which Eskom would be able to locate a 31m servitude for the powerline between Ermelo substation and Uitkoms substation. The servitude is required for maintenance purposes.
- Identification of potential corridors to construct an access/ construction road of 8 meters wide for the line.

The applicant is Eskom Distribution, Mpumalanga Operating Unit, Land Development with contact person Ms. Betty Ngobeni, Environmental Management in Witbank.

#### 1.2 Locality and Regional Context

The proposed power line corridors are situated in the Mpumalanga Province, to the south-east of Ermelo. Two alternative routes are considered for the power line. The study area for the proposed power line servitudes runs approximately south-east over a distance of 22km and links between the two substations of Ermelo and Uitkoms. Both substations lay mostly between the public roads of the N2 (to the south) and the R65 (to the north), with Uitkoms Substation situated at the east end of Camden Power Station.

##### Route Alternative 1

- Represented by the dotted red line in the map in the Figure below.
- Approximately 21 kilometres in length.
- Follows an existing HV power line corridor for its entire length.

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- Runs alongside or in the Witpuntspruit for approximately 5km.
- Traverses mainly grasslands of varying disturbance.

### Route Alternative 2

- Represented by the blue line in the Figure below.
- Approximately 22 km in length.
- For the first approximately 11.5km from Ermelo Substation, it follows the same routing as Alternative 1. It then heads south for a small section, away from existing infrastructure and away from the Witpuntspruit.
- For the last approximately 7km it follows an existing HV powerline to Uitkoms substation.
- Traverses mainly grasslands of varying disturbance.

### Property descriptions of Route Alternative 1

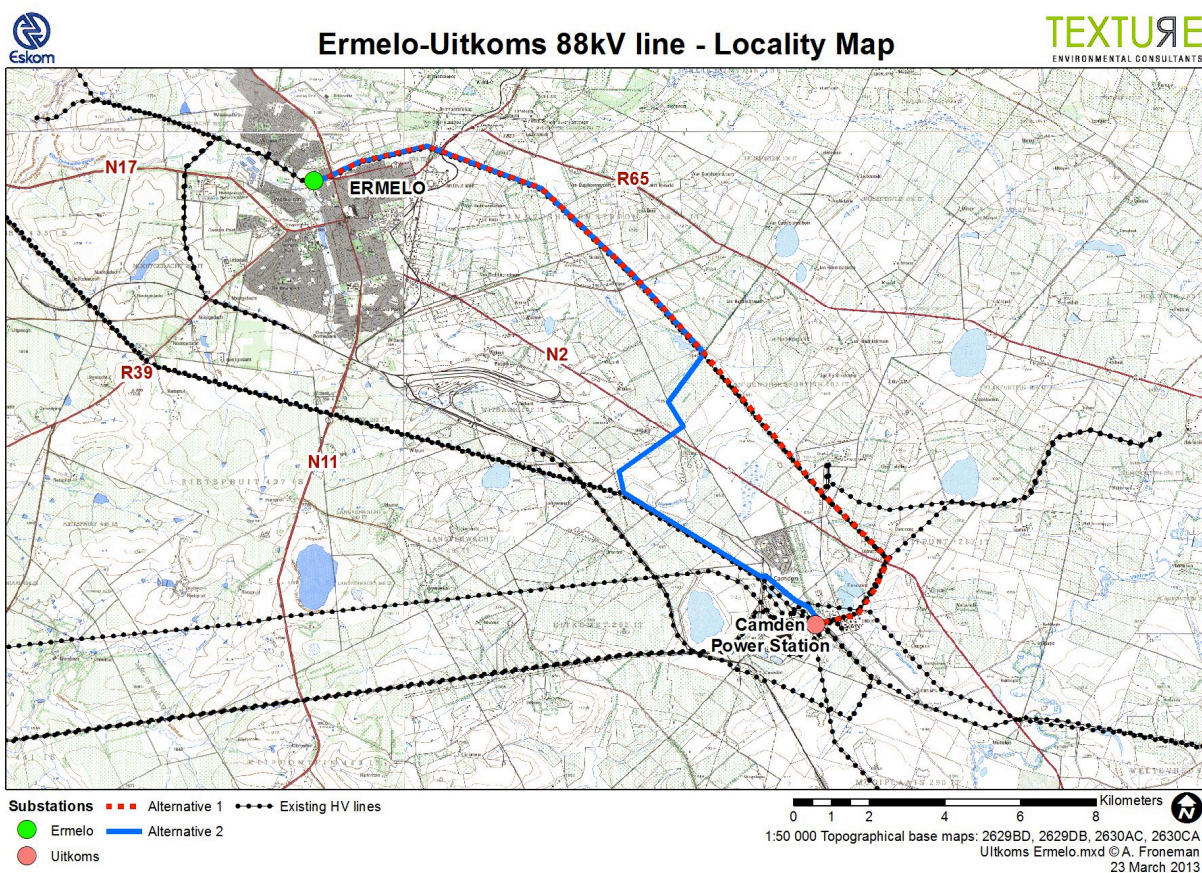
- The **Route Alternative 1** for the line is on the farms Nooitgedacht 268 IT, Van Oudshoornstroom 261 IT portion 86, 27, 57, 75, 9, Rem, 12, 4, 17, 5, 1; Jan Hendriksfontein 263 IT portion 3, 4, 9, 14, 15; Transutu 257 IT portion 0; Jan Hendriksfontein 263 IT portion 6; Witpunt 267 IT portion 9, 22, 34, Witpunt 267 IT (Consolidated to portion 40 of 267 IT) portion 1, Witpunt 267 IT portion 35 and 36; Camden Power Station 329 IT Rem.

### Property descriptions of Route Alternative 2

- The proposed **Route Alternative 2** for the line is on the farms Nooitgedacht 268 IT, Van Oudshoornstroom 261 IT portion 86, 27, 57, 75, 9, Rem, 12, 4, 17, 5, 1; Jan Hendriksfontein 263 IT portion 3; Uitkomst 292 IT (Consolidated to portion 18 of 292 IT) portion 3; Camden Power Station 329 IT Rem; Witpunt 267 IT portion 35 and 36.

Both routes are in the Msukaligwa Local Municipality in the Mpumalanga Province.

The study area is situated on the 1:50 000 topographical base maps 2629BD, 2629DB, 2630AC & 2630CA. (Refer to Appendices A1-A5 for copies of the Locality map and the route maps).



## 1.3 Project Details

### 1.3.1 Need for the project

The current Environmental Impact Assessment application is part of a broader scope of work to improve Eskom's network performance. The existing Distribution networks are exceeding their maximum power transfer capability. Currently the network is experiencing under voltages and is incapable of handling additional loads due to the contingency restraints of the network. This current project aims in addition to address the requested supply. (Refer to the Eskom Scope of work, in Appendix C1, for more information).

### 1.3.2 Project components

The project components are as follows:

1. Construct a 22km 88kV chickadee power line between the existing Ermelo substation to the existing Uitkoms substation;
2. Obtain a corridor of 100 meters wide within which Eskom will be able to obtain a 31 meters wide servitude for the line between Ermelo substation and Uitkoms substation. The servitude is required for maintenance purposes.
3. Construct an access/ construction road of 8 meters wide for the line and substation.

#### 1. *Construct a 88kV power line between the existing Ermelo substation to the existing Uitkoms substation*

It is proposed to construct a 88kV line between the above substations. The proposed structure for the 88kV 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).

#### 2. *Obtain a 100m corridor within which Eskom would be able to locate a servitude area of 36 meters wide for the line between the existing Ermelo substation to the existing Uitkoms*

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 affected 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.

The project involves identification of a 100m corridor within which Eskom would be able to locate a 36m servitude for the powerline between Ermelo substation and Uitkoms substation. 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 88kV or 132kV power lines is 36 meters wide, which implies 18 meters on either side of the power line.

*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 a 132kV or 88kV 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.

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

Access to properties for the purpose of construction are as a rule arranged with all landowners. The existing roads will be used as far as possible. Relevant is the fact that the proposed Route Alternative 2 as well as Alternative 1 is adjacent to existing impact, or existing servitude areas, for most of the alignment. New access will therefore only be required at the sections away from the existing servitude areas. 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 applicable properties, as far as is feasible.

## 2. FEASIBLE AND REASONABLE ALTERNATIVES

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

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

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

Describe alternatives that are considered in this application as required by Regulation 22(2)(h) of GN R.543. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.

The determination of whether site or activity (including different processes, etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the, competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

The identification of alternatives should be in line with the Integrated Environmental Assessment Guideline Series 11, published by the DEA in 2004. Should the alternatives include different locations and lay-outs, the co-ordinates of the different alternatives must be provided. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

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

#### 2.1 ACTIVITY ALTERNATIVES:

##### 2.1.1 Agriculture as alternative activity

The main agricultural activities presently active in the study area are cultivation, cattle farming, sheep farming and goat farming. Cultivation is predominantly maize and beans in the summer season. Most of which is dry land production. Cattle farming is more prominent than sheep or goats. Most of the land actively used for farming in the study area is grazing for cattle. Goat farming is conducted more on a subsistence basis.

The cultivation of land in the study area is not as intensive as found in many of the main maize producing areas of the country. There is also very little cultivation under irrigation taking place at present. No major pivots were observed in the study area. The main farming activity appears to be cattle farming, although even this is not on the scale of those in major cattle producing areas of the country. It is highly likely that farming in the study area is subdued mainly due to the high activity and presence of open-cast coal mining in the area. Large areas of land belong to mines and have been earmarked for open-cast mining. Notwithstanding, the agricultural potential of the land in the study area was taken into account and basic calculations done.

Most of the land in the study area has low to moderate agricultural potential. Nearly all of the land in the study site has been calculated as being 'moderate potential arable land'. Land just north and east of Camden is calculated as being 'very high potential arable land'. Unfortunately most of these lands are presently being open-cast mined, or earmarked for mining. Therefore, the present agricultural potential is non-existent in those areas.

The dominant crop cultivated in the region of the study area is mielies (maize). Although not on as intensive a scale as other well-known maize producing regions of South Africa. Most of the maize cultivation was dryland production, with little, if any, large scale pivot (irrigated) production. The estimated dryland maize yields for the study area, based on the agricultural potential and soil fertility, is low to moderate (that is 3 to 4 tons per hectare). With higher estimated yields potentials east of the study area being at around 6 tons or higher per hectare.

The dominant agricultural land use in the region at present appears to be grazing for livestock, which is primarily cattle. The average potential carrying capacity of the land in the study area has previously been calculated as approximately 5-7 Ha per Animal Unit (AU) or livestock unit. This is seen as being a low to moderate average. Presently much of the grazing land to the north and north-west of Camden is either being open-cast mined or earmarked for coal mining. Which once again reduces the potential grazing capacity of these lands to non-existent.



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.

### 2.2 NO-GO ALTERNATIVE

The term '**fatal flaw**' is used in the pre-application planning and screening phases of a project to evaluate whether or not an impact would have a 'no-go' implication for the project. In the scoping and impact assessment stages, this term is not used. Rather impacts are described in terms of their potential significance.

A potential fatal flaw (or flaws) from a biodiversity perspective is seen as an impact that could have a "no-go" implication for the project. A 'no-go' situation could arise if residual negative impacts (i.e. those impacts that still remain after implementation of all practical mitigatory procedures/actions) associated with the proposed project were to:

- a) Conflict with international conventions, treaties or protocols (e.g. irreversible impact on a World Heritage Site or Ramsar Site);
- b) Conflict with relevant laws (e.g. clearly inconsistent with NEMA principles, or regulations in terms of the Biodiversity Act, etc.);
- c) Make it impossible to meet national or regional biodiversity conservation objectives or targets in terms of the National Biodiversity Strategy and Action Plan (BSAP) or other relevant plans and strategies (e.g. transformation of a 'critically endangered' ecosystem);
- d) Lead to loss of areas protected for biodiversity conservation;
- e) Lead to the loss of fixed, or the sole option for flexible, national or regional corridors for persistence of ecological or evolutionary processes;
- f) Result in loss of ecosystem services that would have a significant negative effect on lives (e.g. loss of a wetland on which local communities rely for water);
- g) Exceed legislated standards (e.g. water quality), resulting in the necessary licences/approvals not being issued by the authorities (eg. WULA);
- h) Be considered by the majority of key stakeholders to be unacceptable in terms of biodiversity value or cultural ecosystem services.

#### **Potential Fatal Flaws for the Project**

There are a few sensitive areas within the study area and these have all been addressed in the report. Proper mitigating measures and recommendations have been put in place to either totally avoid these areas, or reduced impacts. The sensitive areas encountered are predominantly linked to watercourses and their existing floodplains and hillslope seepage areas. No highly sensitive areas or habitats were encountered.

From an ecological (or biodiversity) point of view no fatal flaw (or flaws) were found with regards to the go-ahead (go, no-go option) of the project. In other words, if all recommendations and mitigating measures are put in place the project can go ahead in terms of the ecological component of the project.

It is further 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 a Master Plan for the extension of electrical infrastructure. Should this application not be approved then the supply to the broader area will be unreliable 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 cannot solve the current demand for electricity. The No-Go development alternative is not considered the responsible way to manage the site(s).

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### 2.3 LOCATION/SITE ALTERNATIVES

The project consists of the construction of approximately 22km of 88kV power lines between the existing Ermelo substation and the existing Uitkoms substation. Alternative routes for the power line were considered. Refer to Appendix A1-A5 for the project maps indicating the route Alternatives.

#### 2.3.1 Co-ordinates:

The alternatives for the project are found at approximately:

##### Alternative 1 Route (21.13km):

##### Ermelo substation:

Latitude (Degrees Decimal Minutes)	Longitude (Degrees Decimal Minutes)
26° 30.732' S	29° 58.692' E

250m intervals	Latitude (Degrees Decimal Minutes)	Longitude (Degrees Decimal Minutes)
1	26° 30.678' S	29° 58.866' E
2	26° 30.620' S	29° 59.002' E
3	26° 30.554' S	29° 59.133' E
4	26° 30.488' S	29° 59.264' E
5	26° 30.439' S	29° 59.403' E
6	26° 30.405' S	29° 59.549' E
7	26° 30.371' S	29° 59.695' E
8	26° 30.337' S	29° 59.840' E
9	26° 30.303' S	29° 59.986' E
10	26° 30.269' S	30° 0.131' E
11	26° 30.234' S	30° 0.277' E
12	26° 30.271' S	30° 0.417' E
13	26° 30.322' S	30° 0.557' E
14	26° 30.374' S	30° 0.696' E
15	26° 30.425' S	30° 0.835' E
16	26° 30.476' S	30° 0.974' E
17	26° 30.528' S	30° 1.114' E
18	26° 30.579' S	30° 1.253' E
19	26° 30.630' S	30° 1.392' E
20	26° 30.681' S	30° 1.531' E
21	26° 30.732' S	30° 1.671' E
22	26° 30.784' S	30° 1.810' E
23	26° 30.839' S	30° 1.946' E
24	26° 30.937' S	30° 2.050' E
25	26° 31.035' S	30° 2.154' E
26	26° 31.133' S	30° 2.257' E
27	26° 31.231' S	30° 2.361' E
28	26° 31.329' S	30° 2.465' E
29	26° 31.427' S	30° 2.569' E
30	26° 31.525' S	30° 2.673' E
31	26° 31.623' S	30° 2.777' E
32	26° 31.721' S	30° 2.881' E
33	26° 31.819' S	30° 2.985' E
34	26° 31.916' S	30° 3.089' E
35	26° 32.014' S	30° 3.193' E
36	26° 32.117' S	30° 3.291' E
37	26° 32.222' S	30° 3.386' E
38	26° 32.326' S	30° 3.482' E
39	26° 32.431' S	30° 3.577' E
40	26° 32.535' S	30° 3.673' E
41	26° 32.640' S	30° 3.769' E
42	26° 32.745' S	30° 3.864' E
43	26° 32.849' S	30° 3.960' E

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44	26° 32.954' S	30° 4.055' E
45	26° 33.058' S	30° 4.151' E
46	26° 33.165' S	30° 4.244' E
47	26° 33.273' S	30° 4.335' E
48	26° 33.380' S	30° 4.426' E
49	26° 33.488' S	30° 4.517' E
50	26° 33.596' S	30° 4.608' E
51	26° 33.704' S	30° 4.699' E
52	26° 33.812' S	30° 4.790' E
53	26° 33.920' S	30° 4.880' E
54	26° 34.028' S	30° 4.972' E
55	26° 34.135' S	30° 5.063' E
56	26° 34.243' S	30° 5.153' E
57	26° 34.351' S	30° 5.245' E
58	26° 34.459' S	30° 5.335' E
59	26° 34.567' S	30° 5.426' E
60	26° 34.675' S	30° 5.517' E
61	26° 34.782' S	30° 5.608' E
62	26° 34.890' S	30° 5.699' E
63	26° 34.998' S	30° 5.790' E
64	26° 35.106' S	30° 5.881' E
65	26° 35.212' S	30° 5.975' E
66	26° 35.312' S	30° 6.077' E
67	26° 35.412' S	30° 6.178' E
68	26° 35.511' S	30° 6.280' E
69	26° 35.611' S	30° 6.382' E
70	26° 35.711' S	30° 6.483' E
71	26° 35.811' S	30° 6.585' E
72	26° 35.911' S	30° 6.686' E
73	26° 36.011' S	30° 6.788' E
74	26° 36.112' S	30° 6.884' E
75	26° 36.237' S	30° 6.827' E
76	26° 36.363' S	30° 6.771' E
77	26° 36.488' S	30° 6.715' E
78	26° 36.608' S	30° 6.646' E
79	26° 36.723' S	30° 6.567' E
80	26° 36.839' S	30° 6.488' E
81	26° 36.920' S	30° 6.382' E
82	26° 36.950' S	30° 6.235' E
83	26° 36.980' S	30° 6.088' E
84	26° 37.011' S	30° 5.941' E
85	26° 37.027' S	30° 5.865' E
86	26° 37.051' S	30° 5.848' E

### **Uitkoms substation:**

Latitude (Degrees Decimal Minutes)	Longitude (Degrees Decimal Minutes)
26° 37.051' S	30° 5.848' E

### **Proposed / preferred Alternative 2 (22.18km):**

#### **Ermelo substation:**

Latitude (Degrees Decimal Minutes)	Longitude (Degrees Decimal Minutes)
26° 30.732' S	29° 58.692' E

250m intervals	Latitude (Degrees Decimal Minutes)	Longitude (Degrees Decimal Minutes)
1	26° 30.680' S	29° 58.868' E
2	26° 30.618' S	29° 59.002' E

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3	26° 30.552' S	29° 59.134' E
4	26° 30.487' S	29° 59.265' E
5	26° 30.439' S	29° 59.405' E
6	26° 30.405' S	29° 59.550' E
7	26° 30.371' S	29° 59.696' E
8	26° 30.336' S	29° 59.841' E
9	26° 30.302' S	29° 59.987' E
10	26° 30.268' S	30° 0.133' E
11	26° 30.234' S	30° 0.278' E
12	26° 30.272' S	30° 0.418' E
13	26° 30.323' S	30° 0.558' E
14	26° 30.374' S	30° 0.697' E
15	26° 30.426' S	30° 0.836' E
16	26° 30.477' S	30° 0.976' E
17	26° 30.528' S	30° 1.115' E
18	26° 30.579' S	30° 1.254' E
19	26° 30.630' S	30° 1.394' E
20	26° 30.682' S	30° 1.533' E
21	26° 30.733' S	30° 1.672' E
22	26° 30.784' S	30° 1.811' E
23	26° 30.840' S	30° 1.947' E
24	26° 30.938' S	30° 2.051' E
25	26° 31.036' S	30° 2.155' E
26	26° 31.134' S	30° 2.258' E
27	26° 31.232' S	30° 2.362' E
28	26° 31.330' S	30° 2.466' E
29	26° 31.428' S	30° 2.570' E
30	26° 31.526' S	30° 2.674' E
31	26° 31.624' S	30° 2.778' E
32	26° 31.721' S	30° 2.882' E
33	26° 31.820' S	30° 2.986' E
34	26° 31.917' S	30° 3.090' E
35	26° 32.015' S	30° 3.194' E
36	26° 32.118' S	30° 3.291' E
37	26° 32.223' S	30° 3.386' E
38	26° 32.328' S	30° 3.482' E
39	26° 32.432' S	30° 3.577' E
40	26° 32.537' S	30° 3.672' E
41	26° 32.642' S	30° 3.768' E
42	26° 32.747' S	30° 3.863' E
43	26° 32.852' S	30° 3.958' E
44	26° 32.956' S	30° 4.053' E
45	26° 33.061' S	30° 4.149' E
46	26° 33.166' S	30° 4.244' E
47	26° 33.278' S	30° 4.190' E
48	26° 33.390' S	30° 4.106' E
49	26° 33.503' S	30° 4.023' E
50	26° 33.616' S	30° 3.940' E
51	26° 33.728' S	30° 3.856' E
52	26° 33.841' S	30° 3.773' E
53	26° 33.959' S	30° 3.801' E
54	26° 34.078' S	30° 3.872' E
55	26° 34.197' S	30° 3.943' E
56	26° 34.288' S	30° 3.859' E
57	26° 34.372' S	30° 3.741' E
58	26° 34.456' S	30° 3.623' E
59	26° 34.541' S	30° 3.505' E
60	26° 34.625' S	30° 3.388' E
61	26° 34.709' S	30° 3.270' E
62	26° 34.794' S	30° 3.152' E
63	26° 34.884' S	30° 3.051' E
64	26° 35.017' S	30° 3.078' E
65	26° 35.150' S	30° 3.104' E

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66	26° 35.234' S	30° 3.216' E
67	26° 35.310' S	30° 3.341' E
68	26° 35.386' S	30° 3.466' E
69	26° 35.462' S	30° 3.590' E
70	26° 35.537' S	30° 3.715' E
71	26° 35.613' S	30° 3.840' E
72	26° 35.689' S	30° 3.964' E
73	26° 35.765' S	30° 4.089' E
74	26° 35.841' S	30° 4.213' E
75	26° 35.917' S	30° 4.338' E
76	26° 35.993' S	30° 4.463' E
77	26° 36.069' S	30° 4.587' E
78	26° 36.145' S	30° 4.712' E
79	26° 36.221' S	30° 4.837' E
80	26° 36.297' S	30° 4.961' E
81	26° 36.360' S	30° 5.088' E
82	26° 36.413' S	30° 5.210' E
83	26° 36.505' S	30° 5.320' E
84	26° 36.597' S	30° 5.430' E
85	26° 36.689' S	30° 5.540' E
86	26° 36.761' S	30° 5.667' E
87	26° 36.849' S	30° 5.778' E
88	26° 36.961' S	30° 5.862' E
89	26° 37.027' S	30° 5.865' E
90	26° 37.051' S	30° 5.848' E

**Uitkoms substation:**

Latitude (Degrees Decimal Minutes)	Longitude (Degrees Decimal Minutes)
26° 37.051' S	30° 5.848' E

### 2.3.2 Specialist input

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:

#### 2.3.2.1 Ecological Status Report

**The ecological status report identified the following:**  
(Refer to the full Ecological Status Report in Appendix D1)

#### Water

The entire study area falls within the primary catchment area of the Vaal Catchment. Major threats to the surface water and the affiliated ecosystems in the region are afforestation and open-cast coal mining. The primary river within the study area is the Witpuntspruit. A few smaller streams such as the Humanspruit flow into the Witpuntspruit, which then flow in a south-east direction and eventually into the Vaal River. The Witpuntspruit is a perennial stream with a moderately sized floodplain. To the north-east of the Ermelo Substation the proposed powerline routes run close to, and parallel with, a tributary of the Klein-Drinkwaterspruit. This small stream runs in a drainage line and stormwater run-off from the surrounding suburbs of Ermelo is channelled into it. No large open wetlands such as endorheic pans, typically of the Mpumalanga Highveld are present within the proposed powerline corridors. However, the powerline corridors do impact on the floodplains of the Witpuntspruit, as well as on a few seepage wetlands close to Uitkoms Substation and Camden Powerstation. No wetlands in pristine condition occur within the proposed powerline corridors of the study area.

#### Natural vegetation

The natural vegetation of the study area is entirely that of Eastern Highveld Grassland, with flat open plains and slight to moderately undulating plains. Some low hills and pan depressions are present, with basically no indigenous woodland component present. The small wetlands found scattered within the study area are those of Eastern

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Temperate Freshwater Wetlands vegetation. Most of the trees found in the natural vegetation of the study area are aliens and predominantly blackwattle (*Acacia mearnsii*). The Eastern Highveld Grassland is an endangered veldtype, with a very low percentage conserved in statutory reserves.

Floral Species of Conservation Concern: *Gladiolus malvinus*, *Crinum bulbispermum*, *Ilex mitis*, *Gunnera perpensa*, *Asparagus fractiflexus*, *Nerine gracilis*, *Aspidoglossum xanthosphaerum*, *Khadia carolinensis*, *Merwillia plumbea*, *Habenaria barbetoni*, *Crinum bulbispermum*, *Aloe cooperi*, *Gunnera perpensa*, *Eucomis montana*, *Rapanea melanophloeos*.

There are numerous other herbaceous, bulbous geophytes (eg. *Gladiolus*, *Iris*) that are likely to occur in the grasslands and wetlands of the study area. Many of these species are under threat, although not necessary currently registered as Red Data species. It is therefore recommended for sake of ease for contractors to consider all such species as sensitive and avoid disturbing them or erecting pylon supports directly on top of encountered populations.

Red Data Species highly likely to occur in the area: *Alepidea longeciliata*, *Brachycorythis conica* subsp. *Transvaalensis*, *Disa chrysostachya*, *Disa cooperi*, *Disa nervosa*, *Disa versicolor*.

During site visits no terrestrial Red Data faunal species were encountered in the study area, although previously evidence of Pangolin was seen east of the study site. However, due to the habitats in the study area there remains the high potential for certain Red Data species, to be present, especially along ridges and in the open grassy lowlands in the east of the study area. Red Data Faunal Species likely to occur in the area: *Pyxicephalus adspersus*, *Atelerix frontalis*, *Manis temmincki*, *Mellivora capensis*, *Pipistrellus rusticus*, *Python natalensis*.

### Ecological Sensitivities

The ecological sensitivity of the study area is determined by combining the sensitivity analyses of both the floral and faunal components. The highest calculated sensitivity unit of the two categories is taken to represent the sensitivity of that ecological unit, whether it is floristic or faunal in nature. Only wetlands are seen as having a high ecological sensitivity and deemed as 'No-Go' zones. Eventhough no wetlands in pristine condition occur in the study area. The wetlands that occur are predominantly hillslope seepages and floodplains associated with the streams and small rivers in the study site. The transformed areas within the study site are not seen as sensitive. These include areas of regularly cultivated lands and rehabilitated opencast mines. Both these 'habitat types' are viewed as 'Go Zones' with Low sensitivity ratings. (Refer to sensitivity maps in Appendices A6-A7)

Ecological sensitivities of habitats in study area

Ecological Community	Floristic Sensitivity	Faunal Sensitivity	Ecological Sensitivity	Development Go-Ahead
Cultivated Lands	Low	Low	Low	Go
Rehabilitated	Low	Low	Low	Go
Grassland Plains	Medium	Medium/Low	Medium	Go-Slow
Drainage Lines	Medium	Medium/Low	Medium	Go-Slow
Wetlands	High	High	High	No-Go
Rivers	Medium/High	Medium/High	Medium/High	Go-But
Ridges	Medium/High	Medium/High	Medium	Go-Slow

From an ecological (or biodiversity) point of view no fatal flaw (or flaws) were found with regards to the go-ahead (go, no-go option) of the project. In other words, if all recommendations and mitigating measures are put in place the project can go ahead in terms of the ecological component of the project.

### Impacts

No proposed impacts on the ecology of the environment were identified as possibly being beneficial. However, the impact of the powerline is calculated as 'low', with the greatest impact (Moderate) being on the floodplains of the streams. The implementation of proposed mitigating measures will reduce potential impacts.

### Summary of impacts

ACTIVITY	IMPACT SUMMARY	SIGNIFICANCE	PROPOSED MITIGATION
<b>Alternative Route: 1 (Preferred alternative)</b>			
Construction Erection of power lines	Direct impacts: Lines in open grassland plains	Low. Study site. Short-term.	See mitigating measures

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	Direct impacts: Lines in river floodplains	Moderate. Isolated sites. Short-term		
	Indirect impacts: Temporary construction facilities & workers	Low. Study Site	Stay out of sensitive areas identified. See mitigating measures	
	Cumulative impacts:	Neutral. None. Because existing 88kV line to be removed	See mitigating measures	
<b>Maintenance</b>	Direct impacts:	Low. Study site.	See mitigating measures	
Inspection of power lines	Indirect impacts:	Neutral. None.	See mitigating measures	
	Cumulative impacts:	Neutral. None.	See mitigating measures	
<b>Alternative Route 2</b>				
<b>Construction</b>	Direct impacts: Lines in open grassland plains	Low. Study site. Short-term.	See mitigating measures	
Erection of power lines	Direct impacts: Lines in river floodplains	Moderate. Isolated sites. Short-term		
	Indirect impacts: Temporary construction facilities & workers	Low. Study Site		Stay out of sensitive areas identified. See mitigating measures
	Cumulative impacts:	Neutral. None.		See mitigating measures
<b>Maintenance</b>	Direct impacts:	Low. Study site. Short-term.	See mitigating measures	
Inspection of power lines	Indirect impacts:	Neutral. None.	See mitigating measures	
	Cumulative impacts:	Neutral. None.	See mitigating measures	

### Mitigation of impacts

A number of mitigating and management measures have been recommended. The implementation of these measures will significantly reduce the potential impacts the project may have on the natural environment. Measures recommended include some of the following:

- No area for a campsite or temporary storage site should be selected where it would be necessary to cut down any trees or clear any shrub land whatsoever, not even alien species.
- No indigenous trees or shrubs outside of the powerline 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.
- An on going 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 a way as to allow the natural grasses and pioneer plants to colonise the disturbed areas. Typically there should not be any, or very little, infestation of weeds under the powerlines where the veld / grass has only been cut. The weeds found in the area typically invade disturbed soils, with the exception of tree species, but these typically invade kloofs, ravines and drainage lines.
- 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 powerlines. All control of weeds to be mechanical in nature. That is, physically cut down, pulled out or mowed over.
- All construction material, equipment and any foreign objects brought into the area by contractors and staff to be removed immediately (within two weeks) after construction.
- Removal of all waste construction material to an approved waste disposal site. And only by an official registered waste removal company.
- No temporary or other construction facilities to be erected or stored within 100m of the banks of the rivers, streams or main drainage lines.
- Positioning of any pylons need to be a minimum of 32m (preferably 50m) from the edge of the river banks or outside of the 1 in 100 year floodline, whichever is furthest.
- No campsite, temporary storage facility, or any other facility to be erected within 500m of a wetland.

### Recommended route

Line variant recommendations are made on the strength and combination of all the impacts and mitigating actions. As well as on the sensitivities of the various biophysical features, faunal habitats and vegetation types that each proposed route alternative impacts on.

A comparison between the two alternative routes, as to the number of ecologically sensitive units each one potentially impacts on, is shown in the Table below.

**Table: Comparison of Potential Impacts by Alternative Routes**

Ecological Sensitive Units	Alternative Route 1	Alternative Route 2
Areas of High ecological sensitivity	0	0
No-Go areas in close proximity	4	4

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No. of river & stream crossings	6	4
No. of major drainage line crossings	13	11
Rocky outcrops in corridor	0	0
Ridges in corridor	0	0
Major Wetlands encountered	2	4
<b>Total impacts per route</b>	<b>25</b>	<b>23</b>

When also taking other general impacts into account there is the issue of the higher potential impact in relation to watercourses by Alternative Route 1. Although both alternative routes run within the floodplain of the Witpuntspruit, Alternative Route 1 does so over a much greater distance.

Taking all of the above issues into account, the Ecological recommended line variant for the proposed project is: *Alternative Route 2*.

### Potential water uses

Certain parts of the proposed powerline corridors run parallel in close proximity to the Witpuntspruit, or within the floodplain of the spruit itself. These areas include most of the medium / high sensitivity areas. There are a few areas where other small streams flowing into the Witpuntspruit converge, creating a larger floodplain. These floodplain areas are classified as wetland types and cannot be avoided by the powerline corridors. There is also a wetland area near to Uitkoms Substation and Camden Powerstation. These areas are seen as potential 'water uses' and it is strongly recommended that a formal Water Use Licence Application (WULA) be completed and submitted for the project.

### 2.3.2.2 Bird Impact Assessment

#### The Bird Impact Assessment indicated the following:

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

Impacts that could be associated with a project of this nature include:

- collision of birds with the overhead cables;
- electrocution;
- destruction of habitat;
- and disturbance of birds.

Collisions poses the biggest potential risk to avifauna, while habitat disturbance to avifauna is expected to be the second most important impact of this project.

Numerous microhabitats were identified in the broader area which may attract various bird species, with grasslands, cultivated lands, streams, dams and wetlands being areas present on site, most likely to attract sensitive species. The South African Bird Atlas Project data (SABAP1) recorded a total of 18 Red Data species comprising 1 Endangered, 7 Vulnerable and 10 Near-threatened species. The White Stork and Abdim's Stork, which are not listed, but are protected internationally through the Bonn Convention on Migratory species, were also recorded and it was found that only 5 of the 18 red-listed species recorded in SABAP1 had been recorded by SABAP2. Following a site visit, and examination of all available data, the following species were identified as Focal Species for this study: Greater Flamingo, Southern Bald Ibis, Grey Crowned Crane, African Marsh Harrier, Blue Korhaan, Secretarybird and White Stork.

#### **Bird micro habitats**

In addition to the description of vegetation, it is important to understand the habitats available to birds at a smaller spatial scale, i.e. micro habitats. Micro habitats are shaped by factors other than vegetation, such as topography, land use, food sources and man-made factors. Investigation of this study area revealed the presence of the following bird micro habitats.



### *Built-up Residential and Industrial areas:*

These areas have very little value to any sensitive bird species due to their degraded nature and the associated disturbance factor.

### *Grasslands:*

This is the most prolific microhabitat on site, in line with the vegetation and land use descriptions discussed above. Grasslands, in their true form, represent a significant foraging and/or hunting area for many bird species. Although most of the grassland areas seem to be disturbed to some degree, there may well be patches in the area that attract sensitive species.

### *Wetlands, Pans and Dams:*

There are a few natural pans/wetlands associated with the habitat type "Eastern Temperate Freshwater Wetlands", as well as farm dams scattered throughout the broader study area. Neither route alternative appears to be affected more than the other by these sensitive micro-habitats.

### *Rivers or drainage lines:*

The wooded riparian habitat alongside a river may provide habitat for various species. Rivers also represent feeding areas and rivers and drainage lines also represent important flight paths for many species. The Vaal River begins as a series of small streams, one of which is the Witpuntspruit traversing the study area. Numerous smaller drainage lines, some of which do not always carry water are also present on site. However, these drainage lines may still serve as flight paths for several bird species.

### *Arable and/or cultivated lands:*

Arable or cultivated lands can represent a significant feeding areas for many bird species in any landscape.

### *Stands of Alien Trees:*

Patches of alien trees were observed and may provide perching, roosting and nesting habitat for various raptor species

### **Focal Species List**

Determining the focal species for this study, i.e. the most important species to be considered, is a four step process. Firstly, the micro-habitats available on site were identified. An analysis of the above existing avifaunal data represents the second step, i.e. which species occur historically in the area at significant abundances. The third step is to identify those species which have a high likelihood of being present on, and/or utilizing, the site, based on the above two steps and are more likely to be impacted upon by the power-line and associated development. In general, large, heavy flying birds are more vulnerable to collision with over-head powerlines, while perching Raptors are more vulnerable to electrocution. The fourth and final step was to consider the species conservation status or other reasons for protecting the species. This involved primarily consulting the Red List bird species (Refer to Bird Impact Assessment report).

*The resultant list of 'focal species' for this study is as follows: Greater Flamingo, Southern Bald Ibis, Grey Crowned Crane, African Marsh Harrier, Blue Korhaan, Secretarybird and White Stork.*

### **Assessment of impacts**

#### **Electrocutions**

Electrocution refers to the scenario where a bird is perched or attempts to perch on the electrical structure and causes an electrical short circuit by physically bridging the air gap between live components and/or live and earthed components. Electrocution is possible on 88kV power lines, especially where large raptors and vultures feature prevalently. Fortunately, it is highly unlikely that vultures will occur in the study area and few large raptors were recorded in the SABAP data sets, so *the impact of electrocution is likely to be of Low Significance* for the proposed power line if the proposed mitigations are implemented.

#### **Collisions**

In general, large lines with earth wires that are not always visible to birds can have the largest impact in terms of collisions. Most heavily impacted upon are korhaans, bustards, storks, cranes and various species of water birds. These species are mostly heavy-bodied birds with limited manoeuvrability, which makes it difficult for them to take the

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necessary evasive action to avoid colliding with power lines. Unfortunately, many of the collision sensitive species are considered threatened in southern Africa. Collision of certain large flying bird species such as Southern Bald Ibis, White Stork, Blue Korhaan, Secretarybird, Greater Flamingo and Grey Crowned Crane with the proposed lines is a possibility, and *this impact is predicted to be of Moderate Significance*.

### **Habitat destruction**

During the construction phase and maintenance of substations and power lines some habitat destruction and alteration inevitably takes place. This happens with the construction of access roads, and the clearing of servitudes, as well as clearing vegetation at the substation site. Servitudes have to be cleared of excess vegetation at regular intervals in order to allow access to the line for maintenance, to prevent vegetation from intruding into the legally prescribed clearance gap between the ground and the conductors and to minimize the risk of fire under the line which can result in electrical flashovers. These activities have an impact on birds breeding, foraging and roosting in or in close proximity of the servitude through modification of habitat. *Habitat destruction along route Alternative 1 is anticipated to be of Moderate Significance, while habitat destruction along route Alternative 2 is anticipated to be of Low to Moderate significance in this study area.*

### **Disturbance**

Similarly, the above mentioned construction and maintenance activities impact on bird through disturbance, particularly during bird breeding activities. *Disturbance of birds is anticipated to be of Moderate Significance.*

### **Mitigations**

Potential mitigations for the identified impacts are shown in the table below.

#### **Construction Phase**

<i>Impact</i>	<i>Mitigation</i>
Habitat destruction	Strict control should be maintained over all activities during construction, in particular heavy machinery and vehicle movements, and staff. It is difficult to mitigate properly for this as some habitat destruction is inevitable. It is important to ensure that the construction Environmental Management Plan incorporates guidelines as to how best to minimize this impact.
Disturbance	Strict control should be maintained over all activities during construction. It is difficult to mitigate properly for this as some disturbance is inevitable. <b>During Construction, if any of the "Focal Species" identified in this report are observed to be roosting and/or breeding in the vicinity (within 500m of the power line), the EWT is to be contacted for further instruction.</b>

#### **Operational Phase**

<i>Impact</i>	<i>Mitigation</i>
Collision	Mark the relevant sections of line with appropriate marking devices. These sections of line, and the exact spans, should be finalised by a "walk down" as part of the Environmental Management Programme (EMP) phase, once power-line routes are finalised and pylon positions are pegged.
Electrocution	It is highly recommended that the steel monopole design be used and that this incorporates the standard bird perch. If this is the case then most raptors and birds of high electrocution risk will perch well above the conductors and out of harm's way. In addition it is critical that all clearances between live and earth components are greater than 1.8 meters. If this is the case then the impact of bird electrocution will be very minimal.

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Disturbance during routine maintenance.	No nests may be removed, without first consulting the EWT's Wildlife and Energy Program (WEP). During maintenance, <b>if any of the "Focal Species" identified in this report are observed to be roosting and/or breeding in the vicinity, the EWT is to be contacted</b> for further instruction.
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## Sensitivity analysis

In general the site has been determined to have moderate sensitivity in terms of avifauna, based on the occurrence of a number of listed species in the study area, as well as the various micro-habitats available to avifauna.

- In terms of collision, the sensitivity appears moderate,
- in terms of electrocution, the area has a low sensitivity.

Two sensitivity zones are therefore identified

- The area within 100m on either side of the Witpuntspruit, as well as all open water bodies and farm dams in the area are classified as *Medium-High Sensitivity*. Within these areas, it is recommended that construction of the power line be avoided, if possible, and any line that is built in these zones will require collision mitigation in the form of bird flight diverters ("flappers").
- All remaining areas on the site are classed as *Low-Medium Sensitivity*. At this stage, some of the more natural undisturbed grassland patches may require mitigation in the form of line marking, but this will be confirmed during the EMP phase of the process.

## Comparison of alternatives

In order to rank these alternatives the below was compiled and the two alignments given a rating on a scale of 1 to 5, with 1 being the least preferred and 5 being the most highly preferred option.

TABLE: Preference rating for the three power line route alternatives.

Line Alternative	Preference Rating
1	4
2	4

As can be seen from the discussions and table above, both routings have equal preference and either is acceptable, with the mitigations proposed.

## Recommendation

In conclusion, the proposed project can be built provided that the various mitigation measures recommended in this report are implemented.

- From an avifaunal perspective, route alternative 2 poses a slightly higher risk of collision, as a section will not follow existing linear infrastructure.
- However, route alternative 1 falls within a "wetland" area along the Witpuntspruit, and is likely therefore to have more of an impact in terms of disturbance to avifauna and habitat destruction.
- Therefore it was found that although both alternatives are acceptable, with the proposed mitigations implemented, neither one was preferred.
- Line marking will be required particularly along streams and near to wetlands, dams and pans, as well as possibly in the less disturbed grassland areas. Avifaunal input in to the EMP (in the form of a site "walk down") is recommended in order to, "fine tune" these sensitive zones, and to identify the spans of line for marking to mitigate for bird collisions, once the route is chosen and the tower positions have been pegged. Provided that the high risk sections of line are mitigated in the form of marking, the impact should be contained.
- Electrocutions can be successfully mitigated by ensuring that a bird-friendly monopole structure is used.

### 2.3.2.3 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)

A **Phase I Heritage Impact Assessment (HIA) study** as required in terms of Section 38 of the National Heritage Resources Act (No 25 of 1999) was done.

The Phase I HIA study for the proposed Eskom Project revealed no presence of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) in and near the Eskom Project Area.

- The Highveld region is poor on archaeological sites. Some Late Iron Age sites occur northwest of Ermelo at Tafelkop.
- The town of Ermelo was destroyed during the Anglo Boer War as well as all farmhouses. The area had to be rebuilt after the war.
- No important cultural heritage resources were found near Alternative 1 or Alternative 2 routes.

#### **Recommendation**

- Both Alternative 1 and Alternative 2 are recommended for the proposed 88kV power line between Ermelo substation and Uitkoms substation.
- If archaeological/palaeontological or other types of heritage resources are uncovered during construction/ground clearance activities SAHRA (Mrs Colette Scheermeyer/Mr Phillip Hine, tel: 021 462 4502) and a professional archaeologists/palaeontologist dependent on the finds must be alerted immediately to inspect the finds. A rescue excavation may be required if the identified heritage resource/s is deemed to be significant.

### 2.3.2.4 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.

#### **Summary of findings**

A desktop palaeontological impact assessment scope and study was undertaken and the following is reported:

The geology of the Karoo Supergroup, Ecca Group, Vryheid Formation (Pv) consists of sandstone, shale and coal. The Karoo Supergroup covers large areas of the southern African continent. The largest basin is the area known as the Karoo, but smaller basins are located in the Lebombo area, Springbok flats and Ellisras, and north of the Soutpansberg towards Tshipise-Pafuri and further westward in Namibia.

The sediments of the Ecca Group are lacustrine and marine to fluvio-deltaic. The Ecca Group is known for its coal (mainly the Vryheid Formation) and uranium. The coalfields formed due to the accumulation of plant material in shallow and large swampy deltas. Fossils that may occur are the earliest aquatic reptile *Mesosaurus* and arthropods (Whitehill Formation), marine invertebrates (Prince Albert Formation), bivalves (Volksrust Formation), trace fossils and plants (*Glossopteris*, ferns, horsetails, clubmosses and cordaitales) (Vryheid Formation).

South African coal is bituminous and contains about 85% carbon.

The area between Ermelo and Bethal hosts an exceptional high proportion of Karoo dolerite, barren of fossils. This dolerite is often mined and used as road gravel.

Palaeontological sensitivity is MODERATE. There is evidence of mining activity past and present, mainly coal.

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## Recommendation:

- There is no objection to the development of the construction of the new 22km 88kV Chikadee powerline between substations Ermelo and Uitkoms. Preferred choice: Alternative 1 or 2 as both have equal impact and mostly follows the existing HV lines.
- It may be necessary to perform a Phase 1 Palaeontological Impact Assessment to determine whether the planting of pylons will affect fossiliferous outcrops as the palaeontological sensitivity is MODERATE. A Phase 2 Palaeontological Mitigation may be required taken into account the overall palaeontological impact is LOW to VERY HIGH depending on the outcome of the Phase 1 Palaeontological Impact Assessment.
- The following should be conserved: if any palaeontological material is exposed during digging, excavating, drilling or blasting SAHRA must be notified. All construction activities must be stopped and a palaeontologist should be called in to determine proper mitigation measures.

## 2.4 CONCLUSION

Alternative routes have been investigated for the project. From a heritage, palaeontological, ecological as well as bird impact viewpoint, both Route Alternatives are acceptable, with the proposed mitigations implemented. Although from an ecological viewpoint Alternative Route 2 is slightly preferred.

The final decision between Route 1 or 2 should be made on the accumulative weight of other parameters such as feedback from public participation, land tenure issues, construction costs, etc. **Currently, Alternative 2 is preferred** as the final route alignment due to the above investigations favouring alternative 2.

The **route alternative 1** for the line is on the farms Nooitgedacht 268 IT, Van Oudshoornstroom 261 IT portion 86, 27, 57, 75, 9, Rem, 12, 4, 17, 5, 1; Jan Hendriksfontein 263 IT portion 3, 4, 9, 14, 15; Transutu 257 IT portion 0; Jan Hendriksfontein 263 IT portion 6; Witpunt 267 IT portion 9, 22, 34, Witpunt 267 IT (Consolidated to portion 40 of 267 IT) portion 1, Witpunt 267 IT portion 35 and 36; Camden Power Station 329 IT Rem.

The **proposed route alternative 2** for the line is on the farms Nooitgedacht 268 IT, Van Oudshoornstroom 261 IT portion 86, 27, 57, 75, 9, Rem, 12, 4, 17, 5, 1; Jan Hendriksfontein 263 IT portion 3; Uitkomst 292 IT (Consolidated to portion 18 of 292 IT) portion 3; Camden Power Station 329 IT Rem; Witpunt 267 IT portion 35 and 36.

Both routes are in the Msukaligwa Local Municipality in the Mpumalanga 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 and 2.*

## 3. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative: <b>N/A</b>		Size of the activity:
Alternative A11 (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:
Alternative 1		21.13km
Alternative 2 (preferred alternative)		22.18km

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

Alternative:		Size of the site/servitude:
Alternative 1		31m x 21 130m = 655 030m <sup>2</sup>
Alternative 2 (preferred alternative)		31m x 22 180m = 687 580m <sup>2</sup>

<sup>1</sup> "Alternative A.." refer to activity, process, technology or other alternatives.

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## 4. 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 or in the servitude areas of the existing lines. 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.

## 5. 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 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.). The map must indicate the following:

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

## 6. LAYOUT/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:

- the property boundaries and numbers of all the properties within 50 metres of the site;
- the current land use as well as the land use zoning of the site;
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
- servitude(s) indicating the purpose of the servitude;
- a legend; and
- a north arrow.

## 7. SENSITIVITY MAP

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;
- 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 infested with alien species); and
- critical biodiversity areas.

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The sensitivity map must also cover areas within 100m of the site and must be attached in Appendix A.

## 8. 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 report. It must be supplemented with additional photographs of relevant features on the site, if applicable.

## 9. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of at least 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.

## 10. ACTIVITY MOTIVATION

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

1. Is the activity permitted in terms of the property's existing land use rights?	YES	NO	Please explain
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.			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES	NO	Please explain
Mpumalanga Province has identified six priority areas of intervention as part of the Mpumalanga Provincial Growth and Development Strategy (PGDS) that will assist to stimulate economic growth poverty reduction and overall economic impact, viz:			
<ul style="list-style-type: none"> <li>• Economic Development (i.e. investment, job creation, business and tourism development and SMME development)</li> <li>• Infrastructure Development (i.e. urban/rural infrastructure, housing and land reform)</li> <li>• Human Resource Development (i.e. adequate education opportunities for all)</li> <li>• Social Infrastructure (i.e. access to full social infrastructure)</li> <li>• Environmental Development (i.e. protection of the environment and sustainable development)</li> <li>• Good Governance (i.e. effective and efficient public sector management and service delivery)</li> </ul>			
Vision 2014 is functionally part of the (PGDS) and care has been taken that planning in the municipal IDP has incorporated this vision. Vision 2014 provides a series of milestones to ensure progressive attainment of opportunities envisaged. One of these milestones are: - By 2012 there must be electricity in all households.			
(b) Urban edge / Edge of Built environment for the area	YES	NO	Please explain
The project will not compromise the integrity of the urban edge.			
(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).	YES	NO	Please explain
Msukaligwa municipality is one of the municipalities within Gert Sibande District Municipality. The area of jurisdiction of the municipality comprises of Ermelo, Breyten, Chrissiesmeer, Lothair, Davel, Sheepmoor and Warburton with Ermelo as the major urban centre and economic hub of the municipality. The Eastern part of the municipality comprises of Chrissiesmeer forming part of the Mpumalanga Lake District known for its distinct species of frogs, wetlands and the lakes. Warburton, Sheepmoor and Lothair is characterised by forestry plantations and few agricultural activities. Ermelo and Breyten are surrounded by coal mines and agricultural activities while Davel is dominated by agriculture.			
The Integrated Development Plan reflects, as a priority and objective the provision of electricity to all communities by 2012.			
The Municipal Turnaround Strategy has identified areas that needs urgent intervention. Gaps identified in accordance with the five year Local Government Strategic Agenda are being prioritised within the municipal IDP which includes the following:			

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<ul style="list-style-type: none"> <li>• Basic Service Delivery</li> <li>• Upgrading of purification plants to address bulk water supply</li> <li>• Reducing water losses and improve water supply through replacement of aging infrastructure</li> <li>• Improving on sanitary services at rural areas and maintenance of aging infrastructure at urban areas</li> <li>• Roads and stormwater management, maintenance and construction</li> <li>• The development of services and infrastructure master plans</li> <li>• <b>Electricity supply at farm areas and newly established towns/townships</b></li> </ul> <p>etc..</p> <p>Electricity supply is therefore identified as a key project in the PSDF, the IDP and the SDF.</p>			
(d) Approved Structure Plan of the Municipality	YES	NO	Please explain
The development will not conflict/compromise the structure plan of the municipality.			
(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)	YES	NO	Please explain
(f) Any other Plans (e.g. Guide Plan)	YES	NO	Please explain
3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?	YES	NO	Please explain
Refer to 2 (a) and 2(c).			
4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)	YES	NO	Please explain
<p>South Africa is coming out of the economic downturn but inadequate power supply could undermine the country's economic recovery and ability to create new jobs. A World Bank loan was granted and offers low-cost capital with long repayment periods. In addition the loan offers a chance to borrow for renewable technologies.</p> <p>In 2003 the Government of South Africa (GoSA) launched the Free Basic Electricity (FBE) policy that provides 50 kilowatt hours (KWh) of free electricity per month to poor families. For a sense of scale, 1 kWh can run a small business kiosk for a day; 50 kWh per month is enough to light 3 lamps and run a small appliance (water heater, TV, or refrigerator). Local governments decide who qualifies for free basic services under criteria set for registering households. Today Eskom provides free basic electricity to 27% of its customer households.</p> <p>The FBE system is supplemented by cross-subsidies from large customers to households using less than 350 KWh/months. The tariffs for this category of customers are usually 25% lower than for customers who consume more than 350 kWh/month.</p> <p>The current Environmental Impact Assessment application is part of a broader scope of work to improve Eskom's network performance. The existing Distribution networks are exceeding their maximum power transfer capability. Currently the network is experiencing under voltages and is incapable of handling additional loads due to the contingency restraints of the network.</p>			
5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)	YES	NO	Please explain
<p>The current application is by Eskom Distribution to strengthen /extend their networks. The local municipality will not be requested to cater for the development. 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 recycled 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 other waste that cannot be recycled (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.</p>			



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6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)	YES	NO	Please explain
Refer to above responses.			
7. Is this project part of a national programme to address an issue of national concern or importance?	YES	NO	Please explain
<p>Over the past 20 years, South Africa and Eskom have increased access to electricity from 34% to 81% but they have made limited investments in new large-scale power generation. While other countries have built up enormous power generation capacity, South Africa (and the neighboring countries) have scraped by with power plants built many years ago. Today the South African energy system is under enormous stress and unable to meet the demand.</p> <p>South Africa aims to add a significant amount of base load power to the main grid and jump-start their investments in renewable technologies. The Government of South Africa has an annual budget for rural electrification and a program in place to connect the remaining 19 % of households by 2014. The majority of these households are poor. Without additional power generation capacity, Eskom will find it harder to connect the remaining households that still do not have access to electricity. In addition to household needs, demand is also growing from commercial and small industrial developments as well as schools and health services in rural areas. This project aims to extend the Eskom Distribution networks to subsequently connect households and other developments.</p>			
8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)	YES	NO	Please explain
<p>The project entails the identification of potential alternative corridor routes for the construction of the power lines. Routes with the least environmental impact are favoured. The following is relevant:</p> <ul style="list-style-type: none"> <li>• The design for the power line route and the placement of structures should be accommodating to existing structures in the alignment of the route.</li> <li>• Routes with evident visual disturbance caused by existing power lines or roads are in general more acceptable than traversing through pristine area.</li> <li>• For the above reasons the Route alternatives had been proposed adjacent to existing disturbance as far as is achievable. (e.g. Route Alternative 2 follows existing power lines for most of the way and Route Alternative 1 for the whole route).</li> <li>• During the course of the EIA, all affected landowners were identified and consulted with regarding the proposed project. Meetings were conducted with affected landowners to address their specific requirements. All landowners indicated their agreement to the route or their willingness to enter into further negotiations.</li> <li>• The final decision between Routes/locations should be made on the accumulative weight of all the above parameters and in addition such as feedback from public participation, land tenure issues, construction costs, etc.</li> </ul>			
9. Is the development the best practicable environmental option for this land/site?	YES	NO	Please explain
Refer to the above. Specialist inputs guided the decision.			
10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	YES	NO	Please explain
<p>Chronic power problems take a heavy toll on society. Without reliable energy, the basic services that people in rich countries take for granted cannot be offered. Since South Africa's electricity crisis began in December 2007, it has been obvious that without an immediate increase in its energy supply South Africa's economy will suffer, public services will become more expensive, and businesses will have to scale back. Failing to address South Africa's energy crisis will have dire consequences for the poor, for industry, and for neighbouring countries.</p>			
11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	YES	NO	Please explain
<p>Eskom Distribution has a master plan for electricity strengthening/supply. Similar activities will be conducted in future, as well as possible energy supply projects conducted by the local municipality.</p>			
12. Will any person's rights be negatively affected by the proposed activity/ies?	YES	NO	Please explain
<p>During the course of an EIA, all affected landowners are identified and consulted with regarding the proposed project. Meetings were conducted with affected landowners to address their specific requirements. All landowners indicated their agreement to the route or their willingness to enter into further negotiations.</p>			

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13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	YES	NO	Please explain
The project will not compromise the integrity of the urban edge.			
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPs)?	YES	NO	Please explain
<p>"SIP 10: Electricity transmission and distribution for all: Expand the transmission and distribution network to address historical imbalances, provide access to electricity for all and support economic development."</p> <p>The current project contribute to the above SIP. The project entails the strengthening /extension of the Eskom network in the project area. The project thus provides access to electricity for all and it supports economic development.</p>			
15. What will the benefits be to society in general and to the local communities?	Please explain		
The project will assist to stimulate economic growth and poverty reduction.			
16. Any other need and desirability considerations related to the proposed activity?	Please explain		
No.			
17. How does the project fit into the National Development Plan for 2030?	Please explain		
<p>The National Development Plan aims to eliminate poverty and reduce inequality by 2030. In short, the plan amongst others, aims by 2030 to produce sufficient energy to support industry at competitive prices, ensuring access for poor households, while reducing carbon emissions per unit of power by about one-third. This current EIA application fits into the National Development Plan for 2030 in addressing the first two targets as described above.</p> <p>Further to the above, the Plan in specific stipulates the following objectives to improve the economic infrastructure: The proportion of people with access to the electricity grid should rise to at least 90 percent by 2030, with non-grid options available to the rest. This current EIA application addresses the latter objective.</p>			
18. Please describe how the general objectives of Integrated Environmental Management (IEM) as set out in section 23 of NEMA have been taken into account.			
<b>IEM as set out in NEMA section 23</b>		<b>How has it been taken into account?</b>	
a) Promote the integration of the Principles of NEMA in terms of section 2 into the making of all decisions that may have a significant effect on the environment;		See 19. below	
b) Identify, predict and evaluate the actual and potential impacts on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimizing negative impacts, maximizing benefits, and promoting compliance with the principles of environmental management as set out in Section 2;		See section F: Impact Assessment.	
c) Ensure that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them;		See section F: Impact Assessment.	
d) Ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment;		Details of the public announcements and engagements already made are recorded in Section E: Public Participation as well as in the Comments and Responses Report.	
e) Ensure the consideration of environmental attributes in management and decision-making which may have a significant effect on the environment; and		See section F: Impact Assessment.	
f) Identify and employ the modes of environmental management best suited to ensuring that a particular activity is pursued in accordance with the principles of environmental management as set out in Section 2 of NEMA.		See EMPr attached as Appendix G.	

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19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.	
NEMA Principle	How has it been taken into account?
2) Environmental management must place people and their needs at the forefront of its concern and serve their physical, psychological, developmental, cultural and social interests equitably.	The EAP has recognised the advantages and disadvantages of the alternative sites in terms of the effects its usage would have on people (see Appendix F: Impact assessment).
3) Development must be socially, environmentally and economically sustainable.	The social, environmental and economic impacts of the use of the sites have been evaluated in the Environmental Impact Assessment.
4) a) Sustainable development requires the consideration of all relevant factors including;	
(i) That the disturbance of ecosystems and loss of biological diversity are avoided, or where they cannot be altogether avoided, are minimised and remedied	The impact of the alternatives on biodiversity have been shown to be of low significance (see Section B:9).
(ii) That pollution and degradation of the environment are avoided or, where they cannot be altogether avoided, are minimised and remedied	Means to avoid or mitigate pollution have been described in the Environmental Management Programme (EMPr).
(iii) That the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where is cannot be altogether avoided, is minimised and remedied	The cultural value/features of the sites have been assessed (see Appendices D2 and D4).
(iv) That waste is avoided, or where it cannot be altogether avoided, minimised and reused or recycled where possible and otherwise disposed of in a responsible manner	Waste management measures have been suggested in the EMPr.
(v) That the use and exploitation of non-renewable natural resources is responsible and equitable and takes into account the consequences of the depletion of the resource	This principle is not of key relevance in this particular project as well as not within the scope of this project.
(vi) That the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised	This principle is not of key relevance in this particular project as well as not within the scope of this project.
(vii) That a risk averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions; and	A cautious approach was applied and recommendations informed by specialist's input.
(viii) That the negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.	The EMPr sets out possible measures to prevent or minimise impacts.
b) Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.	This assessment acknowledges the need for integrated environmental management and evaluates the potential consequences of use of these sites on people and the environment.
c) Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons.	The affected parties have been identified and the equity of these impacts assessed. Thorough consultation took place between landowners and the EAP (EIA team).
d) Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination.	This project aims to provide for basic human needs and wellbeing.
e) Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.	The health and safety consequences of the use of the sites for electricity distribution are evaluated in the assessment.
f) The participation of all interested and affected parties in environmental governance must be promoted, and all people	Participation opportunities have been provided.

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must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured.	
g) Decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognising all forms of knowledge, including traditional and ordinary knowledge.	The interests, needs and values of interested and affected parties are being determined through participation processes and reflected in the assessment of the impacts.
h) Community wellbeing and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.	The EMPr makes suggestions for environmental awareness raising with regards to the construction workers.
i) 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 environmental assessment fulfills this role and should inform decision making.
j) The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected.	This principle is not of particular relevance in this project.
k) Decisions must be taken in an open and transparent manner and access to information must be provided in accordance with the law.	Decisions are to be taken by the relevant state department. The reasons for these decisions are expected to be documented and accessible.
l) There must be intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment	Intergovernmental coordination is being pursued through the NEMA process.
m) Actual or potential conflicts of interest between organs of state should be resolved through conflict resolution procedures.	Noted.
n) Global and international responsibilities relating to the environment must be discharged in the national interest.	Noted. This project is of local and regional relevance.
o) 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 IEM process and environmental impact assessment for this project recognise the need to protect people's common heritage.
p) The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.	Noted. The EMPr makes suggestions for prevention of pollution.
q) The vital role of women and youth in environmental management and development must be recognised and their full participation therein must be promoted.	Noted.
r) Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetland and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.	Management measures are proposed to prevent impact to any watercourse/ wetland.

### 11. 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

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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)

### 12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

#### 12(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)?		
<p>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.</p> <p>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.</p>		
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)?		
If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.		
Appropriate Landfill site in Msukaligwa Local Municipality - To be advised by Local Municipality. A letter of agreement between the developer and the Permit Holder of the waste disposal site shall be provided to the DWA.		
N/A		
Where will the solid waste be disposed of if it does not feed into a municipal waste stream (describe)?		
N/A		
<i>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.</i>		
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. An application for a waste permit in terms of the NEMWA must also be submitted with this application.		
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. An application for a waste permit in terms of the NEMWA must also be submitted with this application.		

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### 12(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
<i>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.</i>		
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:		

### 12(c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other than exhaust emissions and dust associated with construction phase activities?	YES	NO
If yes, is it controlled by any legislation of any sphere of government?	YES	NO
If yes, the applicant must 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.		

### 12(d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?  YES  NO

If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority.

### 12(e) 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 EMPr, will be implemented to avoid or minimise generation of noise during construction.		

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### 13. 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 authorisation (general authorisation or water use license) from the Department of Water Affairs?					YES	NO
If yes, please provide proof that the application has been submitted to the Department of Water Affairs.						

*Relevant to this project:*

- The water used to supply the site with potable water is sourced/purchased from landowners 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 EMPr 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.
- 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.

#### Water use authorisation

- In certain areas the powerline servitudes run parallel in close proximity to the Witpuntspruit, or within the floodplain of the spruit itself. These areas include most of the medium / high sensitivity areas. There are a few areas where other small streams flowing into the Witpuntspruit converge, creating a larger floodplain. During the summer rain season, due to the flatness of the terrain, these floodplain areas can become flooded, creating seasonal wetland areas. These floodplain areas are classified as wetland types and cannot be avoided by the powerline corridors. There is also a wetland area near to Uitkoms Substation and Camden Powerstation that needs to be kept in mind during the construction and maintenance of the powerline. These areas are seen as potential ‘water uses’ and it is strongly recommended that a formal Water Use Licence Application (WULA) be completed and submitted for the project. This will commence as soon as the final line variant/ route alternative has been decided on.

### 14. 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

# BASIC ASSESSMENT REPORT

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

Property description/ physical address:	Mpumalanga Province Gert Sibande District Municipality Msukaligwa Local Municipality <b>The affected properties for the Route Alternative 1:</b> The farms Nooitgedacht 268 IT, Van Oudshoornstroom 261 IT portion 86, 27, 57, 75, 9, Rem, 12, 4, 17, 5, 1; Jan Hendriksfontein 263 IT portion 3, 4, 9, 14, 15; Transutu 257 IT portion 0; Jan Hendriksfontein 263 IT portion 6; Witpunt 267 IT portion 9, 22, 34, Witpunt 267 IT (Consolidated to portion 40 of 267 IT) portion 1, Witpunt 267 IT portion 35 and 36; Camden Power Station 329 IT Rem. <b>The affected properties for the Proposed Route Alternative 2:</b> The farms Nooitgedacht 268 IT, Van Oudshoornstroom 261 IT portion 86, 27, 57, 75, 9, Rem, 12, 4, 17, 5, 1; Jan Hendriksfontein 263 IT portion 3; Uitkomst 292 IT (Consolidated to portion 18 of 292 IT) portion 3; Camden Power Station 329 IT Rem; Witpunt 267 IT portion 35 and 36. Both routes are in the Msukaligwa Local Municipality in the Mpumalanga Province.	
	Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.	
Current land-use zoning as per local municipality/IDP records:	Agricultural; Mining; Urban	
	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

Section B Copy No. A:	<b>Alternative 1, Alternative 2</b>
-----------------------	-------------------------------------

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 route. 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 Route 1:

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 Route 2:

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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# BASIC ASSESSMENT REPORT

## 2. LOCATION IN LANDSCAPE

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

- 2.1 Ridgeline
- 2.2 Plateau
- 2.3 Side slope of hill/mountain
- 2.4 Closed valley
- 2.5 Open valley
- 2.6 Plain
- 2.7 Undulating plain/low hills – Alt1 & Alt2
- 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?

	Alternative 1		Alternative 2	
	YES	NO	YES	NO
Shallow water table (less than 1.5m deep)	YES	NO	YES	NO
Dolomite, sinkhole or doline areas	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	YES	NO	YES	NO
Soils with high clay content (clay fraction more than 40%)	YES	NO	YES	NO
Any other unstable soil or geological feature	YES	NO	YES	NO
An area sensitive to erosion	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).

### Alternative Route 1

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

### Alternative Route 2

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 “<sup>E</sup>” 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. SURFACE WATER

Indicate the surface water present on and or adjacent to the site and alternative sites?

Perennial River	YES	NO	UNSURE
Non-Perennial River	YES	NO	UNSURE
Permanent Wetland	YES	NO	UNSURE
Seasonal Wetland	YES	NO	UNSURE

## BASIC ASSESSMENT REPORT

Artificial Wetland	YES	NO	UNSURE
Estuarine / Lagoonal wetland	YES	NO	UNSURE

If any of the boxes marked YES or UNSURE is ticked, please provide a description of the relevant watercourse.

Perennial river – small streams. Namely, Witpunspruit & Humanspruit
Non-Perennial river – small drainage lines that flow during rainy season. Dry in winter. No names.
Permanent wetlands – Some open body wetlands in study area, but not powerline corridors
Permanent wetlands – Some of the floodplain areas of Witpunspruit. Palustrine (vlei / marshy) areas in study area
Artificial wetlands – Farm dams and associated upstream floodplain / wetland area

### 6. 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:

- 6.1 Natural area - Alt1 and Alt2
- 6.2 Low density residential - Alt1 and Alt2
- 6.3 Medium density residential – Alt1 and Alt2
- 6.4 High density residential
- 6.5 Informal residential<sup>A</sup>
- 6.6 Retail commercial & warehousing
- 6.7 Light industrial
- 6.8 Medium industrial<sup>AN</sup>
- 6.9 Heavy industrial<sup>AN</sup>
- 6.10 Power station – Alt1 & Alt2 (Camden Powerstation)
- 6.11 Office/consulting room
- 6.12 Military or police base/station/compound
- 6.13 Spoil heap or slimes dam<sup>A</sup> – Alt1 & Alt2 (Not in corridor, but close proximity)
- 6.14 Quarry, sand or borrow pit
- 6.15 Dam or reservoir
- 6.16 Hospital/medical centre
- 6.17 School
- 6.18 Tertiary education facility
- 6.19 Church
- 6.20 Old age home
- 6.21 Sewage treatment plant<sup>A</sup>
- 6.22 Train station or shunting yard<sup>N</sup>
- 6.23 Railway line<sup>N</sup> – Alt2
- 6.24 Major road (4 lanes or more)<sup>N</sup>
- 6.25 Airport<sup>N</sup>
- 6.26 Harbour
- 6.27 Sport facilities
- 6.28 Golf course
- 6.29 Polo fields
- 6.30 Filling station<sup>H</sup>
- 6.31 Landfill or waste treatment site
- 6.32 Plantation
- 6.33 Agriculture - Alt1 and Alt2
- 6.34 River, stream or wetland - Alt1 and Alt2
- 6.35 Nature conservation area
- 6.36 Mountain, koppie or ridge
- 6.37 Museum
- 6.38 Historical building
- 6.39 Protected Area
- 6.40 Graveyard
- 6.41 Archaeological site
- 6.42 Other land uses (describe)

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

No impact. Overhead powerlines
--------------------------------

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

No direct impact
------------------

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

No impact. Not in corridor of impact.
---------------------------------------

Does the proposed site (including any alternative sites) fall within any of the following:

Critical Biodiversity Area (as per provincial conservation plan)	YES	NO
Core area of a protected area?	YES	NO
Buffer area of a protected area?	YES	NO
Planned expansion area of an existing protected area?	YES	NO
Existing offset area associated with a previous Environmental Authorisation?	YES	NO
Buffer area of the SKA?	YES	NO

If the answer to any of these questions was YES, a map indicating the affected area must be included in Appendix A.

### 7. 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	YES	NO
Archaeological or palaeontological sites, on or close (within 20m) to the site?	Uncertain	
If YES, explain:	Refer to Palaeontological assessment in Appendix D4.	
If uncertain, conduct a specialist investigation by a recognised specialist in the field (archaeology or palaeontology) 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 and the Palaeontological Assessment in Appendix D4. 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 provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.		

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

The Phase I HIA study for the proposed Eskom Project revealed no presence of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) in and near the Eskom Project Area.

#### Recommendation

- Alternative 1 and Alternative 2 for the proposed 88kV power line is viable for construction.
- If archaeological or other types of heritage resources are uncovered during construction/ground clearance activities SAHRA (Mrs Colette Scheermeyer/Mr Phillip Hine, tel: 021 462 4502) and a professional archaeologists/palaeontologist dependent on the finds must be alerted immediately to inspect the finds. A rescue excavation may be required if the identified heritage resource/s is deemed to be significant.

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

Palaeontological sensitivity is MODERATE. There is evidence of mining activity past and present, mainly coal.

#### Recommendation:

- There is no objection to the development of the construction of the new 22km 88kV Chikadee powerline between substations Ermelo and Uitkoms. Preferred choice: Alternative 1 or 2 as both have equal impact and mostly follows the existing HV lines.
- It may be necessary to perform a Phase 1 Palaeontological Impact Assessment to determine whether the planting of pylons will affect fossiliferous outcrops as the palaeontological sensitivity is MODERATE. A Phase 2

## BASIC ASSESSMENT REPORT

Palaeontological Mitigation may be required taken into account the overall palaeontological impact is LOW to VERY HIGH depending on the outcome of the Phase 1 Palaeontological Impact Assessment.

- If palaeontological or other types of heritage resources are uncovered during construction/ground clearance activities SAHRA (Mrs Colette Scheermeyer/Mr Phillip Hine, tel: 021 462 4502) and a professional archaeologists/palaeontologist dependent on the finds must be alerted immediately to inspect the finds. A rescue excavation may be required if the identified heritage resource/s is deemed to be significant.

### 8. SOCIO-ECONOMIC CHARACTER

#### a) Local Municipality

Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

Level of unemployment:

When comparing the period 2001 to 2011, the employment rate is 42.6% in 2011 and has increased by 5.8% from 2001. There is a decrease of 7.2% in unemployment during the period 2001 to 2011. The economically active persons are showing a reduction in 2011 when compared to the 2001 figures, which may imply that people are being absorbed by the labour market or retiring as figures show an increase on those persons that are not economically active. The statistics show that 13,615 jobs were created during the period 2001 to 2011 which reduced the unemployment rate to 15.6%.

Economic profile of local municipality:

The age distribution shows that the youth population contributes 39% of the total population of Msukaligwa. With the youth population contributing a larger percentage of the population, this is a clear indication that most of the youth are joining the job market. The municipality together with sector departments and NGOs must proactively engage in a joint effort to address issues of unemployment, skills development, provision of basic services and housing.

Level of education:

Between 2001 to 2011 there had been a decrease of 32% in the number of persons with no schooling. There is improvement of 20.5% to 23.6% from 2001 to 2011 for the category of persons 15 and above who achieved matric and post matric qualifications. Generally there is an overall improvement at all levels of education over the past 10 years.

#### b) Socio-economic value of the activity

- What is the expected capital value of the activity on completion?
- What is the expected yearly income that will be generated by or as a result of the activity?
- Will the activity contribute to service infrastructure?
- Is the activity a public amenity?
- How many new employment opportunities will be created in the development and construction phase of the activity/ies?
- What is the expected value of the employment opportunities during the development and construction phase?
- What percentage of this will accrue to previously disadvantaged individuals?
- How many permanent new employment opportunities will be created during the operational phase of the activity?
- What is the expected current value of the employment opportunities during the first 10 years?
- What percentage of this will accrue to previously disadvantaged individuals?

Unknown	
R0	
YES	NO
YES	NO
unknown	
unknown	
unknown	
0	
R0	
0%	

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## 9. BIODIVERSITY

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult <http://bgis.sanbi.org> or [BGIShelp@sanbi.org](mailto:BGIShelp@sanbi.org). Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as Appendix D to this report.

a) **Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)**

Systematic Biodiversity Planning Category				If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan
Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR)	NNR – Mined areas; Cultivated areas.
				ONA – Predominantly grassland of low and moderate sensitivity

b) **Indicate and describe the habitat condition on site**

Habitat Condition	Percentage of habitat condition class (adding up to 100%)	Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).
Natural	10%	Little to no pristine grassland vegetation left. Best condition veld mainly in floodplains of streams. However, streams themselves are often badly polluted by mines and local residents.
Near Natural (includes areas with low to moderate level of alien invasive plants)	20%	Grassland in moderate condition. Small, isolated patches or islands. Seldom large, open tracks.
Degraded (includes areas heavily invaded by alien plants)	20%	Areas supposedly rehabilitated after open-cast mining show signs of high alien infestation.
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	50%	Grazing lands. Some of which are poorly managed with overgrazed veld. Cultivation – primarily dryland maize.

c) **Complete the table to indicate:**

- (i) the type of vegetation, including its ecosystem status, present on the site; and
- (ii) whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems		Aquatic Ecosystems								
Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	Critical	Wetland (including rivers, depressions, channelled and unchannelled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline			
	Endangered									
	Vulnerable									
	Least Threatened	YES	NO	UNSURE	YES	NO	YES	NO		

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- d) **Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)**

Powerline corridors predominantly Eastern Highveld Grassland, which is seen as a vulnerable (VU) vegetation type by SANBI, but as endangered (EN) by Mucina & Rutherford. No specific sensitive habitats occurring within the powerline corridors, except floodplains of small streams. Namely, the Witpuntspruit and area where Humanspruit (and other small unnamed tributaries) flow into the Witpuntspruit.

Aquatic ecosystems in the powerline corridors are mainly small perennial and non-perennial streams with associated floodplain (wetland) areas. Most of which have permanent and seasonal zones. No Endorheic pan type wetlands are present in the powerline corridors. Some small / medium sized palustrine, depression and seepage type wetlands are present in the general area. But the powerline corridors will have little or no impact on them. A medium sized palustrine type wetland in the powerline corridor of Alt. 2 near Camden Powerstation.

## SECTION C: PUBLIC PARTICIPATION

Public participation plays an important role in the compilation of environmental reports as well as the planning, design, and ultimately the implementation of the project. Public participation is a process leading to informed decision-making, through joint effort by the proponent, technical experts, governmental authorities, and systematically identified IAPs.

### 1. ADVERTISEMENTS AND NOTICES

#### 1.1 Advertisements

In fulfilment of the EIA Regulations, G.N. R543 Section 54, advertisements were placed in the following newspapers:

- Hoevelder on 8 March 2013 to notify of the proposed project.

Refer to Appendix E1a: Proof of newspaper ads.

#### 1.2 Public Notices (Poster)

A2 laminated on-site notices/posters informing IAPs of the application were placed at key points. These posters, in English and Afrikaans, were placed, at the following locations:

(Refer to Appendix E1b: Proof of site notices)

<b>Publication name</b>	Hoevelder		
<b>Date published</b>	8 March 2013		
<b>Site notice position</b>	<b>Latitude</b>		<b>Longitude</b>
	1. Corner of R65 with Witbank road	26° 31'40.1" S	30° 04'30.7" E
	2. Position where Alternative 2 crosses the N2	26° 34'19.5" S	30° 03'48.3" E
	3. At the Uitkoms substation	26° 37'08.7" S	30° 06'12.3" E
	4. At the Ermelo substation	26° 30.732' S	29° 58.692' E
<b>Date placed</b>	28 February 2013		

### 2. DETERMINATION OF APPROPRIATE MEASURES

- *Provide details of the measures taken to include all potential I&APs as required by Regulation 54(2)(e) and 54(7) of GN R.543.*
- *Include proof that the key stakeholder (other than organs of state), identified in terms of Regulation 54(2)(b) of GN R.543, received written notification of the proposed activities - as Appendix E2.*
- *Include proof that the Authorities and Organs of State identified as key stakeholders received written notification of the proposed activities - as Appendix E4.*

#### 2.1 Public notification

A consultation process was undertaken with the intent of informing key community stakeholders, comprising any Tribal Authorities, the Municipal structures and the local communities (directly affected people) about the proposed development and the Basic Assessment process underway.

##### 2.1.1 Identification of Interested and Affected Parties

The PPP for the project was initiated with the development of a comprehensive IAP database. The list of IAPs was updated on a regular basis during the course of the project. Refer to Appendix E5a: Register of Interested and Affected Parties for a complete list.

- Regional Department of Water Affairs: Water Resources & Water Quality Management
- South African Heritage Resources Authority (submitted via SAHRIS)

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- Mpumalanga Department of Economic Development, Environment and Tourism: Environmental Services
- Mpumalanga Department of Agriculture: Land Use and Soil Management
- Mpumalanga Department of Mineral Resources
- SA National Road Agency Ltd
- Mpumalanga Department of Public Works, Roads And Transport
- Mpumalanga Department of Rural Development and Land Reform: Land Claims Commissioner
- Mpumalanga Department of Rural Development and Land Reform: State Land Administration
- Department of Human Settlements and Traditional Affairs
- Department of Community Services
- Agri Mpumalanga/ Mpumalanga Landbou
- Mpumalanga Tourism and Parks Agency
- Endangered Wildlife Trust
- Landbou Unies
- SA Civil Aviation Authority
- Gert Sibande District Municipality
- Msukaligwa Local Municipality
- Eskom Transmission
- Eskom Distribution
- Landowners

## 2.1.2 Background Information Document

A Background Information Document (BID) was compiled, which provided a description of the proposed project and information on the BA process to be followed. The purpose of this document was to inform all IAPs about the project and afford them an opportunity to comment.

Copies of the BID were emailed to the relevant authorities, affected landowners and relevant organisations on 11 March 2013 with due date for comment by 28 April 2013. Copies of the notification letters to key stakeholders are included as Appendix E2.

## 2.1.3 Landowner notification

Eskom relies on the goodwill of landowners and interested and affected parties to obtain rights of way, or servitudes for power lines. Hence, the landowners throughout the project area play an important roll in assisting with the identification of potential powerline corridors and substation site locations.

Contact details of all landowners impacted by the project were obtained using Windeed or by investigation by foot of the power line route corridors. In January 2013 several visits to affected landowners took place. On 6 March 2013 a meeting with Vunene Mining (farms Jan Hendriksfontein 263 IT Portions 6, 14 and Transutu 257 IT Portion 0) took place to notify the mine of the project.

In addition all landowners/homeowners, not directly affected by the powerline route corridor, but living within a 100 meters from the powerline route, were identified. On 14 May 2013 these homeowners/properties were visited, and notified of the project. Letters with project information and a request for comment were hand delivered. Registration forms were also delivered to all these houses with a request to register as IAP. Letters were left at these premises and/or handed to neighbours for delivery.

(Refer to Appendix E2c for proof of notification to these landowners living within 100m of the proposed powerline, but not directly affected as landowners. In addition refer to Appendix E5c1 for a register of these landowners/properties. In Appendix E5c2 a google map shows these properties within the 100m corridor.

## 2.2 Meetings and site visits

### 2.2.1 Public meeting/ open day

Notification of an information meeting/ open day was sent to all IAPs on 8 April 2013. The open day was conducted on 24 April 2013 at the Ermelo Country Club, Hendrina Road, Ermelo. The purpose of the meeting was to furnish all 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 open day. Written comment was requested at the



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information meeting. The information meeting was conducted in the format of an open day with an invitation for attendance between 9h30 to 12h30. None of the key stakeholders i.e. provincial government or local municipality attended the open day. The Agri Mpumalanga as well as a landowner attended.

(Refer to Appendix E6a for the registration and comment form, that was provided at the meeting; and refer to Appendix E6b for the attendance register of the open day).

### 2.2.2 Focus group meetings / One-on-one meetings

Key stakeholders were identified at the beginning of the PPP, these included: Commenting authorities, key stakeholders and landowners. In January 2013 one-on-one meetings were conducted with landowners to assist in the identification of potential powerline corridors and to determine the impact on these landowners. (refer to Appendix E5b for the register of landowners).

### 2.3 Distribution of Draft Basic Assessment Report for comment

Copies of the Draft Basic Assessment Report (BAR), inclusive of the executive summary, were distributed to the following relevant authorities and key IAPs for review and comment (Proof included in Appendices E2 and E4):

- Regional Department of Water Affairs: Water Resources & Water Quality Management
- South African Heritage Resources Authority (submitted via SAHRIS)
- Mpumalanga Department of Economic Development, Environment and Tourism: Environmental Services
- Mpumalanga Department of Agriculture: Land Use and Soil Management
- Mpumalanga Department of Mineral Resources
- SA National Road Agency Ltd
- Mpumalanga Department of Public Works, Roads And Transport
- Mpumalanga Department of Rural Development and Land Reform: Land Claims Commissioner
- Mpumalanga Department of Rural Development and Land Reform: State Land Administration
- Department of Agriculture
- Department of Human Settlements and Traditional Affairs
- Department of Community Services
- Agri Mpumalanga/ Mpumalanga Landbou
- Mpumalanga Tourism and Parks Agency
- Endangered Wildlife Trust
- Landbou Unies
- SA Civil Aviation Authority
- Gert Sibande District Municipality
- Msukaligwa Local Municipality
- Eskom Transmission
- Eskom Distribution
- Landowners

Hard copies of the draft BAR were sent by courier to the following key stakeholders:

- Mpumalanga Department of Economic Development, Environment and Tourism; 13 De Jager Street, Ermelo, 2350. For Attention: Deputy Director: Impact Management; Mr S Marebane
- Department of Water Affairs, Gauteng Region; Bothongo Plaza East 15<sup>th</sup> Floor, 285 Schoeman Street, Pretoria, 0001. For Attention: Mr Marius Keet, Deputy Director Institutional Establishment
- Eskom Distribution Mpumalanga Operating Unit, Land Development, Eskom Park, Main Building, Jelicoe & Water Meyer Streets, Witbank. For Attention: Ms Betty Ngobeni, Environment and Quality Officer
- The Librarian, Msukaligwa Local Municipality: Library, Cnr Smuts and Church Street, Ermelo, 2350. For attention: Ms Chrisna Calitz
- Msukaligwa Local Municipality, Municipal Offices, Corner Taute and Church Street, Ermelo, 2350. For Attention: Mr J Bouwer, Director Town Services, Cc Mr Thami Dlamini, Municipal Manager
- South African Heritage Resource Agency, 111 Harrington Street, Cape Town, 8000. For Attention: Mr Philip Hine. (submitted via SAHRIS)

### 3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Summary of response from EAP
Landowner Van Oudshoornstroom 261 IT Portions 57 & 75. Mr. Hein Mentz 12 March 2013 Comment:	<i>Noted. Mr Mentz is impacted by both Route Alternative 1 as well as Route Alternative 2 and a servitude area of 31m wide will be required. After identification of the preferred alternative, a land</i>

## BASIC ASSESSMENT REPORT

<p>Registered as I&amp;AP. The above properties are earmarked for Residential development (an estate). Overhead powerlines will have a significant impact on such an estate.</p> <p><u>South African National Road Agency SOC Ltd, Northern Region</u> 16 April 2013 Comment: Crossing of the N2 to be done after agreement with SANRAL has been signed. Proposals to be discussed timeously with SANRAL Northern Region Office</p> <p><u>Eskom Transmission</u> Eskom Transmission indicated the Tx services that will be affected by the current application. They have no objection to the application should their rights and services be acknowledged and respected.</p> <p><u>South African Heritage Resources Agency</u> SAHRA indicated that a Heritage Impact Assessment is required. The report should address impacts to archaeological resources as well as to palaeontological resources.</p>	<p><i>valuator will be appointed to value the property(ies). A process of negotiations will follow between landowner(s) and the negotiator to determine the consideration for the servitudes.</i></p> <p><i>The appointed negotiator will enter into discussion with SANRAL regarding the mentioned.</i></p> <p><i>The appointed negotiator will enter into discussion with Eskom Transmission regarding the mentioned.</i></p> <p><i>The requested studies have been conducted and the findings and recommendations are included in this basic assessment report.</i></p>
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#### 4. COMMENTS AND RESPONSE REPORT

*The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to the Final BAR as Appendix E3.*

The Public Participation Programme allowed for informed and responsible decision-making by all interested and affected parties. A summary of IAP comments and the consultant's responses to these comments is provided below. The original IAP comments are included in Appendix E3.

List of authorities from whom comments have been received:

- Gert Sibande District Municipality registered as an I&AP
- SANRAL Northern Region registered as an I&AP

##### 4.1 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:

###### 4.1.1 Verbal Comment received

None

###### 4.1.2 Written Comment received

(The original IAP comments are included in Appendix E3)

##### **Landowner Van Oudshoornstroom 261 IT Portions 57 & 75. Mr. Hein Mentz**

12 March 2013

Comment:

Registered as I&AP. The above properties are earmarked for Residential development (an estate). Overhead powerlines will have a significant impact on such an estate.

Response:

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*Noted. Mr Mentz is impacted by both Route Alternative 1 as well as Route Alternative 2 and a servitude area of 31m wide will be required. After identification of the preferred alternative, a land valuator will be appointed to value the property(ies). A process of negotiations will follow between landowner(s) and the negotiator to determine the consideration for the servitudes*

### **Gert Sibande District Municipality**

13 March 2013

Comment:

Registered as I&AP.

Response:

*Noted.*

### **South African National Road Agency SOC Ltd, Northern Region**

16 April 2013

Comment:

Registered as an I&AP. Crossing of the N2 to be done after agreement with SANRAL has been signed. Proposals to be discussed timeously with SANRAL Northern Region Office.

Response:

*Noted.*

*The appointed negotiator will enter into discussion with SANRAL regarding the above mentioned.*

### **Eskom Transmission, Land Management**

13 May 2013

Comment:

Eskom Transmission indicated the Tx services that will be affected by the current application:

- a. Eskom Tx Camden-Komati 400kV overhead power line
- b. Eskom Tx Camden-Duvha 400kV overhead power line
- c. Eskom Tx Camden-Sol 1&2 400kV overhead power lines
- d. Eskom Tx Camden-Tutuka 400kV overhead power line
- e. Eskom Tx Camden-Ncadu 400kV overhead power line and
- f. Eskom Tx vacant servitudes

They have no objection to the application should their rights and services be acknowledged and respected.

Response:

*The appointed negotiator will enter into discussion with Eskom Transmission regarding the mentioned.*

### **South African Heritage Resources Agency**

14 May 2013

Comment:

SAHRA indicated that a Heritage Impact Assessment is required. The report should address impacts to archaeological resources as well as to palaeontological resources.

Response:

*The requested studies have been conducted and the findings and recommendations are included in this basic assessment report.*

### **Homeowners on farm Ermelo Town**

In addition all landowners/homeowners, not directly affected by the powerline route corridor, but living within a 100 meters from the powerline route, were identified. On 14 May 2013 these homeowners/properties, close to the Ermelo substation, were visited, and notified of the project. Letters with project information and a request for comment were hand delivered. (Refer to Appendix E2c for proof of notification to these landowners living within 100m of the proposed powerline, but not directly affected as landowners. In addition refer to Appendix E5c1 for a register of these landowners/properties. In Appendix E5c2 a google map shows these properties within the 100m corridor.

Comment:

Mr Andre Franken of Melrows Place, 35 Jan van Rooyen street, registered as an I&AP.

### 4.2 Written Comment received at the open day

No new comment was received at the open day.

### 4.3 Conclusion of Public Participation Programme for the Basic Assessment Report

- The first phase of the **Public Participation Programme (PPP)** commenced in February 2013 and continued until May 2013. 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 24 April 2013 was sent to all IAPs on 8 April 2013. 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 **landowners** to assist in the identification of potential powerline corridors and site locations.
- 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 (I&APs).
- In addition, An **Environmental Management Programme (EMPr)** was compiled to ensure that
  - mitigation measures are identified and implemented to avoid or minimise the expected negative environmental impact and enhance the potential positive impact associated with the project;
  - the developer, construction workers and the operational and maintenance staff are well acquainted with their responsibilities in terms of the environment;
  - communication channels to report on environment related issues are in place.
- On **20 May 2013** the **draft Basic Assessment Report** was submitted for comment to the following:
  - Regional Department of Water Affairs: Water Resources & Water Quality Management
  - South African Heritage Resources Authority (submitted via SAHRIS)
  - Mpumalanga Department of Economic Development, Environment and Tourism: Environmental Services
  - Mpumalanga Department of Agriculture: Land Use and Soil Management
  - Mpumalanga Department of Mineral Resources
  - SA National Road Agency Ltd
  - Mpumalanga Department of Public Works, Roads And Transport
  - Mpumalanga Department of Rural Development and Land Reform: Land Claims Commissioner
  - Mpumalanga Department of Rural Development and Land Reform: State Land Administration
  - Department of Human Settlements and Traditional Affairs
  - Department of Community Services
  - Agri Mpumalanga/ Mpumalanga Landbou
  - Mpumalanga Tourism and Parks Agency
  - Endangered Wildlife Trust
  - Landbou Unies
  - SA Civil Aviation Authority
  - Gert Sibande District Municipality
  - Msukaligwa Local Municipality
  - Eskom Transmission
  - Eskom Distribution
  - Landowners
- The **due date for comment** to the draft Basic Assessment Report is **3 July 2013**. This allows for a comment period of 40 days.
- Subsequently, a **final Basic Assessment Report (BAR)** will be compiled.

## 5. AUTHORITY PARTICIPATION

*Authorities and organs of state identified as key stakeholders.*

*Proof that the Authorities and Organs of State received written notification of the proposed activities is attached as Appendix E4.*

**6. CONSULTATION WITH OTHER STAKEHOLDERS**

*A list of registered I&APs is included as Appendix E5.*

*Copies of correspondence and minutes of meetings held are included in Appendix E6.*

# BASIC ASSESSMENT REPORT

## 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. 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

*Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A(2) of this report.*

Refer to the below summary as well as Appendix F for a complete impact assessment in terms of Regulation 22(2)(i) of GN R.543.

### 2. 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.*

As mentioned in this report, due to the physical nature of the power lines, the overall impact is seen to be minimal over the medium- to long-term. The initial (short-term) construction phase will naturally have a higher impact on the environment, but this is still very low.

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 Programme, the expected negative impact could be mitigated to acceptable measures.

Refer to Appendix F for a complete impact assessment.

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

Impact on Natural habitat	Corridor	Extent	Duration	Intensity	Probability	Significance without mitigation	Significance with mitigation	Proposed mitigation
	Alternative 1	Local	Long term	Medium	Probable	Medium	Low	Programme to mechanically control alien plant species. Corridor inspected yearly for soil erosion and rehabilitated accordingly. Positioning of any pylons need to be a minimum of 32m (preferably 50m) from the edge of the river banks or outside of the 1 in 100 year floodline, whichever is furthest.
	Alternative 2	Local	Long term	Medium	Probable	Low	Low	

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Social Impact	Corridor	Extent	Duration	Intensity	Probability	Significance without mitigation	Significance with mitigation	Proposed mitigation
	Alternative 1	Local	Long term	Medium	Probable	Low	Low	The Route alternatives had been proposed adjacent to existing disturbance as far as is achievable. (e.g. from the Ermelo substation the Route Alternatives 1 and 2 follow an existing power line to the Uitkoms substation; Route Alternative 2 deviates just for a small section away from existing powerlines). During the course of the EIA, all affected landowners are identified and consulted with regarding the proposed project.
	Alternative 2	Local	Long term	Medium	Probable	Medium	Low	Alternative 2 follows an alignment that deviates for a small section away from existing powerlines. More impact is expected although not significant.

## 2.2 IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE

Impact on Natural habitat	Corridor	Extent	Duration	Intensity	Probability	Significance without mitigation	Significance with mitigation	Proposed mitigation
	Alternative 1	Local	Long term	Medium	Probable	Medium	Low	Alternative 1 impacts on more sensitive units than Alternative 2. Alternative 2 is therefore the ecological recommended line variant.
	Alternative 2	Local	Long term	Medium	Probable	Low	Low	

Impact on Grassland Plains	Corridor	Extent	Duration	Intensity	Probability	Significance without mitigation	Significance with mitigation	Proposed mitigation
	Alternative 1	Site	Long term	Low	Probable	Low	Low	No area for a campsite or temporary storage site should be selected where it would be necessary to cut down any trees or clear any shrub land whatsoever, not even alien species; no areas of pristine grassland should be selected. No indigenous trees or shrubs outside of the powerline corridor of 8m to be removed, although due to the grassland vegetation of the study area very few occur. Patches of exotic trees (especially blackwattle ( <i>Acacia mearnsii</i> ) within the large 100m corridor may be totally removed. The stumps of these trees to be treated with the recommended poisons to prevent budding and regrowth, but no poisons to be applied directly to the surrounding soils.
	Alternative 2	Site	Long term	Low	Probable	Low	Low	

Impact on rivers, streams and drainage lines	Corridor	Extent	Duration	Intensity	Probability	Significance without mitigation	Significance with mitigation	Proposed mitigation
	Alternative 1	Site	Long term	Low	Probable	Low	Medium	A few streams / small rivers (Witpuntspruit, Humanspruit,) along with drainage lines cross the powerline corridors. These need to be avoided in the sense that no pylons may be placed directly within the main stream of any one of these watercourses. Alternative Route 1 has higher potential impact in relation to watercourses.
	Alternative 2	Site	Long term	Low	Probable	Low	Low	No temporary or other construction facilities to be erected or stored within 100m of the banks of the rivers, streams or main drainage lines. Positioning of any pylons need to be a minimum of 32m (preferably 50m) from the edge of the river banks or outside of the 1 in 100 year floodline, whichever is

## BASIC ASSESSMENT REPORT

								<p>furthest.</p> <p>Positioning of the foundation slabs for the pylons must be a minimum of 32m away from the edge of all drainage lines.</p> <p>Under no circumstances may a pylon be placed directly in the bed (main flow) of a river or drainage line. Not even if in position of a valid Water Use Licence (WUL).</p>
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Impact on wetlands	Corridor	Extent	Duration	Intensity	Probability	Significance without mitigation	Significance with mitigation	Proposed mitigation
	Alternative 1	Regional	Long term	Very high	Highly Probable	Medium	Low	<p>No typical wetlands such as pans or fresh water lakes, occur within the proposed powerline corridors, but some do occur in the area, or in fairly close proximity. Under no circumstances may any activities directly or indirectly related to the powerline project take place within any wetland area.</p> <p>No campsite, temporary storage facility, or any other facility to be erected within 500m of a wetland.</p>
	Alternative 2	Regional	Long term	Very high	Highly Probable	High	Low	

Impact on Avifauna	Corridor	Extent	Duration	Intensity	Probability	Significance without mitigation	Significance with mitigation	Proposed mitigation
	Alternative 1	Local	Medium term	Medium	Probable	Medium	Low	<p>Alternative 1 power line will have a medium habitat transformation impact and the construction of Alternative 2 a low-medium habitat transformation impact, depending on how much excess vegetation are cleared during the construction of the line. The removal of large trees should be avoided as much as possible.</p> <p>Strict control should be maintained over all activities during construction, in particular heavy machinery and vehicle movements, and staff. During Construction, if any of the "Focal Species" identified in this report are observed to be roosting and/or breeding in the vicinity (within 500m of the power line), the EWT is to be contacted for further instruction.</p>
	Alternative 2	Local	Medium term	Medium	Probable	Low- Medium	Low	

Risk of surface and ground water pollution	Corridor	Extent	Duration	Intensity	Probability	Significance without mitigation	Significance with mitigation	Proposed mitigation
	Alternative 1	Regional	Long term	High	Probable	High	Medium	<p>Alt 1 has a higher potential impact in relation to water courses as it has more river, stream and drainage line crossings than Alt 2.</p> <p>Mitigation measures are included in EMPr to minimize impact of construction camp, waste and sewage.</p> <p>Positioning of any pylons need to be a minimum of 32m (preferably 50m) from the edge of the river banks or outside of the 1 in 100 year floodline, whichever is furthest.</p> <p>Positioning of the foundation slabs for the pylons must be a minimum of 32m away from the edge of all drainage lines.</p> <p>Under no circumstances may a pylon be placed directly in the bed (main flow) of a river or drainage line. Not even if in position of a valid WUL.</p>
	Alternative 2	Regional	Long term	High	Probable	High	Low	



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Impact of Erosion	Corridor	Extent	Duration	Intensity	Probability	Significance without mitigation	Significance with mitigation	Proposed mitigation
	Alternative 1	Local	Long term	Medium	Probable	Medium	Medium	<p>The routes for both Alternative 1 and Alternative 2 were designed to follow existing power lines and these servitudes can be used as access roads during construction. This will lower the need for clearing of natural vegetation during construction.</p> <p>No roads may be cut through riverbanks, stream banks or drainage line banks, as this may lead to erosion and siltation of watercourses and downstream dams. Only existing, proper watercourse crossings may be used during construction and maintenance phases.</p> <p>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.</p> <p>Crossing of dongas and existing eroded areas shall be thoroughly planned prior to the start of construction and movement of construction and delivery vehicles.</p>
	Alternative 2	Local	Long term	Medium	Probable	Medium	Low	<p>Water diversion berms shall be installed at donga crossings to ensure runoff water on the servitude does not run into dongas and cause an erosion hazard, nor resulting in increased or further erosion.</p> <p>Suitable erosion containment structures shall be constructed at donga crossings where required and viable. Specialists shall properly design all structures and drawings shall be available for reference purposes.</p> <p>No unplanned / improperly planned cutting of donga embankments is allowed as this leads to erosion and degradation of the natural environment.</p> <p>No unnecessary roads or vehicle tracks or driving of vehicles through the veld as this leads to increased denuding of the covered soils, which leads to increased erosion potential.</p> <p>Refer to EMPr for erosion control measures.</p>

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Solid Waste	Corridor	Extent	Duration	Intensity	Probability	Significance without mitigation	Significance with mitigation	Proposed mitigation
	Alternative 1	Local	Short term	Medium	Probable	Medium	Low	<p>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.</p> <p>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.</p> <p>More mitigation measures included in the EMP.</p>
	Alternative 2	Local	Short term	Medium	Probable	Medium	Low	

Impact of labourers	Corridor	Extent	Duration	Intensity	Probability	Significance without mitigation	Significance with mitigation	Proposed mitigation
	Alternative 1	Local	Short term	Medium	Probable	Medium	Low	<p>Mitigation measures to counter impact on the natural environment and limit potential for crime include specifications in terms of control of construction workers (i.e. provision of toilet and cooking facilities, provision of either accommodation facilities or transport facilities, implementation of Environmental Educational Programmes, etc.). Accommodation for labourers must either be limited to guarding personnel on the construction site (with labourers transported to and from existing neighbouring towns) or a separate fenced and controlled area where proper accommodation and relevant facilities are provided.</p> <p>Eskom and the contractors should maximise the use of local labour where possible by developing a strategy to involve local labour in the contractor teams and construction process.</p>
	Alternative 2	Local	Short term	Medium	Probable	Medium	Low	

Employment opportunities	Corridor	Extent	Duration	Intensity	Probability	Significance without mitigation	Significance with mitigation	Proposed mitigation
	Alternative 1	Local	Short term	Medium	Probable	Medium	Medium	<p>It should be ensured that contractors use local skills, or train semi-skilled people or re-skill appropriate candidates for employment purposes where possible.</p>
	Alternative 2	Local	Short term	Medium	Probable	Medium	Medium	

Local Procurement	Corridor	Extent	Duration	Intensity	Probability	Significance without mitigation	Significance with mitigation	Proposed mitigation
	Alternative 1	Regional	Short term	Low	Probable	Low	Medium	<p>Local procurement should be aimed at as far as possible.</p> <p>Local sourcing of materials would assist in providing more economic and employment opportunities for the local people.</p>
	Alternative 2	Regional	Short term	Low	Probable	Low	Medium	

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Local Economic benefits	Corridor	Extent	Duration	Intensity	Probability	Significance without mitigation	Significance with mitigation	Proposed mitigation
	Alternative 1	Regional	Short term	Low	Probable	Low	Medium	Maximise the use of local labour even if the number of locals that would be employed would be limited.
	Alternative 2	Regional	Short term	Low	Probable	Low	Medium	Accommodate, but regulate the activities of vendors in the vicinity of the construction areas and at the construction camps.

Daily living and moving patterns	Corridor	Extent	Duration	Intensity	Probability	Significance without mitigation	Significance with mitigation	Proposed mitigation
	Alternative 1	Local	Short term	Low	Probable	Low	Low	Property owners that would be affected by the distribution line construction should be consulted prior to the construction phase with regards to the construction schedules, transportation corridors, construction of additional access roads and construction methods to be used.
	Alternative 2	Local	Short term	Low	Probable	Low	Low	Eskom should keep the construction of access roads to a minimum and rather use the existing infrastructure, as the construction and maintenance of these roads are very costly, impact on the residents' daily living and movement patterns, and create a potential for erosion.

Impact on Safety and Security	Corridor	Extent	Duration	Intensity	Probability	Significance without mitigation	Significance with mitigation	Proposed mitigation
	Alternative 1	Local	Short term	Low	Probable	Low	Low	Safety measures are included in the EMP.
	Alternative 2	Local	Short term	Low	Probable	Low	Low	

Impact of dust pollution	Corridor	Extent	Duration	Intensity	Probability	Significance without mitigation	Significance with mitigation	Proposed mitigation
	Alternative 1	Local	Short term	Low	Probable	Low	Low	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. Dust suppression is not required due to the servitude areas receiving minimal bush clearance.
	Alternative 2	Local	Short term	Medium	Probable	Medium	Low	Alternative 2 deviates for a small section south-west towards Uitkoms substation. This small section runs along the fences of properties and clearing of natural vegetation for an access road might be needed. This can increase the possibility of erosion, and possibly dust pollution.

Impact on heritage resources	Corridor	Extent	Duration	Intensity	Probability	Significance without mitigation	Significance with mitigation	Proposed mitigation
	Alternative 1	Local	Permanent	Low	Impossible	Low	Low	No presence of heritage resources. If archaeological or other types of heritage resources are uncovered during construction/ground clearance activities SAHRA (Mrs Colette Scheermeyer/Mr Phillip Hine, tel: 021 462 4502) and a professional archaeologists dependent on the finds must be alerted immediately to inspect the finds. A rescue excavation may be required if the identified heritage resource/s is deemed to be significant.
	Alternative 2	Local	Permanent	High	Definite	High	High	

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Impact on palaeontology	Corridor	Extent	Duration	Intensity	Probability	Significance without mitigation	Significance with mitigation	Proposed mitigation
	Alternative 1	Site	Permanent	Very High	Highly Probable	Medium	Low	It may be necessary to perform a Phase 1 Palaeontological Impact Assessment to determine whether the planting of pylons will affect fossiliferous outcrops as the palaeontological sensitivity is MODERATE. A Phase 2 Palaeontological Mitigation may be required taken into account the overall palaeontological impact is LOW to VERY HIGH depending on the outcome of the Phase 1 Palaeontological Impact Assessment. If palaeontological or other types of heritage resources are uncovered during construction/ground clearance activities SAHRA (Mrs Colette Scheermeyer/ Mr Phillip Hine, tel: 021 462 4502) and a professional palaeontologist dependent on the finds must be alerted immediately to inspect the finds. A rescue excavation may be required if the identified heritage resource/s is deemed to be significant.
	Alternative 2	Site	Permanent	Very High	Highly Probable	Medium	Low	

Visual impact	Corridor	Extent	Duration	Intensity	Probability	Significance without mitigation	Significance with mitigation	Proposed mitigation
	Alternative 1	Local	Short term	Medium	Highly Probable	Medium	Low	Any existing servitude roads as well as existing roads must be used during construction of the power line. Alt 1 and Alt 2 follow existing powerlines and the servitudes thereof can be used for access. 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. Where clearing for an access road is essential, the maximum width to be cleared is 8m.
	Alternative 2	Local	Short term	Medium	Highly Probable	Medium	Low	

Loss of agricultural land	Corridor	Extent	Duration	Intensity	Probability	Significance without mitigation	Significance with mitigation	Proposed mitigation
	Alternative 1	Local	Short term	Low	Probable	Low	Low	Most farming activities could continue underneath distribution lines. A quantification of possible losses should be done based on a property specific basis once a final Corridor alignment has been determined. The Corridor alignment in the preferred corridor might then have to be adapted to avoid agricultural equipment such as irrigation. Eskom should select towers and construction approaches to have the minimum impact on agricultural practices.
	Alternative 2	Local	Short term	Low	Probable	Low	Low	

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### 2.3 IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE

Impacts to avi-fauna	Corridor	Extent	Duration	Intensity	Probability	Significance without mitigation	Significance with mitigation	Proposed mitigation
	Alternative 1	Local	Long term	Medium	Probable	Medium	Low	<p><i>Collisions</i></p> <p>The area within 100m on either side of the Witpuntspruit, as well as all open water bodies and farm dams in the area are classified as <i>Medium-High Sensitivity</i>. Within these areas, it is recommended that construction of the power line be avoided, if possible, and any line that is built in these zones will require collision mitigation in the form of bird flight diverters ("flappers"). All remaining areas on the site are classed as <i>Low-Medium Sensitivity</i>.</p> <p>Mark the relevant sections of line with appropriate marking devices. These sections of line, and the exact spans, should be finalised by a "walk down" as part of the Environmental Management Programme (EMP) phase, once power-line routes are finalised and pylon positions are pegged.</p> <p><i>Electrocution</i></p> <p>It is highly recommended that the steel monopole design be used and that this incorporates the standard bird perch. If this is the case then most raptors and birds of high electrocution risk will perch well above the conductors and out of harm's way. In addition it is critical that all clearances between live and earth components are greater than 1.8 meters. If this is the case then the impact of bird electrocution will be very minimal.</p> <p><i>Disturbance during routine maintenance</i></p> <p>No nests may be removed, without first consulting the EWT's Wildlife and Energy Program (WEP). During maintenance, if any of the "Focal Species" identified in this report are observed to be roosting and/or breeding in the vicinity, the EWT is to be contacted for further instruction.</p>
	Alternative 2	Local	Long term	Medium	Probable	Low-Medium	Low	<p><i>Disturbance during routine maintenance</i></p> <p>No nests may be removed, without first consulting the EWT's Wildlife and Energy Program (WEP). During maintenance, if any of the "Focal Species" identified in this report are observed to be roosting and/or breeding in the vicinity, the EWT is to be contacted for further instruction.</p>

Impact of alien vegetation	Corridor	Extent	Duration	Intensity	Probability	Significance without mitigation	Significance with mitigation	Proposed mitigation
	Alternative 1	Local	Long term	Medium	Highly Probable	Medium	Low	<p>Mechanical control of alien plants around disturbed areas to be implemented within three 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.</p>
	Alternative 2	Local	Long term	High	Highly Probable	High	Medium	<p>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.</p> <p>Disturbance of the soils must be kept to an absolute minimum to limit the potential</p>

# BASIC ASSESSMENT REPORT

								introduction of alien plants.
<b>Visual Impact</b>	<b>Corridor</b>	<b>Extent</b>	<b>Duration</b>	<b>Intensity</b>	<b>Probability</b>	<b>Significance without mitigation</b>	<b>Significance with mitigation</b>	<b>Proposed mitigation</b>
	Alternative 1	Local	Long term	Medium	Probable	Medium-Low	Low	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 Alternative 1 and route Alternative 2 were designed to run through more "disturbed" corridors, i.e. mostly along existing powerlines. In addition, visual impact could generally be mitigated to some extent by constructing the line with monopole steel structures. From previous experience the steel poles are known to weather and with time blend into the environment.
	Alternative 2	Local	Long term	High	Probable	Medium	Medium-Low	
<b>Access to properties</b>	<b>Corridor</b>	<b>Extent</b>	<b>Duration</b>	<b>Intensity</b>	<b>Probability</b>	<b>Significance without mitigation</b>	<b>Significance with mitigation</b>	<b>Proposed mitigation</b>
	Alternative 1	Local	Short term	Medium	Probable	Medium	Low	Approaches to facilitate access 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. Specific Protocol measures are proposed.
	Alternative 2	Local	Short term	Medium	Probable	Medium	Low	
<b>Fire breaks and servitude maintenance</b>	<b>Corridor</b>	<b>Extent</b>	<b>Duration</b>	<b>Intensity</b>	<b>Probability</b>	<b>Significance without mitigation</b>	<b>Significance with mitigation</b>	<b>Proposed mitigation</b>
	Alternative 1	Local	Medium	Low	Probable	Low	Low	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.
	Alternative 2	Local	Medium	High	Probable	High	Medium	
<b>Public Health Hazard</b>	<b>Corridor</b>	<b>Extent</b>	<b>Duration</b>	<b>Intensity</b>	<b>Probability</b>	<b>Significance without mitigation</b>	<b>Significance with mitigation</b>	<b>Proposed mitigation</b>
	Alternative 1	Local	Medium	Low	Probable	Low	Low	Eskom should undertake regular inspections of the servitude and put a strategy in place, together with the Local Municipality, to deal with illegal "squatting" in the servitude areas. The safety exclusion zone should be strictly adhered to.
	Alternative 2	Local	Medium	Low	Probable	Low	Low	

## 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.

As indicated, it is generally assumed that the decommissioning process is the reverse of the construction process and as such the indicated impacts will also be relevant to decommissioning phase. Appropriate measures to address this

should be outlined in the EMPr required for decommissioning. This report addresses impacts related to decommissioning- refer to Appendix F: Impact Assessment.

### 2.5 CUMULATIVE IMPACTS

Cumulative effects are caused by the accumulation and interaction of multiple stresses affecting the parts and the functions of ecosystems. For our purpose, cumulative effects are defined as the changes to the environment caused by an activity in combination with other past, present, and reasonably foreseeable human activities.

Bearing in mind that the magnitude, extent and duration of environmental effects depend on the characteristics of a development activity in a particular location.

Currently the proposed power line is located in a developing area with some residential areas, existing substations, power lines, roads, etc. The proposed route follows a corridor of existing disturbance. The cumulative effect for constructing the electricity infrastructure in this will be low.

In time the overall cumulative impact on this area is likely to increase as various mining companies have mineral rights over a significant portion of the immediate area and are likely to expand their mining operations in these sections. It is thus critical that major role players in the region's economy create long term strategic plans that will accommodate and enhance a wide range of economic activities.

Equally important is the need for Eskom to align all the projects that are planned for the area in order to minimise the potential negative impacts and enhance potential positive outcomes. It is therefore crucial for Eskom to liaise very closely with the various municipalities to mainstream Eskom projects into the Integrated Development Plans (IDPs) and Spatial Development Frameworks (SDFs) of the respective municipalities.

As indicated in the report, the grassland plains within the study area are not seen as floristically sensitive with regards to powerline corridors. Existing impacts relate to cultivated lands, coal mining, cattle farming, urbanisation, general human activity and movement through them.

In spite of the above, the project could cause a significant impact where clearing for construction and access purposes, etc. is required. Insensitive clearing can cause the destruction of habitat. The cumulative impact on this area is likely to increase should various mining companies expand their mining operations in these sections.

It is therefore important that the proposed Eskom project adhere to the stipulated mitigation measures to limit impact to the natural habitat, to surface water, erosion etc.

Should this be implemented, then no cumulative impacts on the ecology of the environment are identified as possibly being beneficial.

As mentioned in this report, due to the physical nature (and small footprint) of the powerlines, the overall impact to the natural environment is minimal over the medium- to long-term. This relative to other impacts in the region such as open-cast coal mining, agriculture and urbanisation. The initial (short-term) construction phase will have a higher initial impact on the environment, but this is still seen as being relatively low.

### CONCLUSION

Alternative routes have been investigated for the project. From a heritage, palaeontological, ecological as well as bird impact viewpoint, both Route Alternatives are acceptable, with the proposed mitigations implemented. Although from an ecological viewpoint Alternative Route 2 is slightly preferred.

The final decision between Route 1 or 2 should be made on the accumulative weight of other parameters such as feedback from public participation, land tenure issues, construction costs, etc. **Currently, Alternative 2 is preferred** as the final route alignment due to the above investigations favouring alternative 2.

The **route alternative 1** for the line is on the farms Nooitgedacht 268 IT, Van Oudshoornstroom 261 IT portion 86, 27, 57, 75, 9, Rem, 12, 4, 17, 5, 1; Jan Hendriksfontein 263 IT portion 3, 4, 9, 14, 15; Transutu 257 IT portion 0; Jan

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Hendriksfontein 263 IT portion 6; Witpunt 267 IT portion 9, 22, 34, Witpunt 267 IT (Consolidated to portion 40 of 267 IT) portion 1, Witpunt 267 IT portion 35 and 36; Camden Power Station 329 IT Rem.

The **proposed route alternative 2** for the line is on the farms Nooitgedacht 268 IT, Van Oudshoornstroom 261 IT portion 86, 27, 57, 75, 9, Rem, 12, 4, 17, 5, 1; Jan Hendriksfontein 263 IT portion 3; Uitkomst 292 IT (Consolidated to portion 18 of 292 IT) portion 3; Camden Power Station 329 IT Rem; Witpunt 267 IT portion 35 and 36. Both routes are in the Msukaligwa Local Municipality in the Mpumalanga Province.



**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:

**1. Ecological Sensitivity**

No proposed impacts on the ecology of the environment were identified as possibly being beneficial. However, the impact of the powerline is calculated as 'low', with the greatest impact (Moderate) being on the floodplains of the streams. The implementation of proposed mitigating measures will reduce potential impacts.

**Mitigation of impacts**

- A number of mitigating and management measures have been recommended. The implementation of these measures will significantly reduce the potential impacts the project may have on the natural environment. 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.

Measures recommended include some of the following:

- No area for a campsite or temporary storage site should be selected where it would be necessary to cut down any trees or clear any shrub land whatsoever, not even alien species.
- No indigenous trees or shrubs outside of the powerline 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.
- An on going 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 a way as to allow the natural grasses and pioneer plants to colonise the disturbed areas. Typically there should not be any, or very little, infestation of weeds under the powerlines where the veld / grass has only been cut. The weeds found in the area typically invade disturbed soils, with the exception of tree species, but these typically invade kloofs, ravines and drainage lines.
- 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 powerlines. All control of weeds to be mechanical in nature. That is, physically cut down, pulled out or mowed over.
- All construction material, equipment and any foreign objects brought into the area by contractors and staff to be removed immediately (within two weeks) after construction.
- Removal of all waste construction material to an approved waste disposal site. And only by an official registered waste removal company.
- No temporary or other construction facilities to be erected or stored within 100m of the banks of the rivers, streams or main drainage lines.
- Positioning of any pylons need to be a minimum of 32m (preferably 50m) from the edge of the river banks or outside of the 1 in 100 year floodline, whichever is furthest.
- No campsite, temporary storage facility, or any other facility to be erected within 500m of a wetland.

**Recommended route**

Line variant recommendations are made on the strength and combination of all the impacts and mitigating actions. As well as on the sensitivities of the various biophysical features, faunal habitats and vegetation types that each proposed route alternative impacts on.

A comparison between the two alternative routes, as to the number of ecologically sensitive units each one potentially impacts on, is shown in the Table below.

When also taking other general impacts into account there is the issue of the higher potential impact in relation to watercourses by Alternative Route 1. Although both alternative routes run within the floodplain of the Witpuntspruit,

Alternative Route 1 does so over a much greater distance.

Taking all of the above issues into account, the Ecological recommended line variant for the proposed project is: *Alternative Route 2*.

## 2. Heritage Resources

The **Phase 1 Heritage Impact Assessment** study for the proposed Eskom Project revealed no presence of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) in and near the Eskom Project Area.

### Recommendation

- Both Alternative 1 and Alternative 2 are recommended for the proposed 88kV power line between Ermelo substation and Uitkoms substation.
- If archaeological or other types of heritage resources are uncovered during construction/ground clearance activities SAHRA (Mrs Colette Scheermeyer/Mr Phillip Hine, tel: 021 462 4502) and a professional archaeologists/palaeontologist dependent on the finds must be alerted immediately to inspect the finds. A rescue excavation may be required if the identified heritage resource/s is deemed to be significant.

A **desktop Palaeontological Impact Assessment** found the Palaeontological sensitivity to be MODERATE. There is evidence of mining activity past and present, mainly coal.

### Recommendation:

- There is no objection to the development of the construction of the new 22km 88kV Chikadee powerline between substations Ermelo and Uitkoms. Preferred choice: Alternative 1 or 2 as both have equal impact and mostly follows the existing HV lines.
- It may be necessary to perform a Phase 1 Palaeontological Impact Assessment to determine whether the planting of pylons will affect fossiliferous outcrops as the palaeontological sensitivity is MODERATE. A Phase 2 Palaeontological Mitigation may be required taken into account the overall palaeontological impact is LOW to VERY HIGH depending on the outcome of the Phase 1 Palaeontological Impact Assessment.
- The following should be conserved: if any palaeontological material is exposed during digging, excavating, drilling or blasting SAHRA must be notified. All construction activities must be stopped and a palaeontologist should be called in to determine proper mitigation measures.

## 3. Bird Impact

The proposed project can be built provided that the various mitigation measures recommended in this report are implemented.

- From an avifaunal perspective, route alternative 2 poses a slightly higher risk of collision, as a section will not follow existing linear infrastructure.
- However, route alternative 1 falls within a "wetland" area along the Witpuntspruit, and is likely therefore to have more of an impact in terms of disturbance to avifauna and habitat destruction.
- Therefore it was found that although *both alternatives are acceptable*, with the proposed mitigations implemented, neither one was preferred.
- Strict control should be maintained over all activities during construction, in particular heavy machinery and vehicle movements, and staff. It is difficult to mitigate properly for this as some habitat destruction is inevitable. It is important to ensure that the construction Environmental Management Plan incorporates guidelines as to how best to minimize this impact.
- During Construction and Maintenance, if any of the "Focal Species" identified in this report are observed to be roosting and/or breeding in the vicinity (within 500m of the power line), the EWT is to be contacted for further instruction.
- Line marking will be required particularly along streams and near to wetlands, dams and pans, as well as possibly in the less disturbed grassland areas. Avifaunal input in to the EMP (in the form of a site "walk down") is recommended in order to, "fine tune" these sensitive zones, and to identify the spans of line for marking to mitigate for bird collisions, once the route is chosen and the tower positions have been pegged. Provided that the high risk sections of line are mitigated in the form of marking, the impact should be contained.

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- Electrocutions can be successfully mitigated by ensuring that a bird-friendly monopole structure is used.

### CONCLUSION

Alternative routes have been investigated for the project. From a heritage, palaeontological, ecological as well as bird impact viewpoint, both Route Alternatives are acceptable, with the proposed mitigations implemented. Although from an ecological viewpoint Alternative Route 2 is slightly preferred.

The final decision between Route 1 or 2 should be made on the accumulative weight of other parameters such as feedback from public participation, land tenure issues, construction costs, etc. **Currently, Alternative 2 is preferred** as the final route alignment due to the above investigations favouring alternative 2.

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The **proposed Route alternative 2** for the line is on the farms Nooitgedacht 268 IT, Van Oudshoornstroom 261 IT portion 86, 27, 57, 75, 9, Rem, 12, 4, 17, 5, 1; Jan Hendriksfontein 263 IT portion 3; Uitkomst 292 IT (Consolidated to portion 18 of 292 IT) portion 3; Camden Power Station 329 IT Rem; Witpunt 267 IT portion 35 and 36. Both routes are in the Msukaligwa Local Municipality in the Mpumalanga Province.

Is an EMPr attached?

YES	NO
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*The EMPr must be attached as Appendix G.*

*The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as Appendix H.*

*If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in Appendix I.*

*Any other information relevant to this application and not previously included must be attached in Appendix J.*

\_\_\_\_\_  
NAME OF EAP

\_\_\_\_\_  
SIGNATURE OF EAP

\_\_\_\_\_  
DATE

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