environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

	(For official use only)
File Reference Number:	
Application Number:	**DEA Ref nr 12/12/20/2650** **NEAS Ref DEA/EIA/0000846/2011**
Date Received:	

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

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2010 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.

2. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.

3. Where applicable **tick** the boxes that are applicable in the report.

4. An incomplete report may be returned to the applicant for revision.

5. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.

6. This report must be handed in at offices of the relevant competent authority as determined by each authority.

7. No faxed or e-mailed reports will be accepted.

8. The report must be compiled by an independent environmental assessment practitioner.

9. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.

10. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.

1. INTRODUCTION

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

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

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

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

The lists of activities requiring environmental authorisation prior to commencement have also been revised. This was a major focus of the amendment process as the EIA system was inter alia overburdened by large numbers of applications associated with insignificant activities; the comprehensive scoping and EIR process with its associated substantial costs was in some instances unjustifiably required for activities for which the impacts were known and thereby potential entrepreneurs could be excluded from the economy; and some critical activities were omitted.Subsequently, three listing notices have been published in conjunction with the new regulations.
Listing notice one (1) stipulates the activities requiring a basic assessment report (BAR). These are typically activities that have the potential to impact negatively on the environment but due to the nature and scale of such activities, these impacts are generally known. Listing notice two (2) identifies the activities requiring both Scoping and an Environmental Impact Report (EIR) these are typically large scale or highly polluting activities and the full range of potential impacts need to be established through a scoping exercise prior to it being assessed. Listing notice three (3) contains activities that will only require an environmental authorisation through a basic assessment process if the activity is undertaken in one of the specified geographical areas indicated in that listing notice. Geographical areas differ from province to province.

2. LEGAL FRAMEWORK

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

Relevant to this project is the activities that are listed in Listing Notices 1 and 3. A Basic Assessment (BA) is the procedure designed for Listing Notices 1 and 3, where the impacts of activities are more generally known and can be easily managed.

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

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

Section 2 of the Constitution of the Republic of South Africa (Act 108 of 1996) (CA) states that: "This Constitution is the supreme law of the Republic; law or conduct inconsistent with it is invalid, and the obligations imposed by it must be fulfilled." Section24 of the CA, states that everyone has the right to an environment that is not harmful totheir health or well-being and to have the environment protected, for the benefit ofpresent 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 beingpromulgated. Section 33(1) concerns administrative justice which includes theconstitutional right to administrative action that is lawful, reasonable and procedurally fair.This Basic Assessment Report was accordingly prepared, submitted and considered within the constitutional framework set by inter alia section 24 and 33 of the Constitution.

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

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

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

- Environmental management must place people and their needs at the forefront ofits concern.
- Development must be socially, environmentally and economically sustainable.
- Environmental management must be integrated, acknowledging that all elementsof 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 environmentalgovernance 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, includingdisadvantages and benefits, must be considered, assessed and evaluated, anddecisions must be appropriate in the light of such consideration and assessment.
- The environment is held in public trust for the people, the beneficial use ofenvironmental resources must serve the public interest and the environment mustbe protected as the people's common heritage.

The Environmental Impact Assessment (EIA) process to be undertaken in respect of theauthorisation process of the proposed project is in compliance with the NEMAread with the Environmental Impact Assessment Regulations of 2010 (GovernmentNotice 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 power line:

Relevant notice:	Activity No:	Description of each listed activity as per project description:
R 544 of 18 June 2010	10	The construction of facilities or infrastructure for the distribution of electricity outside urban areas with a capacity of 88kV.
R 546 of 18 June 2010	4	The construction of an access and construction road of wider than 4 meters. (activity to be confirmed)

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

In terms of the NWA, the national government, acting through the Minister of Water and Environmental Affairs (previously the Minister of Water Affairs and Forestry), is the public trustee of South Africa's water resources, and must ensure that water is protected, used, development, conserved, managed and controlled in a sustainable and equitable manner for the benefit of all persons (section 3(1)).
In terms of the NWA a person may only use water without a license under certain circumstances. All other use, provided that such use qualify as a use listed in section 21 of the Act, require a water use license. A person may only use water without a license if such water use is permissible under Schedule 1 (generally domestic type use) if that water use constitutes a continuation of an existing lawful water use (water uses being undertaken prior to the commencement of the NWA, generally in terms of the Water Act of 1956), or if that water use is permissible in terms of a general authorisation issued under section 39 (general authorisations allow for the use of certain section 21 uses provided that the criteria and thresholds described in the general authorisation is met).Permissible water use furthermore includes water use authorised by a license issued in terms of the NWA.

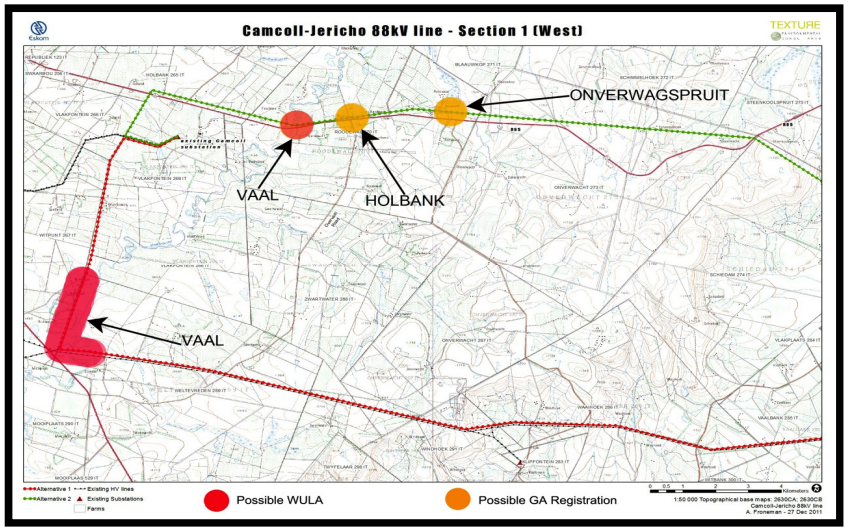
Section 21 of the NWA indicates that "water use" includes:

- taking water from a water resource (section 21(a));
- storing water (section 21(b));
- impeding or diverting the flow of water in a water course (section 21(c));
- engaging in a stream flow reduction activity contemplated in section 36 (section21(d));
- engaging in a controlled activity which has either been declared as such or isidentified in section 37(1) (section 21(e));
- discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit (section 21(f));
- disposing of waste in a manner which may detrimentally impact on a water resource (section 21(g);
- disposing in any manner of water which contains waste from, or which has heated in, any industrial or power generation process (section 21 (h));
- altering the bed, banks, course or characteristics of a water course (section 21(i));
- removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people (section 21(j)); and
- using water for recreational purposes (section 21(k)).

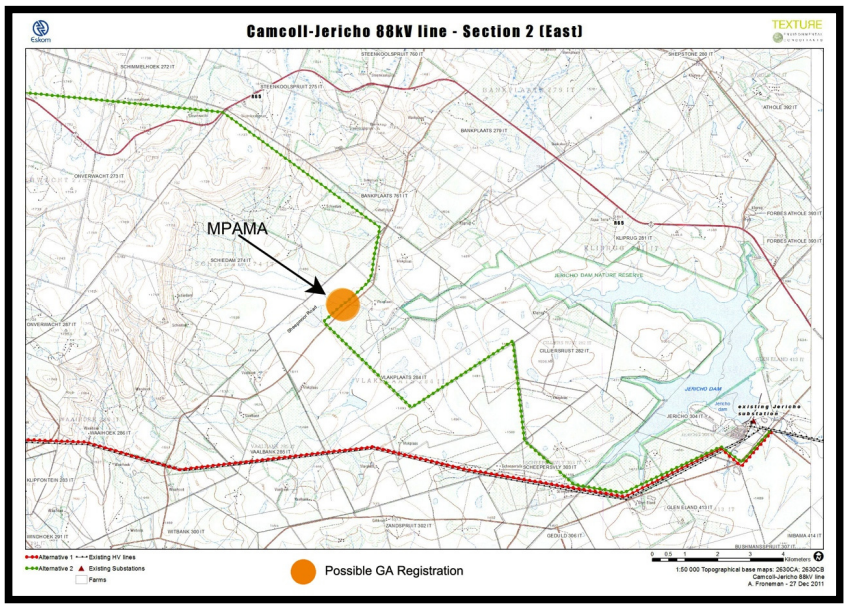
Of relevance is, that the two Alternative Routes traverse a number of rivers. Whichever route is finally decided upon, river crossings will still be necessary. Some of these rivers originate in the study area and are not even recognisable as rivers, but more as drainage lines, where they transect the power line corridors, while other rivers such as the Vaal River, are much larger. The largest river in the study area is the Vaal River, which needs to be crossed by both Alternative Routes. The Vaal River originates in the region and is still a small river of only approximately 5-10m wide where it flows through the study area. The terrain is very flat and during heavy rains the river easily floods over a width-distance of a few hundred metres, even up to 600-800 metres. In times of high rainfall seasons some of the other rivers hardly break their banks due to their small catchment areas in the study area. The Mpama River, which flows into the Jericho Dam, can also flood up to 100-200m in width during a heavy rainfall season.

The law (National Water Act (NWA)) sees each river crossing as a Water Use that will either need to be registered (General authorisation) or a water use licence applied for (Water Use Licence Application (WULA)).

However, a general indication is given in the below figures as to which river crossings will probably only need to be registered under General Authorisations and which will probably need Water Use Licence Applications (WULA). The water uses are all covered in the NWA. In the case of overhead power lines, 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.



Water Uses - Section 1 (West)



Water Uses - Section 2 (East)

- It is suggested that the applicant will **need to obtain a water use license or register as a water user** interms of the General Authorisations.
- It should be noted, that If there are any activities which relates to section 21 (c) and (i) water uses of the National Water Act 1998 (Act No. 36 of 1998), the applicant will need to get authorisation from the Department before such activities commences.

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

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

(a) places, buildings structures and equipment of cultural significance;
(b) places to which oral traditions are attached or which are associated with living heritage;
(c) historical settlements and townscapes;
(d) landscapes and natural features of cultural significance;

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

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

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

The current application requires a Phase 1 Heritage Impact Assessment by a qualified archaeologist/cultural heritage management consultant. Report attached in Appendix D2.

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

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

The NEMBA provides for the publishing of various lists of species and ecosystems by the Minister of Water andEnvironmental Affairs as well as by a Member of the Executive Council responsible forthe conservation of biodiversity of a province in relation to which certain activities may notbe undertaken without a permit. In terms of Section 57 of the NEMBA, no person maycarry out any restricted activity involving any species which has been identified by theMinister as "critically endangered species", "endangered species", "vulnerable species"or "protected species" without a permit. The NEMBA defines "restricted activity" inrelation 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 toThreatened and Protected Species which came into effect on 1 June 2007.Furthermore, the Minister published lists of critically endangered, endangered, vulnerableand protected species in terms of section 56(1) of the NEMBA.

2.6 National Forests Act (Act 84 of 1998)

The project may involve the cutting, disturbing, damaging or destroying of any protectedtrees declared in terms of section 12 of the National Forest Act (NFA) (Act 84 of 1998). If this is proven during the EIA a licence 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 protected trees have been identified and no permit applications are applicable.

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

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

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

The fire break should be:

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

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

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

The NEMWA commenced on 1 July 2009 and as a result of its commencement therelevant provisions in the Environment Conservation Act 73 of 1989 (ECA) in respect ofwaste management, were repealed.
Section 19 of the NEMWA provides for listed waste management activities and states interms of section 19(1), the Minister may publish a list of waste management activitiesthat have, or are likely to have a detrimental effect on the environment. Such a list waspublished in GN 718 of 3 July 2009 (GN 718).
In accordance with section 19(3), the Schedule to GN 718 provides that a wastemanagement licence is required for those activities listed therein prior to thecommencement, undertaking or conducting of same. In addition, GN 718 differentiatesbetween Category A and Category B waste management activities. Category A wastemanagement activities are those which require the conducting of a basic assessmentprocess as stipulated in the EIA Regulations, 2006 promulgated in terms of the NEMA aspart of the waste management licence application and Category B waste managementactivities are those that require the conducting of a scoping and environmental impactassessment process stipulated in the EIA Regulations, 2006 as part of the wastemanagement licence application.
No activities in respect of which a waste management license might be required underNEMWA, are envisaged for this project.

2.9 Civil Aviation Technical Standards (CATS)

Eskom has to adhere to Civil Aviation Technical Standards (CATS) regarding power lines.Power lines, overhead wires and cables are considered as obstacles and the detail shall be communicated to the Commissioner at an early planning stage.The Commissioner shall require the route of the power line, the co-ordinates (*latitude and longitude in degree, minute, seconds and tenth of seconds format*) of turning points in the line, the maximum height of the structures above ground level and the name of the power line. The Commissioner shall evaluate the route and require those sections of the line (if any), which is considered a danger to aviation to be marked or rerouted.
There is no specified definite distance between power lines and runways. The distances depends on various

factors such as height of lines, surrounding topography, runway approach, length of airstrip, size of planes landing at aerodrome, etc. A directory of airfields that lists registered airfields around the country ("Airfields Directory for Southern Africa") is available and could be obtained from Aviation Direct cc (Tel 011 465 2669 or 011 465 5291).
The South African Civil Aviation Authority **(**SACAA) suggests that Eskom follows the following procedure for each project:

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

After evaluating the site position and reviewing the information received, the CAA has no objection to the proposed 88kV line for either Alternative 1 or Alternative 2. The **SACAA therefor approved** the proposed 88kV line.

2.10 National Roads Act (Act No 54 of 1971)

The National Road N2 is affected by the proposed route servitude, should Alternative 1 be constructed and the Provincial Road R65 is affected by the proposed route servitudes, should Alternative 2 be constructed.
In terms of the National Roads Act (Act No 54 of 1971) the requirements of standard conditions applicable to power lines parallel to or across national and provincial roads are as follows:

- Only under exceptional circumstances will crossings within 500m of an intersection be permitted.
- No infrastructure will be allowed within 60m from the edge of the road reserve or within a distance of ninety-five (95) metres from the centre line of a building restriction road.
- Vertical clearance as set out in the Occupational Health and Safety Act No. 85 of 1993 to be maintained.
- The proposed angle of crossing to be as close to 90 degrees as possible.
- When considering an infrastructure site, no direct access from a national road to be permitted.
- A wayleave will be granted in terms of the Advertising on Roads and Ribbon Development Act (Act 21 of 1940, as amended) and the Roads Ordinance (Ordinance 22 of 1957, as amended) and its Regulations and does not exempt Eskom from the provisions of any other law.
- The Wayleave Application should be supplied to the Dept, with appropriate plans before the commencement of construction.
- The general conditions for the overhead wayleave should be accepted by Eskom in writing as per written notification of the Dept.
- The overhead lines are not to be lower than 10m above the highest point of the road surface.
- At crossings no pylons, poles, anchors or parts thereof may be erected closer than 16 m from the road reserve. Where the routes of the lines are parallel to the road(s), it must not be closer than 15m outside the road reserve.
- Crossing services should be perpendicular to the affected road(s).

It is expected that Eskom Land and Rights will apply for exemption from some of the requirements above, should Alternative 1 or 2 be constructed. The specific requirements from the Provincial Department of Roads and Transport: Roads Management should be obtained.

3. STUDY APPROACH

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

- Preliminary **site investigations,** to determine the scope of works of the project and to familiarise with the sites, were done in August and September 2011.
- Further site investigations were done by the EAPs and Eskom in Septemberand November 2011.

- **An application for a Basic Assessment was submitted to DEA** and the project was issued with DEA reference number 12/12/20/2650 and NEAS Ref DEA/EIA/0000846/2011.
- Specialist **ecological input** was obtained to investigate the flora, fauna and the general biophysical environment in an attempt to identify the potential impacts of the project.
- The proposed development is covered by the National Heritage Resources Act which incorporates heritage impact assessments in the Environmental Impact Assessment process. A **Phase 1 Heritage Impact Assessment** was therefore done by a specialist to identify the potential impact on heritage resources.
- Input from an **avifauna specialist** was also obtained to determine the impact of the proposed project on birds.
- During the months of November 2011 to January 2012 the EAPs, the **ecologist, the bird impact specialist and the archaeologist/cultural heritage management** consultant conducted **more site investigations**.
- The first phase of the **Public Participation Programme** (PPP) started in **September 2011 and continued until February 2012**. It included the identification of landowners and key stakeholders, the distribution of **information letters** with request for comment, as well as **advertising of the project in the press and on site**.
- In addition, invitations to an **information meeting conducted on 8 February 2012** were sent to all IAPs on **3 December 2011 and 25 January 2012**. 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. A slide show presentation, project posters with information, and maps of the routes were presented at the meeting. Written comment was requested at the meeting.
- A **draft Basic Assessment Report** – this document- was compiled with the main aim to identify issues, potential impacts and potential alternatives associated with this project. It included a description of the status quo of all relevant environmental components as well as the proceedings of the PPP and communication with registered Interested & Affected Parties (IAPs).
- 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 **22 May 2012** the **draft Basic Assessment Report was submitted** for comment to:
  - Regional Department of Water Affairs: Water Resources & Water Quality Management
  - South African Heritage Resources Agency
  - 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
  - BHP Billiton Energy Coal SA Ltd
  - Mondi
  - Lion Match Forestry Pty Ltd
  - SA Civil Aviation Authority
  - Gert Sibande District Municipality
  - Msukaligwa Local Municipality
  - Eskom Transmission
  - Eskom Distribution Northern Region
  - Landowners
- The **due date for comment on the draft Basic Assessment Report is 3 July 2012** .
- Subsequently, a **final Basic Assessment Report** (BAR) will be compiled **and submitted to DEA by August 2012**. This report will include all concerns raised to the draft BAR and responses thereto. The Consultants

(EAPs)will ensure that all concerns raised are addressed in appropriate detail in the final Basic Assessment Report.

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?	YES	NO
If YES, please complete the form entitled "Details of specialist and declaration of interest"		
for appointment of a specialist for each specialist thus appointed:		

Any specialist reports must be contained in Appendix D.

1. ACTIVITY DESCRIPTION

Describe the activity, which is being applied for, in detail[1]:

1.1 Project Background

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

The current Environmental Impact Assessment application is part of a broader scope of works to strengthen Eskom's network. Currently the network is experiencing under voltages and is incapable of handling additional loads due to the contingency constraints of the network. One of the solutions to the above is to construct the following:

- Construct a 45km 88 kV chickadee line from the existing Camcoll Substation to the existing Jericho Substation;
- establish 1 x 88Kv feeder bay at Camcoll Substation;
- establish 1 x 88kV feeder bay at Jericho Substation;
- construct an access/ construction road of 8 meters wide for the line;
- obtain a servitude area of 31metres wide for the line.

The applicant is Eskom Distribution Northern Region, Land Development with contact person Ms. Marriam Ngwezi, Environmental Management in Witbank.

1.2 Locality and Regional Context

The proposed power line corridors are situated in the Mpumalanga Province, east of Ermelo, north of Sheepmoor and west of Amsterdam.
Two alternative routes are considered for the power line. The study area for the proposed power line servitudes runs approximately east-west over a distance of 35-50km and links between the two substations of Camcoll and Jericho. Both substations lay between the public roads of the N2 (to the south) and the R65 (to the north), with Jericho Substation situated at the south end of Jericho Dam.

The affected properties for the **proposedAlternative 1** is on the farms Vlakfontein 269IT portion 2, 3, 4; Vlakfontein 266IT portion 9; Weltevreden 289IT portion 2, 3, 6, 10, 11; Zwartwater 288IT portion 1, 6; Onverwacht 287IT portion 6; Windhoek 291IT portion 8; Waaihoek 286IT portion 3, 4, 5, 6, 11, 12, 13; Vaalbank 285IT portion 2, 4, 6; Vlakplaats 284IT portion 1, 7, 9, 12; Scheepersvley 303IT portion 2, 4, 5, 6; Glen Eland 413IT portion 11/15, 13, Rem; Jericho 304IT portion 1, 2.
Alternative 2 is on the farms Vlakfontein 269IT portion 1, 4; Vlakfontein 266IT portion 4; Holbank 265IT portion 12; Roodewal 270IT portion 2, 5, 6, 7, 8, 16, 17, 19, 24; Onverwacht 273IT portion 3, 5, 6, 9, 12, RE; Schiedam 274IT portion RE; Vlakplaats 284IT portion 3, 11, 13, 14, 20, 23; Cilliersrust 282IT portion RE; Scheepersvley 303IT portion 2, 6, RE; Glen Eland 413IT portion 11/15, 13, Rem; Jericho 304IT portion 1, 2 in the Msukaligwa Local Municipality in the Mpumalanga Province.

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

The study area is situated on the 1:50 000 topographical base maps 2630CA and 2630CB. (Refer to Appendices A1-A4 for copies of the Locality map and the route maps). The alternatives for the project are found at approximately:

Existing Camcoll sub:

Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
30° 10.776' E	26° 34.325' S

Proposed Alternative 1 (45.08km):

250m intervals	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
1	30° 10.741' E	26° 34.347' S
2	30° 10.617' E	26° 34.424' S
3	30° 10.493' E	26° 34.501' S
4	30° 10.356' E	26° 34.491' S
5	30° 10.214' E	26° 34.448' S
6	30° 10.071' E	26° 34.404' S
7	30° 9.929' E	26° 34.361' S
8	30° 9.845' E	26° 34.446' S
9	30° 9.779' E	26° 34.568' S
10	30° 9.713' E	26° 34.689' S
11	30° 9.659' E	26° 34.814' S
12	30° 9.636' E	26° 34.948' S
13	30° 9.613' E	26° 35.082' S
14	30° 9.590' E	26° 35.215' S
15	30° 9.568' E	26° 35.349' S
16	30° 9.545' E	26° 35.483' S
17	30° 9.522' E	26° 35.617' S
18	30° 9.499' E	26° 35.751' S
19	30° 9.476' E	26° 35.885' S
20	30° 9.454' E	26° 36.018' S
21	30° 9.431' E	26° 36.152' S
22	30° 9.408' E	26° 36.286' S
23	30° 9.385' E	26° 36.420' S
24	30° 9.361' E	26° 36.553' S
25	30° 9.329' E	26° 36.686' S
26	30° 9.298' E	26° 36.818' S
27	30° 9.265' E	26° 36.950' S
28	30° 9.225' E	26° 37.081' S
29	30° 9.185' E	26° 37.211' S
30	30° 9.144' E	26° 37.341' S
31	30° 9.104' E	26° 37.472' S
32	30° 9.064' E	26° 37.602' S
33	30° 9.024' E	26° 37.733' S
34	30° 8.984' E	26° 37.864' S
35	30° 8.944' E	26° 37.994' S
36	30° 8.904' E	26° 38.124' S
37	30° 8.864' E	26° 38.255' S
38	30° 8.849' E	26° 38.369' S
39	30° 8.999' E	26° 38.379' S
40	30° 9.149' E	26° 38.389' S
41	30° 9.300' E	26° 38.398' S
42	30° 9.447' E	26° 38.424' S
43	30° 9.595' E	26° 38.451' S
44	30° 9.743' E	26° 38.477' S
45	30° 9.891' E	26° 38.503' S
46	30° 10.039' E	26° 38.529' S
47	30° 10.187' E	26° 38.555' S
48	30° 10.334' E	26° 38.581' S
49	30° 10.482' E	26° 38.607' S
50	30° 10.630' E	26° 38.633' S
51	30° 10.778' E	26° 38.659' S

52	30° 10.926' E	26° 38.685' S
53	30° 11.073' E	26° 38.712' S
54	30° 11.220' E	26° 38.742' S
55	30° 11.367' E	26° 38.774' S
56	30° 11.511' E	26° 38.812' S
57	30° 11.655' E	26° 38.851' S
58	30° 11.800' E	26° 38.889' S
59	30° 11.944' E	26° 38.927' S
60	30° 12.089' E	26° 38.966' S
61	30° 12.233' E	26° 39.004' S
62	30° 12.378' E	26° 39.042' S
63	30° 12.522' E	26° 39.081' S
64	30° 12.667' E	26° 39.119' S
65	30° 12.811' E	26° 39.157' S
66	30° 12.956' E	26° 39.196' S
67	30° 13.100' E	26° 39.234' S
68	30° 13.245' E	26° 39.272' S
69	30° 13.389' E	26° 39.311' S
70	30° 13.534' E	26° 39.349' S
71	30° 13.678' E	26° 39.387' S
72	30° 13.823' E	26° 39.426' S
73	30° 13.967' E	26° 39.464' S
74	30° 14.112' E	26° 39.502' S
75	30° 14.257' E	26° 39.539' S
76	30° 14.401' E	26° 39.577' S
77	30° 14.546' E	26° 39.615' S
78	30° 14.691' E	26° 39.653' S
79	30° 14.835' E	26° 39.690' S
80	30° 14.980' E	26° 39.728' S
81	30° 15.125' E	26° 39.766' S
82	30° 15.269' E	26° 39.804' S
83	30° 15.414' E	26° 39.841' S
84	30° 15.560' E	26° 39.864' S
85	30° 15.708' E	26° 39.839' S
86	30° 15.856' E	26° 39.814' S
87	30° 16.004' E	26° 39.788' S
88	30° 16.152' E	26° 39.764' S
89	30° 16.300' E	26° 39.738' S
90	30° 16.450' E	26° 39.741' S
91	30° 16.601' E	26° 39.747' S
92	30° 16.751' E	26° 39.753' S
93	30° 16.902' E	26° 39.759' S
94	30° 17.052' E	26° 39.765' S
95	30° 17.203' E	26° 39.771' S
96	30° 17.353' E	26° 39.777' S
97	30° 17.504' E	26° 39.783' S
98	30° 17.654' E	26° 39.789' S
99	30° 17.805' E	26° 39.795' S
100	30° 17.955' E	26° 39.801' S
101	30° 18.103' E	26° 39.820' S
102	30° 18.246' E	26° 39.862' S
103	30° 18.389' E	26° 39.905' S
104	30° 18.533' E	26° 39.947' S
105	30° 18.676' E	26° 39.989' S
106	30° 18.819' E	26° 40.031' S
107	30° 18.962' E	26° 40.073' S
108	30° 19.105' E	26° 40.116' S
109	30° 19.249' E	26° 40.158' S
110	30° 19.392' E	26° 40.200' S
111	30° 19.535' E	26° 40.242' S
112	30° 19.682' E	26° 40.244' S
113	30° 19.832' E	26° 40.226' S
114	30° 19.981' E	26° 40.209' S

115	30° 20.130' E	26° 40.191' S
116	30° 20.280' E	26° 40.173' S
117	30° 20.429' E	26° 40.156' S
118	30° 20.579' E	26° 40.138' S
119	30° 20.728' E	26° 40.121' S
120	30° 20.878' E	26° 40.103' S
121	30° 21.027' E	26° 40.086' S
122	30° 21.176' E	26° 40.068' S
123	30° 21.326' E	26° 40.050' S
124	30° 21.475' E	26° 40.033' S
125	30° 21.625' E	26° 40.015' S
126	30° 21.774' E	26° 39.997' S
127	30° 21.923' E	26° 39.980' S
128	30° 22.073' E	26° 39.962' S
129	30° 22.222' E	26° 39.945' S
130	30° 22.372' E	26° 39.927' S
131	30° 22.521' E	26° 39.909' S
132	30° 22.670' E	26° 39.892' S
133	30° 22.818' E	26° 39.900' S
134	30° 22.963' E	26° 39.935' S
135	30° 23.109' E	26° 39.970' S
136	30° 23.255' E	26° 40.005' S
137	30° 23.400' E	26° 40.040' S
138	30° 23.546' E	26° 40.075' S
139	30° 23.691' E	26° 40.110' S
140	30° 23.837' E	26° 40.145' S
141	30° 23.982' E	26° 40.179' S
142	30° 24.128' E	26° 40.215' S
143	30° 24.274' E	26° 40.249' S
144	30° 24.421' E	26° 40.277' S
145	30° 24.569' E	26° 40.303' S
146	30° 24.717' E	26° 40.328' S
147	30° 24.865' E	26° 40.353' S
148	30° 25.013' E	26° 40.379' S
149	30° 25.161' E	26° 40.404' S
150	30° 25.309' E	26° 40.429' S
151	30° 25.457' E	26° 40.455' S
152	30° 25.605' E	26° 40.480' S
153	30° 25.753' E	26° 40.505' S
154	30° 25.901' E	26° 40.530' S
155	30° 26.049' E	26° 40.556' S
156	30° 26.197' E	26° 40.581' S
157	30° 26.345' E	26° 40.606' S
158	30° 26.493' E	26° 40.632' S
159	30° 26.641' E	26° 40.657' S
160	30° 26.789' E	26° 40.682' S
161	30° 26.936' E	26° 40.697' S
162	30° 27.067' E	26° 40.631' S
163	30° 27.198' E	26° 40.564' S
164	30° 27.330' E	26° 40.498' S
165	30° 27.461' E	26° 40.432' S
166	30° 27.592' E	26° 40.365' S
167	30° 27.724' E	26° 40.299' S
168	30° 27.855' E	26° 40.233' S
169	30° 27.986' E	26° 40.166' S
170	30° 28.118' E	26° 40.100' S
171	30° 28.249' E	26° 40.034' S
172	30° 28.380' E	26° 39.967' S
173	30° 28.511' E	26° 39.910' S
174	30° 28.619' E	26° 40.004' S
175	30° 28.727' E	26° 40.098' S
176	30° 28.835' E	26° 40.192' S
177	30° 28.930' E	26° 40.097' S

178	30° 29.023' E	26° 39.991' S
179	30° 29.117' E	26° 39.885' S
180	30° 29.210' E	26° 39.779' S
181	30° 29.304' E	26° 39.673' S

Alternative 2 (47.43km):

250m intervals	Longitude(Degrees Decimal Minutes)	Latitude(Degrees Decimal Minutes)
1	30° 10.780' E	26° 34.313' S
2	30° 10.649' E	26° 34.379' S
3	30° 10.517' E	26° 34.445' S
4	30° 10.381' E	26° 34.461' S
5	30° 10.241' E	26° 34.413' S
6	30° 10.100' E	26° 34.365' S
7	30° 9.959' E	26° 34.318' S
8	30° 9.955' E	26° 34.219' S
9	30° 10.018' E	26° 34.096' S
10	30° 10.080' E	26° 33.972' S
11	30° 10.142' E	26° 33.849' S
12	30° 10.205' E	26° 33.726' S
13	30° 10.267' E	26° 33.603' S
14	30° 10.329' E	26° 33.480' S
15	30° 10.443' E	26° 33.461' S
16	30° 10.587' E	26° 33.502' S
17	30° 10.730' E	26° 33.543' S
18	30° 10.874' E	26° 33.584' S
19	30° 11.017' E	26° 33.626' S
20	30° 11.160' E	26° 33.667' S
21	30° 11.304' E	26° 33.708' S
22	30° 11.447' E	26° 33.749' S
23	30° 11.590' E	26° 33.790' S
24	30° 11.734' E	26° 33.831' S
25	30° 11.877' E	26° 33.873' S
26	30° 12.021' E	26° 33.914' S
27	30° 12.164' E	26° 33.955' S
28	30° 12.308' E	26° 33.996' S
29	30° 12.451' E	26° 34.037' S
30	30° 12.595' E	26° 34.078' S
31	30° 12.739' E	26° 34.105' S
32	30° 12.887' E	26° 34.081' S
33	30° 13.035' E	26° 34.058' S
34	30° 13.184' E	26° 34.034' S
35	30° 13.332' E	26° 34.010' S
36	30° 13.480' E	26° 33.986' S
37	30° 13.628' E	26° 33.963' S
38	30° 13.777' E	26° 33.939' S
39	30° 13.925' E	26° 33.915' S
40	30° 14.073' E	26° 33.892' S
41	30° 14.221' E	26° 33.868' S
42	30° 14.369' E	26° 33.844' S
43	30° 14.518' E	26° 33.821' S
44	30° 14.666' E	26° 33.797' S
45	30° 14.815' E	26° 33.809' S
46	30° 14.965' E	26° 33.824' S
47	30° 15.115' E	26° 33.838' S
48	30° 15.264' E	26° 33.853' S
49	30° 15.414' E	26° 33.868' S
50	30° 15.563' E	26° 33.883' S
51	30° 15.713' E	26° 33.897' S
52	30° 15.863' E	26° 33.912' S
53	30° 16.012' E	26° 33.927' S
54	30° 16.162' E	26° 33.942' S
55	30° 16.312' E	26° 33.956' S
56	30° 16.461' E	26° 33.971' S

57	30° 16.611' E	26° 33.986' S
58	30° 16.761' E	26° 34.001' S
59	30° 16.910' E	26° 34.015' S
60	30° 17.060' E	26° 34.030' S
61	30° 17.209' E	26° 34.045' S
62	30° 17.359' E	26° 34.060' S
63	30° 17.509' E	26° 34.074' S
64	30° 17.659' E	26° 34.089' S
65	30° 17.808' E	26° 34.104' S
66	30° 17.958' E	26° 34.118' S
67	30° 18.108' E	26° 34.133' S
68	30° 18.257' E	26° 34.148' S
69	30° 18.407' E	26° 34.163' S
70	30° 18.557' E	26° 34.177' S
71	30° 18.706' E	26° 34.192' S
72	30° 18.856' E	26° 34.207' S
73	30° 19.005' E	26° 34.221' S
74	30° 19.155' E	26° 34.236' S
75	30° 19.305' E	26° 34.251' S
76	30° 19.454' E	26° 34.265' S
77	30° 19.604' E	26° 34.280' S
78	30° 19.754' E	26° 34.295' S
79	30° 19.903' E	26° 34.310' S
80	30° 20.053' E	26° 34.324' S
81	30° 20.203' E	26° 34.339' S
82	30° 20.337' E	26° 34.386' S
83	30° 20.454' E	26° 34.471' S
84	30° 20.571' E	26° 34.557' S
85	30° 20.688' E	26° 34.642' S
86	30° 20.804' E	26° 34.728' S
87	30° 20.921' E	26° 34.813' S
88	30° 21.038' E	26° 34.899' S
89	30° 21.154' E	26° 34.984' S
90	30° 21.271' E	26° 35.070' S
91	30° 21.388' E	26° 35.155' S
92	30° 21.505' E	26° 35.241' S
93	30° 21.622' E	26° 35.326' S
94	30° 21.738' E	26° 35.412' S
95	30° 21.855' E	26° 35.497' S
96	30° 21.972' E	26° 35.583' S
97	30° 22.089' E	26° 35.668' S
98	30° 22.205' E	26° 35.754' S
99	30° 22.322' E	26° 35.839' S
100	30° 22.439' E	26° 35.925' S
101	30° 22.556' E	26° 36.010' S
102	30° 22.672' E	26° 36.096' S
103	30° 22.789' E	26° 36.181' S
104	30° 22.875' E	26° 36.277' S
105	30° 22.847' E	26° 36.410' S
106	30° 22.818' E	26° 36.543' S
107	30° 22.790' E	26° 36.676' S
108	30° 22.770' E	26° 36.810' S
109	30° 22.756' E	26° 36.944' S
110	30° 22.724' E	26° 37.075' S
111	30° 22.649' E	26° 37.190' S
112	30° 22.543' E	26° 37.286' S
113	30° 22.436' E	26° 37.382' S
114	30° 22.330' E	26° 37.477' S
115	30° 22.223' E	26° 37.573' S
116	30° 22.116' E	26° 37.668' S
117	30° 22.009' E	26° 37.764' S
118	30° 21.994' E	26° 37.861' S
119	30° 22.096' E	26° 37.961' S

120	30° 22.198' E	26° 38.060' S
121	30° 22.300' E	26° 38.160' S
122	30° 22.403' E	26° 38.259' S
123	30° 22.505' E	26° 38.359' S
124	30° 22.607' E	26° 38.458' S
125	30° 22.709' E	26° 38.557' S
126	30° 22.811' E	26° 38.657' S
127	30° 22.913' E	26° 38.756' S
128	30° 23.015' E	26° 38.856' S
129	30° 23.118' E	26° 38.956' S
130	30° 23.220' E	26° 39.055' S
131	30° 23.322' E	26° 39.154' S
132	30° 23.429' E	26° 39.210' S
133	30° 23.551' E	26° 39.130' S
134	30° 23.672' E	26° 39.050' S
135	30° 23.794' E	26° 38.971' S
136	30° 23.916' E	26° 38.891' S
137	30° 24.038' E	26° 38.811' S
138	30° 24.160' E	26° 38.731' S
139	30° 24.281' E	26° 38.652' S
140	30° 24.403' E	26° 38.572' S
141	30° 24.525' E	26° 38.492' S
142	30° 24.647' E	26° 38.413' S
143	30° 24.768' E	26° 38.333' S
144	30° 24.890' E	26° 38.253' S
145	30° 25.012' E	26° 38.173' S
146	30° 25.080' E	26° 38.202' S
147	30° 25.095' E	26° 38.337' S
148	30° 25.111' E	26° 38.471' S
149	30° 25.127' E	26° 38.606' S
150	30° 25.142' E	26° 38.741' S
151	30° 25.158' E	26° 38.876' S
152	30° 25.173' E	26° 39.010' S
153	30° 25.189' E	26° 39.145' S
154	30° 25.204' E	26° 39.279' S
155	30° 25.220' E	26° 39.414' S
156	30° 25.236' E	26° 39.549' S
157	30° 25.251' E	26° 39.683' S
158	30° 25.296' E	26° 39.805' S
159	30° 25.404' E	26° 39.900' S
160	30° 25.512' E	26° 39.994' S
161	30° 25.620' E	26° 40.089' S
162	30° 25.727' E	26° 40.184' S
163	30° 25.835' E	26° 40.278' S
164	30° 25.943' E	26° 40.373' S
165	30° 26.051' E	26° 40.468' S
166	30° 26.182' E	26° 40.521' S
167	30° 26.330' E	26° 40.546' S
168	30° 26.478' E	26° 40.571' S
169	30° 26.626' E	26° 40.596' S
170	30° 26.775' E	26° 40.621' S
171	30° 26.920' E	26° 40.630' S
172	30° 27.053' E	26° 40.566' S
173	30° 27.186' E	26° 40.503' S
174	30° 27.320' E	26° 40.440' S
175	30° 27.453' E	26° 40.377' S
176	30° 27.586' E	26° 40.313' S
177	30° 27.719' E	26° 40.250' S
178	30° 27.853' E	26° 40.187' S
179	30° 27.986' E	26° 40.124' S
180	30° 28.119' E	26° 40.061' S
181	30° 28.252' E	26° 39.997' S
182	30° 28.385' E	26° 39.934' S

183	30° 28.517' E	26° 39.883' S
184	30° 28.632' E	26° 39.971' S
185	30° 28.746' E	26° 40.059' S
186	30° 28.858' E	26° 40.121' S
187	30° 28.954' E	26° 40.016' S
188	30° 29.049' E	26° 39.912' S
189	30° 29.145' E	26° 39.807' S
190	30° 29.240' E	26° 39.702' S

Existing Jericho Sub-station:

Longitude(Degrees Decimal Minutes)	Latitude(Degrees Decimal Minutes)
30° 29.041' E	-26° 39.454' S

1.3 Project Details

1.3.1 Need for the project

This EIA application is part of the broader scope of works to improve the network performance. Currently the network is experiencing under voltages and is incapable of handling additional loads due to the contingency constraints of the network. One of the solutions to the above is to construct the following:

1.3.2 Project components

The construction of the project entail the following:

1. Construct a 45km 88 kV chickadee line from the existing Camcoll Substation to the existing Jericho Substation;
2. establish 1 x 88Kv feeder bay at Camcoll Substation;
3. establish 1 x 88kV feeder bay at Jericho Substation;
4. construct an access/ construction road of 8 meters wide for the line;
5. obtain a servitude area for the line.

Refer to Appendix C1 for the Eskom scope of works.

*1. Construct a **88kV chickadee line***

It is proposed to construct an approximately 45km 88kV chickadee line from the existing Camcoll Substation to the existing Jericho substation. The proposed structure for the 88kV power line, is a monopole steel structure, constructed to 132kV specifications. 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. Refer to Appendix C2 and C3 in the BAR for visuals of the monopole steel structure (pylon).

The National Road N2 is affected by the proposed route servitude, should Alternative 1 be constructed. SANRAL will require that the nearest poles or structures of the power line be erected at a distance of not less than 60 metres outside the N2 road reserve.

The Provincial Road R65 is affected by the proposed route servitudes, should Alternative 2 be constructed. In terms of the National Roads Act (Act No 54 of 1971) the requirements of standard conditions applicable to power lines parallel to or across national and provincial roads are as follows:

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

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

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

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

Two Location Alternativesareinvestigated for the proposed project (Refer to maps in Appendix A1-A4 of the BAR):

Alternative 1: The route for the line is proposed to run from the existing Camcoll Substation to the south in order to join some of Eskom's existing power lines which run to the existing Jericho Substation in the east.

Stretch AB

Stretch AB runs from the Camcoll Substation on Vlakfontein 259IT westwards where it bends to the south following the border between Vlakfontein 268IT, Vlakfontein 266IT and Weltevereden 289IT (east) and the border between Vlakfontein 266IT and Witpunt 267IT (west).This stretch primarily crosses patches with agricultural fields. A number of farm homesteads occur on Vlakfontein 268IT (to the east of the proposed power line) and on Braklaagte (west of the proposed power line). At these farmsteads avenues with Blue Gum trees occur along the winding course of the river.

Stretch BC

Stretch BC bends eastwards following Eskom's existing 400kV power line eastwards and runs across the following farms: Weltevreden 289IT, Onverwacht 281IT, Windhoek 291IT and Waaihoek 286IT where it crosses the dirt road running to Sheepmore.This stretch runs across patches with agricultural fields but also crosses higher pristine land with no evidence for any occupation or cultivation.

Stretch CD

Stretch CD runs from the Sheepmoor dirt road eastwards across the following farms: Vaalbank 285IT, Vlakplaas 284IT, Scheepersvley 303IT and Jericho 304IT where it ends at the Jericho Substation and the Jerichodam.On Windhoek 291IT and Waaihoek 286IT this stretch crosses an undulating strtch which includes low sandstone mountains and ridges. Hereafter this stretch runs across level land which includes patches with agricultural fields and woodlands mostly consisting of plantations as well as dense clusters of wattle trees. The penultimate stretch of Stretch CD runs across continuous agricultural fields on Scheepersvley 303IT and Jericho 304IT.

Alternative 2: The route for the line is proposed to run from Camcoll Substation to the north in order to join the R65 from where it will run along this road to the east before bending to the south and then to the east again in order to end at the existing Jericho Substation.

Stretch AB

Stretch AB runs from the Camcoll Substation on Vlakfontein 259IT westwards and bends to the north following the border between Vlakfontein 269IT and Vlakfontein 266IT.This stretch mainly crosses agricultural fields.

Stretch BC

Stretch BCbends eastwards following the southern shoulder of Road R65 and crosses the following farms or follows the borders between the following farms: Vlakfontein 269IT/Holbank 285IT; Roodewal 270IT/Blaauwkop 271IT and Schimmelhoek 272IT, Steenkoolspruit 275IT/Onverwacht 273IT. (Alternative 02 deviates from the winding stretch in Road 65 [on Onverwacht 273IT] and follows a straight corridor across Schimmelhoek 272IT in order to avoid the turns in the road).The first half of this stretch primarily crosses agricultural fields. At least three older (historical) dwellings occur on Roodewal 270IT but will not be affected by the proposed power line.The second half of Stretch BC follows a slightly undulating course across pristine grass veld whilst the last part of the stretch runs through woodlands on Schimmelhoek 272IT.

Stretch CD

Stretch CD bends towards the south-east and runs across Schiedam 274IT and along the borders of Klipbrug 281IT and Vlakplaats 284IT.

Stretch DE

Stretch DE bends on the border of Klipbrug 281IT and Vlakplaas 284IT to the south-west and follows the border between Cilliersrust 282IT and Vlakplaas 284IT before bending towards the south-east in order to cross Scheepersvley 303IT where it joins Eskom's existing power line. From here Stretch DE runs further to the east following Eskom's power line across Jericho 304IT in order to join the Jericho Substation. This stretch mainly runs through woodlands (Scheepersvley 303IT) and then across agricultural fields on Jericho 304IT.

The **final proposed route** is **Alternative 1** on the farms **Vlakfontein 269IT portion 2, 3, 4; Vlakfontein 266IT portion 9; Weltevreden 289IT portion 2, 3, 6, 10, 11; Zwartwater 288IT portion 1, 6; Onverwacht 287IT portion 6; Windhoek 291IT portion 8; Waaihoek 286IT portion 3, 4, 5, 6, 11, 12, 13; Vaalbank 285IT portion 2, 4, 6; Vlakplaats 284IT portion 1, 7, 9, 12; Scheepersvley 303IT portion 2, 4, 5, 6; Glen Eland 413IT portion 11/15, 13, Rem; Jericho 304IT portion 1, 2** in the Msukaligwa Local Municipality in the Mpumalanga Province.

2. *Construct an **construction/access road** for the new lines*

Access to properties for the purpose of construction will be arranged with landowners. The existing roads will be used as far as is feasible. Relevant is the fact that both alternatives are adjacent to existing impact – either roads or an existing corridor of power lines for most of the alignment. New access will therefore only be required at the sections away from the roads or away from the existing servitutes underneath the corridor op power lines. Should a construction road be unavoidable, then an area of 8m will be selectively cleared, 4m on either side of the center line of the line.

3. ***Obtain a servitude area**for the proposed line*

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

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

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 from which a property owner can benefit by utilising the available energy.

A servitude area is generally a no building area, except for Eskom structures. Usually, normal farming activities may continue in a servitude with the exception that no trees may be planted or structures may be erected. The following will be applicable to the servitute areas for this project:

- In general, a building restriction of 31 meters is applicable to Eskom 132kV power lines, which implies 15,5 meters on either side of the center line underneath the power line.
- In the afforestation areas the servitude will be adapted to ensure the safety of the power line and the plantation. The width of the servitude will be calculated according to the rotation age of the plantation, that is the optimal age at which the specific component will be clear felled. The purpose for which the trees are grown will determine the rotation age.
- The height of the tree is taken into account, for example Blue gum can mature to approximately 25 meter, Black Wattle to 18 meter and Pine to 30 meter. Hence, in the case of Pine a general tree restriction of 30 meters from the center line underneath the power line will apply. The total servitude width will therefore be 60 meters.
- In the afforestation areas every affected property will have to be assessed individually to calculate the width of the servitude according to the type of plantation and the rotation age of that plantation.
- The negotiations with every landowner to this regard will be conducted once the final route has been recommended.
- For the first section of the route for Alternative 1, from Jericho substation to Kliphoek substation, it will be adjacent to the existing Jericho-Kliphoek 88kV line. For this section Eskom Distribution (Dx) has two existing servitudes. The first Dx servitude,on the northern side of the existing 400kV Camden - Edwaleni Transmission (Tx) line, is 27.4m wide (13.7 metres on either side of the centre line) and currently empty. The centre line of this vacant Dx servitude is 39,75 meter from the centre line of the Tx power line.**(Please note - the exact measurements will be confirmed on site by the negotiator and the surveyor).**
- The centre point of the second Dx servitude (immediately north of the first vacant Dx servitude) is 15.25 meters from the centre point of the first Dx servitude (this is referred to as the seperation distance). The second Dx servitude is also 27.4 metres wide and accommodates the existing Jericho-Kliphoek 88kV line.
- The vacant area/servitude north of the 400kV Camden - Edwaleni Tx line is therefore adequate tot accommodate the proposed new 88kV line. A new servitude for this section from Jericho substation to Kliphoek substation is therefore not needed and the proposed 88kV line can be constructed in the existing servitude areas.

1.4 Consideration for servitudes

The process of negotiations can commence as soon as the Environmental Impact Assessment recommend the preferred alternative i.e. route, site etc. for the project. After identification of the preferred alternative, a land valuator will be appointed to value the property(ies). The distance/length of the line affecting each property is measured to calculate the area affected by the line. A process of negotiations will follow between landowner(s) and Eskom appointed negotiators. After agreement has been reached, Eskom and the landowner will sign the documents. The valuations will be tabled before an Eskom tender committee for approval. Eskom pays the consideration as determined by the professional evaluator on a before and after basis. Servitude rights for a servitude in general terms will be obtained by means of an “Option to Acquire a Servitude”. Interest will be paid according to the laid down principle by the National Treasury Act.

The value of the servitude in the afforestation areas will be calculated according to the Faustmann Formula. This is a formula designed to detemine the loss due to premature clearfelling of plantation in the servitude areas. The value of the property will be calculated as well as the loss of income due to the removal of premature trees.

Eskom Distribution has a compensation model that allows for a once-off compensation for the servitude which will be paid upon registration of the servitude. A servitude will be registered which provides Eskom with the rights to construct and maintain a power line on the applicable property. The applicable land is therefore not purchased. All normal activity on the farm/land can continue as usual. For the sake of safety the landowner should not construct

any structures in the servitude area underneath the power line. Eskom has the right to enter the servitude 24 hours per day to maintain the line in so much as following the laid down farm access protocol..
Power for rural supply cannot be supplied directly from an 132kV line. There is however indirect benefit in the construction of the line for the community, in that the supply would be strengthened with a feed to the substations that feed the rural lines. Eskom strives to follow the shortest route from point A to B due to the fact that the line costs approximately R1 600 000 per kilometer to construct. Objections from landowners/users and site-specific problems will be considered in the finalisation of any route/site.
The option document (referred to above) is a binding document that will reflect all the requirements of the landowner, for example: the negotiated compensation for the servitude; specific access arrangements to his property etc. Negotiations between the landowner and the negotiator will address site-specific requirements such as the positions of the pylons, on the property in question. These agreements/requirements will be noted on a site plan, as part of the option document. Construction may only commence once the environmental authorisation has been issued and the option document has been signed by the affected landowner.

2. FEASIBLE AND REASONABLE ALTERNATIVES

"Alternatives", in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—
(a) the property on which or location where it is proposed to undertake the activity;
(b) the type of activity to be undertaken;
(c) the design or layout of the activity;
(d) the technology to be used in the activity;
(e) the operational aspects of the activity; and
(f) the option of not implementing the activity.

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

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

2.1 ACTIVITY ALTERNATIVES:

2.1.1 Electricity Distribution

It was identified by Eskom that the network performance in the area need to be improved. In order to address the aforementioned problem there is a need to construct additional feeders thus solving voltage problems and improving the performance of the network.
This current project is therefore designed to improve the supply of electricity of the Eskom Distribution Network. There is no other activity alternative due to the technical constraints of the proposed project.

2.1.2 Agriculture

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

- The land uses (landcover) within the study area are almost exclusively cultivation, grazing and afforestation. Cultivation dominates on the western side above the escarpment, with afforestation dominanting along the escarpment and in the east. Other land uses include private game farms, Bed and Breakfast Accomodation, urbanisation, small holdings and roads.
- The land capabilities of the area within which the proposed servitudes fall is that of good arable and grazing capabilities. Ground water potential is however unknown, but the area has good rainfall figures along with deep, good soils.
- The general quality and fertility of the soils is good as well as the presence of palatable grazing grasses. The actual carrying capacity of the open areas is relatively high when compared to many other bushveld areas. Infrastructure for commercial agricultural practices is good. The greatest limiting factor for the potential use of the open land as arable or grazing land is the coal mining industry.
- The impact to agricultural activities of the proposed power line will only be for a limited period during construction. The positions of the pylons will be cleared and a construction road of 8m wide could be cleared, if necessary, to construct the power line. After construction the access road will be revegetated and normal agricultural activites can continue under the power line as usual.
- It is therefore submitted that the servitude area will not interfere with any agricultural activities on the property. In addition, Eskom will not own the servitude but will purchase the rights to construct and maintain the lines. A change in land use from agriculture to other land uses is not applicable.
- In addition, in terms of the Subdivision of Agricultural Land Act, 1970 (Act 70 of 1970), Section 2(a) Eskom is a statutory body and therefore it is not subjected to the provisions of the Act.

2.1.3 Conservation

According to the document, Threatened Ecosystems in South Africa (2009), Eastern Highveld Grassland andEastern Temperate Freshwater Wetlands are both vulnerable veldtypes (General information taken from the SANBI website. www.bgis.sanbi.org). Mucina and Rutherford claim that Eastern Highveld Grassland is now endangered (EN). While Wakkerstroom Montane Grassland is least threatened (LT) and Eastern Temperate Freshwater Wetlands are vulnerable (VU).

The Eastern Highveld Grassland is an endangered veldtype, with only a very low percentage conserved in statutory reserves such as Nooitgedacht Dam and Jericho Dam Nature Reserves. Some protection is found in private reserves such as Holkranse, Kransbank and Morgenstond. Approximately 44% of the vegetation type has been transformed, mainly by cultivation, plantations, mines, urbanisation and the building of dams. Other agricultural practices such as sheep and cattle farming (Grazing) place further pressure on the preservation of the grassland. Within the study area there are a number of small private game reserves that help to preserve the veld and havealso introduced large mammals previously found in the region. The biggest impacts or pressures on the Eastern Highveld Grassland unit are from cultivation, afforestation and mining. Not many alien plant species are encountered in the region with view invasive weeds presesnt. The biggest threat and concern is that of blackwattle (*Acacia mearsnsii*) which can and as become invasive in disturbed sites and in the kloofs of the escarpment ridges. Erosion in the veldtype and the study area is very low.

Wakkerstroom Montane Grassland is considered by Mucina and Rutherford to be least threatened (LT) as a vegetation unit, eventhough less than 1% is statutorily protected (Paardeplaats Nature Reserve). Land pressures from agriculture in the form of cultivation (5% cultivated) and to an extend grazing, are low due to the colder climate, shallow soils and sour grasses. However, a major threat to the grassland unit is afforestation. Furthermore, tree species used in afforestation (*Acacia* and *Eucalpytus*) are in many cases declared invasive weeds and this is evident from the numerous areas where seedlings spring up in areas away from the formal planted areas and populate those natural areas. It is the opinion of the fauna and flora specialist for this project that this grassland vegetation should be considered vulnerable, eventhough it does not fully meet the formal criteria of such.

Water is a scarce commodity in South Africa that is fast becoming scarcer. Many if not most wetlands are under threat, even those protected. Eastern Temperate Freshwater Wetlands, found scattered throughout the region are no exception. Many are under threat from afforestation and mining. According to Mucina & Rutherfordapproximately 5% is statutorily conserved in reserves such as Blesbokspruit, Hogsback, Marievale, Olifantsvlei, Seekoeivlei, Wakkerstroom Wetland and others. Some 15% has been transformed through cultivation farming, urbanisation and plantations. In some areas intensive grazing and use of wetlands as drinking pools for livestock causes major damage to the vegetation and general wetland environment. This along with other vectors

also introduces numerous alien plant species.

Within the study area itself are a few private games reserves and one government reserve (Jericho Dam Nature Reserve). According to the fauna and flora specialist for this project, the Jericho Dam Nature Reserve is not on par with general ideas of nature reserves such as the Kruger National Park or Pilanesberg, but is typical of the buffer zone found around all dams. However, that been said, it still creates protection for the natural environment, including fauna and flora. There is little statutory protection of the environment within the study area.

The area on and below the escarpment (eastern section of the study area) is in good condition with a number of sections being pristine. It is also within this section that a number of pristine freshwater wetlands are present, including a very large one that empties into the Jericho Dam. Afforestation is a threat to this area, including the water table and the wetlands. During site visits it was evident that plantations where not adhering strictly to environmental and water laws. Oftentimes with trees planted directly in vleis and wetlands. Furthermore, numerous manmade drainage channels had been dug to drain wetlands within plantations as designated planting areas. Another major threat to the environment, including the wetlands, rivers and water table is coal mining. There are numerous prospecting activities going on in the region.

The vegetation in the study area to the west and above the escarpment is much more transformed. One of the primary land-uses in this region is cultivation, with maize and beans being the primary crops. Large areas are also used for grazing, which if managed properly places less pressure on the natural environment. This area also has more urbanisation than the western part, albeit still very low in comparison with Ermelo and its immediate surrounding. Here the potential of coal mining is a major threat to the future well being of the natural environment.

In summary, there are some (but not enough) well-preserved examples of the vegetation units found in the study area, but as with all Grassland veldtypes in Mpumalanga they are under constant threat from mining, cultivation, afforestation, livestock farming and urbanisation. It is for these reasons that the alternative routes for the power line are carefully scrutinized and calculated to avoid any sensitive and/or pristine areas. It is the opinion of the specialist report that 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 low. Measures to mitigate impact has been proposed. The project will in summary not impact significantly on any conservation activities in the project area.

2.1.4 No-Go

It is suggested that **to maintain the status quo is not the best option for the macro environment**. This proposed project is **part of the infrastructure to improve the supply of electricity to the broader area**. Should this application not be approved then the supply will not be reliable and this can result in major disturbances in the supply of electricity.
As indicated in this EIA report the impacts that are likely to occur as a result of the proposed power line are insignificant and can be mitigated to acceptable levels. The No-Go development alternative could therefore not be considered the responsible way to manage the site.

2.2 LOCATION ALTERNATIVES

The proposed project requires the construction of:

- a **88kV line** from the existing Camcoll substation to the existing Jericho substation.

Initially three Alternative Routeswere considered for the power line.

Alternative 1: This route for the power line was proposed to run from Camcoll Substation mostly along an existing corridor of power lines towards Jericho Substation at Jericho Dam.
Alternative 2: This route was proposed to run mostly along the R65 from Camcoll Substation towards Jericho Substation.

Alternative 3: This route was proposed to run from Camcoll Substation mostly along existing roads towards Jericho Substation. Approximately half of this route was proposed to run adjacent to the dirt road between Sheepmoor and Jericho dam (Refer to the Locality map in Appendix A1 for the *blue dotted line* = *Alternative 3*).

Alternative 3was objected to for the following reasons:

- Alternative 3 was objected to by landowners in the early stages of the project, due to its impact on afforestation activities. Informal meetings with landowners took place on 27 Sept2011 to brief them on the proposed routes.At these informal meetings, Route Alternative 1 (following a corridor of power lines) was supported, but Route Alternative 3 (running adjacent to roads) was rejected. This is due to the impact on Forestry activities. Many private property owners have plantations and they are of the opinion that the impact and resulting loss of income would be enormous.
- The interest groups/landowners suggested another route alternative, running along the R65 (Route Alternative 2) to be investigated instead of Alternative 3.

The**remaining two alternative localities, Route Alternative 1 and Route Alternative 2,** were investigated and briefly discussed below:

2.2.1 Ecological status report

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

- The soils in the study area are predominantly light red to yellow-red, sandy, deep soils that are well drained. The clay content is also low. The sandy soils could be prone to water erosion, but erosion in the area is low due to the general flatness of the topography. Alluvial soils and clays (resulting in darker coloured soils) are typically found in the lower laying areas, where the freshwater wetlands are also common.
- Within the middle of the study area (basically along the high laying areas bordering directly onto the western side of the escarpment (ridge) running approximately north-south are different soils. These soils tend to be predominantly red and yellow massive or weak structured soils. While along the ridge of the escarpment itself the soils are characterised by minimal development and are typically shallow on hard or weathered rock, without intermittend diverse soils.
- The land uses within the study area are almost exclusively cultivation, grazing and afforestation. Cultivation dominates on the western side above the escarpment, with afforestation dominanting along the escarpment and in the east. Other land uses include private game farms, Bed and Breakfast Accomodation, urbanisation, small holdings and roads.
- The topography of the region is primarily strongly undulating irregular plains, with occasional low hills and numerous pan depressions. The altitude of the region is high (1 520 – 1 800m), but can be as low as 1 300m in places. There are few rocky ridges or koppies present. Within the region is the escarpment, which runs approximately north-south. Along the top of the escarpment the terrein is much more undulating and rugged. The escarpment forms a prominent barrier (ridge) with varying degrees of cliffs and kloofs. At the escarpment edge the land drops off from the highveld plateau to the lowveld, which consists of slighly undulating hills and plains with pan depressions.
- The region has a strongly seasonal rainfall, with wet summers and dry, cold winters. The mean annual precipitation (MAP) for the region is 650 – 900mm, with an overall average of 726mm.
- The vegetation of the study area is predominantly Eastern Highveld Grassland (approximately 75%), with flat open plains and slightly to strongly undulating plains. Some low hills and pan depressions are present, with very little to no indigenous trees and shrubs present, except along the escarpment. The remaining 25% of the vegetation of the study is that of Wakkerstroom Montane Grassland, which is almost entirely restricted to the escarpment area of the study area. It is within this area that most of the indigenous woodland component of the study area is found. The small wetlands found scattered within the study area are those of Eastern Temperate Freshwater Wetlands vegetation.

Habitat sensitivities
Habitat sensitivities were determined for floral and faunal habitats found in the study area. These were found to be as follows:

Floral habitats
A large portion of the study area has been transformed by cultivated lands (predominantly in the west) and plantations (predominantly in the east). Along the escarpment and within the lowlands are large tracks of grassland in good condition. The existing, natural untransformed grassland plains are not seen as having a high sensitivity rating, only a medium rating (Go-Slow). Drainage lines within were also calculated to be of medium sensitivity (Go-Slow). Rivers and the escarpement (ridges) are both calculated to be of medium / high sensitivity (Go-But), while wetlands have a high sensitivty rating (No-Go). Calculations and ratings are done on the *status quo* and linked specifically to the study site and neighbouring region.
Faunal habitats
Faunal sensitivities are often closely linked to those of floral sensitivities. The grassland plains are not viewed as sensitive from a faunal perspective, nor are drainage lines. Both are seen as having a medium rating. Rivers and ridges are usually habitats that harbour rare or endangered species and are often seen as sensitive. In this case both are rated as medium / high, which is sensitive. Wetlands habitats are calculated to be highly sensitive (No-Go Zones).

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. Only Wetlands are seen as having a high ecological sensitivity and deemed as 'No-Go' zones. The transformed areas within the study site are not seen as sensitive (low sensitivity). These include cultivated lands and plantations , which are both viewed as 'Go' zones.

Nature of impacts
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 low.
Significance of impacts
Grassland Plains
The Eastern Highveld Grassland is a vegetation type that is endangered and efforts need to be made to protect it. Although the study site falls within this grassland, the site itself and the immediate surrounding area has been mostly transformed and consists mainly of cultivated lands and plantations. For these reasons the significance of the impacts are seen as low and can be viewed as neutral.

Drainage Lines
Drainage lines are generally viewed as sensitive and need to be avoided. There are a number of drainage lines, some of which are traversed by both route alternatives. Due to the high rainfall, soils, grassland vegetation and flat, low gradient of the terrain, many of the drainage areas remain damp for most of the year. This is more due to the continual seepage of groundwater in the depressions and the slow run-off of the water. Most of the drainage lines (except those down the escarpment) are flat and wide. All drainage lines encountered in the power line corridors need to be traversed with no pylons been erected within them. All drainage lines are calculated as been of medium/high sensitivity.

Wetlands
All wetlands are considered sensitive and those found in the study area are no exception. A number of small water bodies (wetlands) are scattered across the high-laying western part of the study area, but all of these fall outside the power line corridors or will be avoided during construction. The lowlands in the west have a number of large wetland areas in fairly pristine condition. Corridor routes have been adjusted to avoid the larger wetlands, but in cases come within close proximity to some small pans and seasonal waterlogged depressions. Mitigating measures have been put in place to avoid any construction or disturbance of these small water bodies as well. Wetlands are viewed as 'No-Go' zones.

Rivers
Rivers are always seen as sensitive and should be avoided, along with their associated riparian vegetation and floodplains. The power line corridors will need to cross a number of rivers in order to link up between Camcoll

Substation and Jericho Substation. Mitigating measures are necessary, the implementation of which will ensure that almost no negative impact in terms of the ecological environment are felt. Typical of many of the small rivers and streams in the Highveld grasslands, the rivers do not have a very distinctive riparian vegetation zone, especially with regards to trees. Often the trees found along these watercourses are invasive aliens such as weeping willow (*Salix babylonica*) and grey poplar (*Populus* x *canescens*).

Ridges
Rocky ridges are generally seen as sensitive and need to be avoided where possible. There are no typical koppies (rocky outcrops) found within the power line corridors. However, both route alternatives drop off the escarpment, which forms a continual rocky ridge that runs north-south through the study area. The rocky ridge itself is mostly east-facing. The ridge (escarpment) has been calculated as medium/high sensitive and is considered a 'Go-But' zone.

Mitigating measures
A number of mitigating measures have been proposed that need to be implemented to reduce impact on the natural environment. These include the following:
Construction phase
- Camp site, storage facilities and other necessary temporary structures to preferably be erected within the confines of the Camcoll and Jericho Substations. With the possibility of another one (maximum two) temporary sites within the power line corridors due to the distance between the substations.
- No open fires to be allowed outside of the substation sites.
- Collection of wood for fires and cooking from out of the surrounding veld is prohibited.
- In campsites in the substations a designated area for camp fires and cooking needs to be made. Should open fires be used then an area of at least 2m by 2m needs to be cleared of any flammable materials such as grass.
- No open fires to be allowed in campsites erected outside of the substations. In such cases proper provision for portable gas stoves should be made. All relevant laws related to flamable substances to be strictly adhered to.
- No material or machinery to be stored or placed in the open veld outside the designated area of the power line corridors.
- Proper and adequate containers (rubbish bins) to be placed in campsites for the temporary disposal of food waste and general litter generated by construction workers. These containers need to close securely to avoid items (eg. Paper and plastic) been blown into the veld, etc. Proper waste management is essential.
- Containers for food and general waste to be removed weekly to avoid bins overflowing their capacity.
- Under no circumstances may any sewage, waste food or general litter be dumped, or buried in the veld.
- No campsites or other temporary structures to be erected outside the designated areas of the power line corridors.
- No concrete to be allowed to be mixed in the veld. Mixing boards or cement mixing machinery to be used.
- All construction activities and movement of people and machinery to remain within the designated power line corridor, as far as possible and within reason.
- Temporary access roads for vehicles carrying equipment, materials, etc. into the power line corridors need to be kept to an absolute minimum. None of these accesss roads may cross through sensitive areas.
- Work corridor to be limited to 20 metres along the route of the servitudes.
- When foundation holes are dug for the pylons, the topsoil (top 30cm of the ground) needs to be placed aside separately. After construction this topsoil needs to be spread back over the distrubed area. The reason is that there might possibly be bulbs of geophytes in this topsoil and in this way if any where disturbed most would survive in this way, hereby mitigating the impact on the vegetation of the environment.

Completion phase
- All leftover construction material, equipment, refuge, etc. needs to be completely removed after construction. This within 3 months of completion of the project.
- Removal of all waste construction material must be to an approved waste disposal site only.
- Proper and complete take down and removal of all temporary accommodation sites, storage sites, etc. needs to take place within three months of completion of the project. This include all litter.
- All disturbed sites and surfaces to be rehabilitated.
- No unused piles of sand, soil or construction materials of any kind whatsoever to be left in the power line corridors, or at temporary construction or storage sites.

Maintenance phase

- Mechanical control of alien plants around disturbed areas to be implemented within three months of completion of construction. Thereafter every six months. These areas are predominantly around the erected pylons. Mechanical control to be of such a nature as to allow local grasses and other pioneers to colonise the previously disturbed areas, thereby keeping out alien invasives.
- No chemical control (herbicides) of alien plants to be used, except in the case of killing off cut down trees where it is painted onto the wounds of the stump still in the ground. Herbicides will have a detrimental effect on the surrounding vegetation and habitats.
- Vegetation under pylons and next to pylons to be mowed and not ploughed.
- Areas around foundation slabs to be check before and after the summer rainy season for signs of soil erosion due to stormwater run-off. Such sites need to be modified and rehabilitated to prevent ongoing erosion. These sites need to be monitored more closely than other sites which show no or minimal signs of erosion.
- Two of the impacts of greatest concern on the environment are the introduction of alien plants and soil erosion. As already mentioned these impacts need to be monitored and managed on an ongoing basis.

Line variant recommendations

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, fuanal habitats and vegetation types. 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:

Ecological Sensitive Units	Alternative Route 1	Alternative Route 2
Areas of High ecological sensitivity	0	3
No-Go areas in close proximity	1	3
No. of river & stream crossings	5	5
No. of major drainage line crossings	13	15
Rocky outcrops in corridor	0	0
Ridges in corridor	1	1
Major Wetlands encountered	1	4
Total impacts per route	21	31

When also taking other general impacts into account there is the issue of the higher potential impact in relation to airstrips by Alternative Route 2. Furthermore, Alternative Route 1 runs alongside an already existing corridor of power lines, while Alternative Route 2 will create an entirely new corridor. The new corridor will also have a greater effect on the negative visual aspect of power lines in general and in particular where the power lines come up and over the high laying contours of the escarpment. Alternative Route 2 has the potential to have a greater impact on the environment than Alternative Route 1, especially along the escarpment and within the eastern side (lowlands) area where the wetlands and grasslands are in a more pristine condition and more sensitive.

Taking all of the above issues into account, the **Ecological recommended line variant** for the proposed project is: **Alternative Route 1**.

2.2.2 Bird Impact Assessment

The Bird Impact Assessment indicated the following:
(Refer to Appendix D3 of the BAR for the full report)

Electrocution

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. The steel mono-pole is not a major electrocution hazard to birds, except in specific instances, and then only for vultures, which do not occur in the study area. No electrocution risk is therefore foreseen for the new 88kV line.

Collisions
The most direct impact that the proposed line could potentially have on Red Data birds is collisions with the overhead earth wire. Generally this impact is most likely to occur close to wetlands, where the line skirts a dam or where it is positioned across a drainage line. Another collision hazard exists if the line will cross patches of grassland, as this is the preferred habitat of most of the remaining large terrestrial Red Data species in Mpumalanga.
Mitigation
Those sections of line that will require the application of bird flight diverters (BFDs) are indicated on the accompanying sensitivity map in the Bird Impact Assessment in Appendix D3. Sensitive sections will include dams, wetlands, waterlogged grassland, drainage crossings and other areas of grassland. The proposed BFD is the Double Loop Bird Flight Diverter. BFDs should be placed on the earthwires, staggered, alternating black and white, 10 metres apart. (Sensitivity map is included in Appendix D3 of the BAR for the sections of the alignments to be marked with Bird Flight Diverters).

Habitat destruction
A degree of habitat destruction always takes place when a power line is constructed. In this instance the study area has been intensively transformed through agriculture and afforrestation, which has fragmented the majority of the original grassland. There are however still sensitive grassland and wetlands areas which could be damaged, particularly with the construction of roads. Further fragmentation of the grassland habitat should be avoided if possible. It has been shown that fragmentation of natural grassland in Mpumalanga by afforrestation has had a detrimental impact on the densities and diversity of grassland species.
Mitigation
The construction of access roads in sensitive wetland habitat should be avoided.

Disturbance
The potential for disturbance of Red Data species is the biggest in remnant grassland areas, and in wetlands. Disturbance during the construction phase is inevitable, but is to some extent mitigated by the temporary nature of the impact.
Mitigation
The construction of access roads in sensitive wetland habitat should be avoided.

Preferred alignment
From the analysis of risk factors both alternatives emerge virtually equally as high risk from a bird impact alternative. However, it is recommended that **alternative 1** is used, because of the **confirmed** presence of cranes in a large wetland on the farm Vlakplaats 2841T. This wetland forms part of a large wetland system which is bisected by alternative 2. If alternative 2 is constructed, it will bisect a likely flight path between the wetland areas and will thus constitute a definite high collision risk to the birds.

2.2.3 Heritage Impact Assessment

The main findings of the Heritage Impact Assessment are 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 revealed none of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999).
There is consequently no reason from a heritage point of view why **either Alternative 01 or Alternative 02** cannot be used for the construction of Eskom's proposed Camcoll Jericho Project.
Mitigation
It is possible that this Phase I HIA study may have missed heritage resources in the Eskom Project Area. If any heritage resources of significance is exposed during the construction of the power lines the South African Heritage Resources Authority (SAHRA) should be notified immediately, all development activities must be stopped and an

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

2.3 CONCLUSION

- Alternatives have been considered for this project, and in specific locality alternatives, that is Route Alternatives 1 and Route Alternative 2.
- From a purely ***ecological* viewpoint**, 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 low. When all impacts and sensitive habitats are taken into account, the Ecological recommended line variant for the proposed project is: **Alternative Route 1**.
- From the analysis of risk factors both alternatives emerge virtually equally as high risk from a ***bird impact*alternative**. However, it is recommended that **alternative 1** is used, because of the **confirmed** presence of cranes in a large wetland on the farm Vlakplaats 2841T. This wetland forms part of a large wetland system which is bisected by alternative 2. If alternative 2 is constructed, it will bisect a likely flight path between the wetland areas and will thus constitute a definite high collision risk to the birds.
- From a ***heritage* point of view**, **both** of the location **alternativesare suitable**, for the construction of the project.
- In **summary**, however, due to close similaraties of alternatives 1 and 2 it is imperative that the accumulative weight of other parameters such as feedback from public participation, land tenure issues, construction costs, technical constraints, etc. also be taken into account when deciding on the final alternative between Alternative 1 and Alternative 2.
- **Subsequently, Alternative 1 is preferred and submitted as the final proposed route mainly due to the following:**
  - This Alternative (1) is preferred both from an ecological viewpoint as well as from a bird impact perspective. Both alternatives are suitable from a heritage point of view.
  - In addition, Route Alternative 1 can be constructed in an existing Eskom Distribution vacant servitute for approximately 50% of the route.
  - Route Alternative 1 is preferred by landowners above other new corridors of impact due to the existing corridor of power lines adjacent to this proposed route.Hence Route Alternative 1 will impact less on landowners and their agricultural activities.

The **final proposed route** is **Alternative 1** on the farms **Vlakfontein 269IT portion 2, 3, 4; Vlakfontein 266IT portion 9; Weltevreden 289IT portion 2, 3, 6, 10, 11; Zwartwater 288IT portion 1, 6; Onverwacht 287IT portion 6; Windhoek 291IT portion 8; Waaihoek 286IT portion 3, 4, 5, 6, 11, 12, 13; Vaalbank 285IT portion 2, 4, 6; Vlakplaats 284IT portion 1, 7, 9, 12; Scheepersvley 303IT portion 2, 4, 5, 6; Glen Eland 413IT portion 11/15, 13, Rem; Jericho 304IT portion 1, 2** in the Msukaligwa Local Municipality in the Mpumalanga Province.

3. ACTIVITY POSITION

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

Alternative:	**Latitude (S):**		**Longitude (E):**	
Alternative S1[2] (preferred or only site alternative)	°	‘	°	‘
Alternative S2 (if any)	°	‘	°	‘

In the case of linear activities:

Alternative:	**Latitude (S):**		**Longitude (E):**	
Alternative S1 (preferred Alt)				
• Starting point of the activity	26°	34.325' S	30°	10.776' E

[2] “Alternative S..” refer to site alternatives.

• Middle/Additional point of the activity	26°	39.741' S	30°	16.450' E
• End point of the activity	26°	39.454' S	30°	29.041' E
Alternative S2				
• Starting point of the activity	26°	34.325' S	30°	10.776' E
• Middle/Additional point of the activity	26°	35.070' S	30°	21.271' E
• End point of the activity	26°	39.454' S	30°	29.041' E

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

Existing Camcoll sub:

Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
30° 10.776' E	26° 34.325' S

Proposed Alternative 1 (45.08km):

250m intervals	Longitude (Degrees Decimal Minutes)	Latitude (Degrees Decimal Minutes)
1	30° 10.741' E	26° 34.347' S
2	30° 10.617' E	26° 34.424' S
3	30° 10.493' E	26° 34.501' S
4	30° 10.356' E	26° 34.491' S
5	30° 10.214' E	26° 34.448' S
6	30° 10.071' E	26° 34.404' S
7	30° 9.929' E	26° 34.361' S
8	30° 9.845' E	26° 34.446' S
9	30° 9.779' E	26° 34.568' S
10	30° 9.713' E	26° 34.689' S
11	30° 9.659' E	26° 34.814' S
12	30° 9.636' E	26° 34.948' S
13	30° 9.613' E	26° 35.082' S
14	30° 9.590' E	26° 35.215' S
15	30° 9.568' E	26° 35.349' S
16	30° 9.545' E	26° 35.483' S
17	30° 9.522' E	26° 35.617' S
18	30° 9.499' E	26° 35.751' S
19	30° 9.476' E	26° 35.885' S
20	30° 9.454' E	26° 36.018' S
21	30° 9.431' E	26° 36.152' S
22	30° 9.408' E	26° 36.286' S
23	30° 9.385' E	26° 36.420' S
24	30° 9.361' E	26° 36.553' S
25	30° 9.329' E	26° 36.686' S
26	30° 9.298' E	26° 36.818' S
27	30° 9.265' E	26° 36.950' S
28	30° 9.225' E	26° 37.081' S
29	30° 9.185' E	26° 37.211' S
30	30° 9.144' E	26° 37.341' S
31	30° 9.104' E	26° 37.472' S
32	30° 9.064' E	26° 37.602' S
33	30° 9.024' E	26° 37.733' S
34	30° 8.984' E	26° 37.864' S
35	30° 8.944' E	26° 37.994' S
36	30° 8.904' E	26° 38.124' S
37	30° 8.864' E	26° 38.255' S
38	30° 8.849' E	26° 38.369' S
39	30° 8.999' E	26° 38.379' S
40	30° 9.149' E	26° 38.389' S
41	30° 9.300' E	26° 38.398' S
42	30° 9.447' E	26° 38.424' S
43	30° 9.595' E	26° 38.451' S
44	30° 9.743' E	26° 38.477' S

45	30° 9.891' E	26° 38.503' S
46	30° 10.039' E	26° 38.529' S
47	30° 10.187' E	26° 38.555' S
48	30° 10.334' E	26° 38.581' S
49	30° 10.482' E	26° 38.607' S
50	30° 10.630' E	26° 38.633' S
51	30° 10.778' E	26° 38.659' S
52	30° 10.926' E	26° 38.685' S
53	30° 11.073' E	26° 38.712' S
54	30° 11.220' E	26° 38.742' S
55	30° 11.367' E	26° 38.774' S
56	30° 11.511' E	26° 38.812' S
57	30° 11.655' E	26° 38.851' S
58	30° 11.800' E	26° 38.889' S
59	30° 11.944' E	26° 38.927' S
60	30° 12.089' E	26° 38.966' S
61	30° 12.233' E	26° 39.004' S
62	30° 12.378' E	26° 39.042' S
63	30° 12.522' E	26° 39.081' S
64	30° 12.667' E	26° 39.119' S
65	30° 12.811' E	26° 39.157' S
66	30° 12.956' E	26° 39.196' S
67	30° 13.100' E	26° 39.234' S
68	30° 13.245' E	26° 39.272' S
69	30° 13.389' E	26° 39.311' S
70	30° 13.534' E	26° 39.349' S
71	30° 13.678' E	26° 39.387' S
72	30° 13.823' E	26° 39.426' S
73	30° 13.967' E	26° 39.464' S
74	30° 14.112' E	26° 39.502' S
75	30° 14.257' E	26° 39.539' S
76	30° 14.401' E	26° 39.577' S
77	30° 14.546' E	26° 39.615' S
78	30° 14.691' E	26° 39.653' S
79	30° 14.835' E	26° 39.690' S
80	30° 14.980' E	26° 39.728' S
81	30° 15.125' E	26° 39.766' S
82	30° 15.269' E	26° 39.804' S
83	30° 15.414' E	26° 39.841' S
84	30° 15.560' E	26° 39.864' S
85	30° 15.708' E	26° 39.839' S
86	30° 15.856' E	26° 39.814' S
87	30° 16.004' E	26° 39.788' S
88	30° 16.152' E	26° 39.764' S
89	30° 16.300' E	26° 39.738' S
90	30° 16.450' E	26° 39.741' S
91	30° 16.601' E	26° 39.747' S
92	30° 16.751' E	26° 39.753' S
93	30° 16.902' E	26° 39.759' S
94	30° 17.052' E	26° 39.765' S
95	30° 17.203' E	26° 39.771' S
96	30° 17.353' E	26° 39.777' S
97	30° 17.504' E	26° 39.783' S
98	30° 17.654' E	26° 39.789' S
99	30° 17.805' E	26° 39.795' S
100	30° 17.955' E	26° 39.801' S
101	30° 18.103' E	26° 39.820' S
102	30° 18.246' E	26° 39.862' S
103	30° 18.389' E	26° 39.905' S
104	30° 18.533' E	26° 39.947' S
105	30° 18.676' E	26° 39.989' S
106	30° 18.819' E	26° 40.031' S
107	30° 18.962' E	26° 40.073' S

108	30° 19.105' E	26° 40.116' S
109	30° 19.249' E	26° 40.158' S
110	30° 19.392' E	26° 40.200' S
111	30° 19.535' E	26° 40.242' S
112	30° 19.682' E	26° 40.244' S
113	30° 19.832' E	26° 40.226' S
114	30° 19.981' E	26° 40.209' S
115	30° 20.130' E	26° 40.191' S
116	30° 20.280' E	26° 40.173' S
117	30° 20.429' E	26° 40.156' S
118	30° 20.579' E	26° 40.138' S
119	30° 20.728' E	26° 40.121' S
120	30° 20.878' E	26° 40.103' S
121	30° 21.027' E	26° 40.086' S
122	30° 21.176' E	26° 40.068' S
123	30° 21.326' E	26° 40.050' S
124	30° 21.475' E	26° 40.033' S
125	30° 21.625' E	26° 40.015' S
126	30° 21.774' E	26° 39.997' S
127	30° 21.923' E	26° 39.980' S
128	30° 22.073' E	26° 39.962' S
129	30° 22.222' E	26° 39.945' S
130	30° 22.372' E	26° 39.927' S
131	30° 22.521' E	26° 39.909' S
132	30° 22.670' E	26° 39.892' S
133	30° 22.818' E	26° 39.900' S
134	30° 22.963' E	26° 39.935' S
135	30° 23.109' E	26° 39.970' S
136	30° 23.255' E	26° 40.005' S
137	30° 23.400' E	26° 40.040' S
138	30° 23.546' E	26° 40.075' S
139	30° 23.691' E	26° 40.110' S
140	30° 23.837' E	26° 40.145' S
141	30° 23.982' E	26° 40.179' S
142	30° 24.128' E	26° 40.215' S
143	30° 24.274' E	26° 40.249' S
144	30° 24.421' E	26° 40.277' S
145	30° 24.569' E	26° 40.303' S
146	30° 24.717' E	26° 40.328' S
147	30° 24.865' E	26° 40.353' S
148	30° 25.013' E	26° 40.379' S
149	30° 25.161' E	26° 40.404' S
150	30° 25.309' E	26° 40.429' S
151	30° 25.457' E	26° 40.455' S
152	30° 25.605' E	26° 40.480' S
153	30° 25.753' E	26° 40.505' S
154	30° 25.901' E	26° 40.530' S
155	30° 26.049' E	26° 40.556' S
156	30° 26.197' E	26° 40.581' S
157	30° 26.345' E	26° 40.606' S
158	30° 26.493' E	26° 40.632' S
159	30° 26.641' E	26° 40.657' S
160	30° 26.789' E	26° 40.682' S
161	30° 26.936' E	26° 40.697' S
162	30° 27.067' E	26° 40.631' S
163	30° 27.198' E	26° 40.564' S
164	30° 27.330' E	26° 40.498' S
165	30° 27.461' E	26° 40.432' S
166	30° 27.592' E	26° 40.365' S
167	30° 27.724' E	26° 40.299' S
168	30° 27.855' E	26° 40.233' S
169	30° 27.986' E	26° 40.166' S
170	30° 28.118' E	26° 40.100' S

171	30° 28.249' E	26° 40.034' S
172	30° 28.380' E	26° 39.967' S
173	30° 28.511' E	26° 39.910' S
174	30° 28.619' E	26° 40.004' S
175	30° 28.727' E	26° 40.098' S
176	30° 28.835' E	26° 40.192' S
177	30° 28.930' E	26° 40.097' S
178	30° 29.023' E	26° 39.991' S
179	30° 29.117' E	26° 39.885' S
180	30° 29.210' E	26° 39.779' S
181	30° 29.304' E	26° 39.673' S

Alternative 2 (47.43km):

250m intervals	Longitude(Degrees Decimal Minutes)	Latitude(Degrees Decimal Minutes)
1	30° 10.780' E	26° 34.313' S
2	30° 10.649' E	26° 34.379' S
3	30° 10.517' E	26° 34.445' S
4	30° 10.381' E	26° 34.461' S
5	30° 10.241' E	26° 34.413' S
6	30° 10.100' E	26° 34.365' S
7	30° 9.959' E	26° 34.318' S
8	30° 9.955' E	26° 34.219' S
9	30° 10.018' E	26° 34.096' S
10	30° 10.080' E	26° 33.972' S
11	30° 10.142' E	26° 33.849' S
12	30° 10.205' E	26° 33.726' S
13	30° 10.267' E	26° 33.603' S
14	30° 10.329' E	26° 33.480' S
15	30° 10.443' E	26° 33.461' S
16	30° 10.587' E	26° 33.502' S
17	30° 10.730' E	26° 33.543' S
18	30° 10.874' E	26° 33.584' S
19	30° 11.017' E	26° 33.626' S
20	30° 11.160' E	26° 33.667' S
21	30° 11.304' E	26° 33.708' S
22	30° 11.447' E	26° 33.749' S
23	30° 11.590' E	26° 33.790' S
24	30° 11.734' E	26° 33.831' S
25	30° 11.877' E	26° 33.873' S
26	30° 12.021' E	26° 33.914' S
27	30° 12.164' E	26° 33.955' S
28	30° 12.308' E	26° 33.996' S
29	30° 12.451' E	26° 34.037' S
30	30° 12.595' E	26° 34.078' S
31	30° 12.739' E	26° 34.105' S
32	30° 12.887' E	26° 34.081' S
33	30° 13.035' E	26° 34.058' S
34	30° 13.184' E	26° 34.034' S
35	30° 13.332' E	26° 34.010' S
36	30° 13.480' E	26° 33.986' S
37	30° 13.628' E	26° 33.963' S
38	30° 13.777' E	26° 33.939' S
39	30° 13.925' E	26° 33.915' S
40	30° 14.073' E	26° 33.892' S
41	30° 14.221' E	26° 33.868' S
42	30° 14.369' E	26° 33.844' S
43	30° 14.518' E	26° 33.821' S
44	30° 14.666' E	26° 33.797' S
45	30° 14.815' E	26° 33.809' S
46	30° 14.965' E	26° 33.824' S
47	30° 15.115' E	26° 33.838' S
48	30° 15.264' E	26° 33.853' S
49	30° 15.414' E	26° 33.868' S

50	30° 15.563' E	26° 33.883' S
51	30° 15.713' E	26° 33.897' S
52	30° 15.863' E	26° 33.912' S
53	30° 16.012' E	26° 33.927' S
54	30° 16.162' E	26° 33.942' S
55	30° 16.312' E	26° 33.956' S
56	30° 16.461' E	26° 33.971' S
57	30° 16.611' E	26° 33.986' S
58	30° 16.761' E	26° 34.001' S
59	30° 16.910' E	26° 34.015' S
60	30° 17.060' E	26° 34.030' S
61	30° 17.209' E	26° 34.045' S
62	30° 17.359' E	26° 34.060' S
63	30° 17.509' E	26° 34.074' S
64	30° 17.659' E	26° 34.089' S
65	30° 17.808' E	26° 34.104' S
66	30° 17.958' E	26° 34.118' S
67	30° 18.108' E	26° 34.133' S
68	30° 18.257' E	26° 34.148' S
69	30° 18.407' E	26° 34.163' S
70	30° 18.557' E	26° 34.177' S
71	30° 18.706' E	26° 34.192' S
72	30° 18.856' E	26° 34.207' S
73	30° 19.005' E	26° 34.221' S
74	30° 19.155' E	26° 34.236' S
75	30° 19.305' E	26° 34.251' S
76	30° 19.454' E	26° 34.265' S
77	30° 19.604' E	26° 34.280' S
78	30° 19.754' E	26° 34.295' S
79	30° 19.903' E	26° 34.310' S
80	30° 20.053' E	26° 34.324' S
81	30° 20.203' E	26° 34.339' S
82	30° 20.337' E	26° 34.386' S
83	30° 20.454' E	26° 34.471' S
84	30° 20.571' E	26° 34.557' S
85	30° 20.688' E	26° 34.642' S
86	30° 20.804' E	26° 34.728' S
87	30° 20.921' E	26° 34.813' S
88	30° 21.038' E	26° 34.899' S
89	30° 21.154' E	26° 34.984' S
90	30° 21.271' E	26° 35.070' S
91	30° 21.388' E	26° 35.155' S
92	30° 21.505' E	26° 35.241' S
93	30° 21.622' E	26° 35.326' S
94	30° 21.738' E	26° 35.412' S
95	30° 21.855' E	26° 35.497' S
96	30° 21.972' E	26° 35.583' S
97	30° 22.089' E	26° 35.668' S
98	30° 22.205' E	26° 35.754' S
99	30° 22.322' E	26° 35.839' S
100	30° 22.439' E	26° 35.925' S
101	30° 22.556' E	26° 36.010' S
102	30° 22.672' E	26° 36.096' S
103	30° 22.789' E	26° 36.181' S
104	30° 22.875' E	26° 36.277' S
105	30° 22.847' E	26° 36.410' S
106	30° 22.818' E	26° 36.543' S
107	30° 22.790' E	26° 36.676' S
108	30° 22.770' E	26° 36.810' S
109	30° 22.756' E	26° 36.944' S
110	30° 22.724' E	26° 37.075' S
111	30° 22.649' E	26° 37.190' S
112	30° 22.543' E	26° 37.286' S

113	30° 22.436' E	26° 37.382' S
114	30° 22.330' E	26° 37.477' S
115	30° 22.223' E	26° 37.573' S
116	30° 22.116' E	26° 37.668' S
117	30° 22.009' E	26° 37.764' S
118	30° 21.994' E	26° 37.861' S
119	30° 22.096' E	26° 37.961' S
120	30° 22.198' E	26° 38.060' S
121	30° 22.300' E	26° 38.160' S
122	30° 22.403' E	26° 38.259' S
123	30° 22.505' E	26° 38.359' S
124	30° 22.607' E	26° 38.458' S
125	30° 22.709' E	26° 38.557' S
126	30° 22.811' E	26° 38.657' S
127	30° 22.913' E	26° 38.756' S
128	30° 23.015' E	26° 38.856' S
129	30° 23.118' E	26° 38.956' S
130	30° 23.220' E	26° 39.055' S
131	30° 23.322' E	26° 39.154' S
132	30° 23.429' E	26° 39.210' S
133	30° 23.551' E	26° 39.130' S
134	30° 23.672' E	26° 39.050' S
135	30° 23.794' E	26° 38.971' S
136	30° 23.916' E	26° 38.891' S
137	30° 24.038' E	26° 38.811' S
138	30° 24.160' E	26° 38.731' S
139	30° 24.281' E	26° 38.652' S
140	30° 24.403' E	26° 38.572' S
141	30° 24.525' E	26° 38.492' S
142	30° 24.647' E	26° 38.413' S
143	30° 24.768' E	26° 38.333' S
144	30° 24.890' E	26° 38.253' S
145	30° 25.012' E	26° 38.173' S
146	30° 25.080' E	26° 38.202' S
147	30° 25.095' E	26° 38.337' S
148	30° 25.111' E	26° 38.471' S
149	30° 25.127' E	26° 38.606' S
150	30° 25.142' E	26° 38.741' S
151	30° 25.158' E	26° 38.876' S
152	30° 25.173' E	26° 39.010' S
153	30° 25.189' E	26° 39.145' S
154	30° 25.204' E	26° 39.279' S
155	30° 25.220' E	26° 39.414' S
156	30° 25.236' E	26° 39.549' S
157	30° 25.251' E	26° 39.683' S
158	30° 25.296' E	26° 39.805' S
159	30° 25.404' E	26° 39.900' S
160	30° 25.512' E	26° 39.994' S
161	30° 25.620' E	26° 40.089' S
162	30° 25.727' E	26° 40.184' S
163	30° 25.835' E	26° 40.278' S
164	30° 25.943' E	26° 40.373' S
165	30° 26.051' E	26° 40.468' S
166	30° 26.182' E	26° 40.521' S
167	30° 26.330' E	26° 40.546' S
168	30° 26.478' E	26° 40.571' S
169	30° 26.626' E	26° 40.596' S
170	30° 26.775' E	26° 40.621' S
171	30° 26.920' E	26° 40.630' S
172	30° 27.053' E	26° 40.566' S
173	30° 27.186' E	26° 40.503' S
174	30° 27.320' E	26° 40.440' S
175	30° 27.453' E	26° 40.377' S

176	30° 27.586' E	26° 40.313' S
177	30° 27.719' E	26° 40.250' S
178	30° 27.853' E	26° 40.187' S
179	30° 27.986' E	26° 40.124' S
180	30° 28.119' E	26° 40.061' S
181	30° 28.252' E	26° 39.997' S
182	30° 28.385' E	26° 39.934' S
183	30° 28.517' E	26° 39.883' S
184	30° 28.632' E	26° 39.971' S
185	30° 28.746' E	26° 40.059' S
186	30° 28.858' E	26° 40.121' S
187	30° 28.954' E	26° 40.016' S
188	30° 29.049' E	26° 39.912' S
189	30° 29.145' E	26° 39.807' S
190	30° 29.240' E	26° 39.702' S

Existing Jericho Sub-station:

Longitude(Degrees Decimal Minutes)	Latitude(Degrees Decimal Minutes)
30° 29.041' E	-26° 39.454' S

4. PHYSICAL SIZE OF THE ACTIVITY

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

Alternative: N/A	**Size of the activity:**
Alternative A1	m^2
Alternative A2	m^2
Alternative A3	m^2

or, for linear activities:

Alternative:	**Length of the activity:**
Alternative A1 (preferred alternative)	45.08km
Alternative A2	47.43km

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

Alternative:	**Size of the site/servitude:**
Alternative A1	31m x 45 080m = 1 397 480m^2
Alternative A2	31m x 47 430m = 1 470 330m^2

5. SITE ACCESS

Does ready access to the site exist?	YES	NO
If NO, what is the distance over which a new access road will be built	m	

Describe the type of access road planned:

No new access to the site is planned. During construction all vehicle movement must be along existing roads. 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, 4m on either side of the proposed alignment of the lines. This temporary access should be monitored for erosion and alien investation.

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

6. SITE OR ROUTE PLAN

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

The site or route plans must indicate the following:

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

6.10 for gentle slopes the 1 metre contour intervals must be indicated on the plan and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the plan; and
6.11 the positions from where photographs of the site were taken.

7. SITE PHOTOGRAPHS

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

8. FACILITY ILLUSTRATION

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

9. ACTIVITY MOTIVATION

9(a) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	unknown	
What is the expected yearly income that will be generated by or as a result of the activity?	R 0	
Will the activity contribute to service infrastructure?	YES	NO
Is the activity a public amenity?	YES	NO
How many new employment opportunities will be created in the development phase of the activity?	0	
What is the expected value of the employment opportunities during the development phase?	unknown	
What percentage of this will accrue to previously disadvantaged individuals?	unknown	
How many permanent new employment opportunities will be created during the operational phase of the activity?	0	
What is the expected current value of the employment opportunities during the first 10 years?	R0	
What percentage of this will accrue to previously disadvantaged individuals?	n/a	

9(b) Need and desirability of the activity

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

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

DESIRABILITY:			
1.	Does the proposed land use / development fit the surrounding area?	YES	NO
2.	Does the proposed land use / development conform to the relevant structure plans, SDF and planning visions for the area?	YES	NO
3.	Will the benefits of the proposed land use / development outweigh the negative impacts of it?	YES	NO
4.	If the answer to any of the questions 1-3 was NO, please provide further motivation / explanation:		
	Eskom will only register a servitude on the relevant property and the land use will not change.		
5.	Will the proposed land use / development impact on the sense of place?	YES	NO
6.	Will the proposed land use / development set a precedent?	YES	NO
7.	Will any person's rights be affected by the proposed land use / development?	YES	NO
8.	Will the proposed land use / development compromise the "urban edge"?	YES	NO
9.	If the answer to any of the question 5-8 was YES, please provide further motivation / explanation.		

BENEFITS:			
1.	Will the land use / development have any benefits for society in general?	YES	NO
2.	Explain:		
	This proposed project is **part of the infrastructure to improve the supply of electricity to the broader area**. Should this application not be approved then the supply will not be reliable and this can result in major disturbances in the supply of electricity with the resulting negative impacts on economic growth and social well-being.		
3.	Will the land use / development have any benefits for the local communities where it will be located?	YES	NO
4.	Explain:		
	The project will have direct benefits for the local communities, due to the strengthening of the electrical network of the broader area. This will result in socio-economical benefits.		

10. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

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

Title of legislation, policy or guideline:
The following legislation is applicable to the proposed project: The Constitution of the Republic of South Africa (Act 108 of 1996) National Environmental Management Act (Act No 107 of 1998) – NEMA EIA Regulations of 2010 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 Mine Health and Safety Act, 1996 (Act No 29 of 1996) 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) Hazardous Substances (Act no 15 of 1973)

11. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

11(a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	YES	NO
If yes, what estimated quantity will be produced per month?	2,5m^3	
How will the construction solid waste be disposed of (describe)?		
The solid waste will be transported off site by the contractor and returned to Eskom Stores where the scrap will be handed over to buyers (scrap dealers). Mostly the waste is steel thatis **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. These measures are included as requirements in the EMPr under the headings "Appointment of Contractors" and "Waste Mangement". Also refer to the other mitigation measures under the same headings.		
Where will the construction solid waste be disposed of (describe)?		
Any waste that cannot be recycled as the above (this is minimal) 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). The disposal of any construction waste will be the responsibility of the developer and should be done at least twice a week. A letter confirming collection or disposal of waste on a regular basis to a permitted landfill site must be kept on site.		
Will the activity produce solid waste during its operational phase?	YES	NO
If yes, what estimated quantity will be produced per month?	0m^3	
How will the solid waste be disposed of (describe)?		
N/A		
Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?		
N/A		
If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.		
Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?	YES	NO
If yes, inform the competent authority and request a change to an application for scoping and EIA.		
Is the activity that is being applied for a solid waste handling or treatment facility?	YES	NO
If yes, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.		

11(b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	YES	NO
If yes, what estimated quantity will be produced per month?	m^3	
Will the activity produce any effluent that will be treated and/or disposed of on site? 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 *accommodation in a construction camp be unavoidable*, then the measures as stipulated in the EMPr must be adhered to. Included as requirement in the EMPr, under heading *"Waste Management" 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, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.		
Will the activity produce effluent that will be treated and/or disposed of at another facility?	YES	NO
If yes, provide the particulars of the facility:		
Facility name:		
Contact person:		

Postal address:			
Postal code:			
Telephone:		Cell:	
E-mail:		Fax:	
Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:			

11(c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere? 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.	YES	NO
If yes, is it controlled by any legislation of any sphere of government?	YES	NO
If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.		
If no, describe the emissions in terms of type and concentration:		

11(d) Generation of noise

Will the activity generate noise?	YES	NO
If yes, is it controlled by any legislation of any sphere of government?	YES	NO
If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.		
If no, describe the noise in terms of type and level:		

12. WATER USE

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

municipal	water board	groundwater	river, stream, dam or lake	other	the activity will not use water
If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate					
the volume that will be extracted per month:					litres

Relevant to this project:

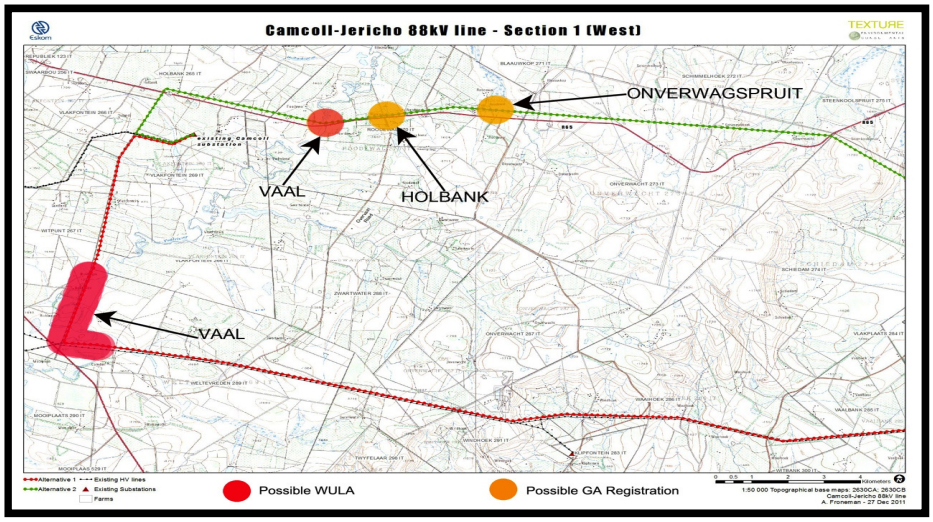
- The water used to supply the site with potable water is sourced/purchased from farmers in the area with pre-existing rights. The contractor should deliver the water to the site in an applicable water tanker. These requirements are included in the EMPr under the headings "*Construction site*" and "*Ground 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. This water is sourced/purchased from farmers in the area with pre-existing rights.
- According to the applicant and their contractors**,** dust suppressionisnot 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 is often associated with other forms of construction, but not with erecting of power lines.

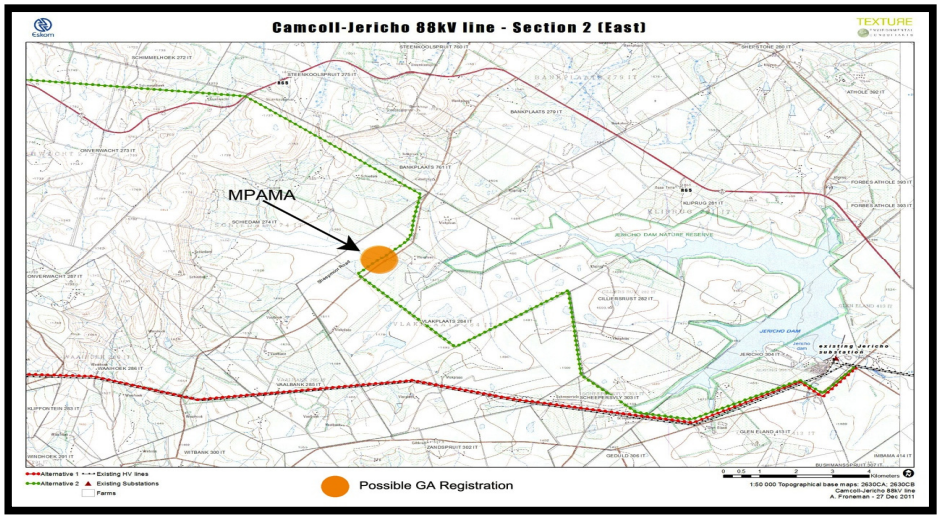
Does the activity require a water use permit from the Department of Water Affairs?	YES	NO
If yes, please submit the necessary application to the Department of Water Affairs and attach proof thereof to this application if it has been submitted.		

Relevant to this project:

- Of relevance is, that the two Alternative Routes traverse a number of rivers. Whichever route is finally decided upon, river crossings will still be necessary. Some of these rivers originate in the study area and are not even recognizable as rivers, but more as drainage lines, where they transect the power line corridors, while other rivers such as the Vaal River, are much larger. The largest river in the study area is the Vaal River, which needs to be crossed by both Alternative Routes. The Vaal River originates in the region and is still a small river of only approximately 5-10m wide where it flows through the study area. The terrain is very flat and during heavy rains the river easily floods over a width-distance of a few hundred metres, even up to 600-800 metres. In times of high rainfall seasons some of the other rivers hardly break their banks due to their small catchment areas in the study area. The Mpama River, which flows into the Jericho Dam, can also flood up to 100-200m in width during a heavy rainfall season.
- The law (National Water Act (NWA)) sees each river crossing as a Water Use that will either need to be registered (General authorisation) or a water use licence applied for (Water Use Licence Application (WULA)).
- However, a general indication is given in the below figures as to which river crossings will probably only need to be registered under General Authorisations and which will probably need Water Use Licence Applications (WULA). The water uses are all covered in the NWA. In the case of overhead power lines, 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.



Water Uses - Section 1 (West)



Water Uses - Section 2 (East)

- It is suggested that the applicant will **need to obtain a water use license or register as a water user** interms of the General Authorisations.
- It should be noted, that If there are any activities which relates to section 21 (c) and (i) water uses of the National Water Act 1998 (Act No. 36 of 1998), the applicant will need to get authorisation from the Department of Water Affairs before such activities commences.

13. ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:
N/a
Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:
N/a

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

5. 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.
6. Paragraphs 1 - 6 below must be completed for each alternative.

7. 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:		
All specialist reports must be contained in Appendix D.		

Section B Copy No. A:	**Proposed Alternative 1**

Proposed Alternative 1

Property description/ physical address:	Two alternative routes are considered for the 88kV line. The **final proposed route** is **Alternative 1** on the farms **Vlakfontein 269IT portion 2, 3, 4; Vlakfontein 266IT portion 9; Weltevreden 289IT portion 2, 3, 6, 10, 11; Zwartwater 288IT portion 1, 6; Onverwacht 287IT portion 6; Windhoek 291IT portion 8; Waaihoek 286IT portion 3, 4, 5, 6, 11, 12, 13; Vaalbank 285IT portion 2, 4, 6; Vlakplaats 284IT portion 1, 7, 9, 12; Scheepersvley 303IT portion 2, 4, 5, 6; Glen Eland 413IT portion 11/15, 13, Rem; Jericho 304IT portion 1, 2** in the Msukaligwa Local Municipality in the Mpumalanga Province.		
	(Farm name, portion etc.) Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application.		
	In instances where there is more than one town or district involved, please attach a list of towns or districts to this application.		
Current land-use zoning:	Agricultural		
	In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application.		
Is a change of land-use application required?		YES	NO
Is a consent use application required?		YES	NO
Must a building plan be submitted to the local authority?		YES	NO
Locality map:	An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometers, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.) The map must indicate the following: • an indication of the project site position as well as the positions of the alternative sites, if any; • road access from all major roads in the area; • road names or numbers of all major roads as well as the roads that provide access to the site(s); • all roads within a 1km radius of the site or alternative sites; and • a north arrow; • a legend; and • locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection)		

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

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

2. LOCATION IN LANDSCAPE

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

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

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

	Alternative S1:	
Shallow water table (less than 1.5m deep)	YES	NO
Dolomite, sinkhole or doline areas	YES	NO
Seasonally wet soils (often close to water bodies)	YES	NO
Unstable rocky slopes or steep slopes with loose soil	YES	NO
Dispersive soils (soils that dissolve in water)	YES	NO
Soils with high clay content (clay fraction more than 40%)	YES	NO
Any other unstable soil or geological feature	YES	NO
An area sensitive to erosion	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).

Notes to Superscripts where answers to above are 'Yes'

3.1. Soils close to and around wetlands and pan depressions
3.2. Only where alternative S1 route go down the escarpment
3.3. Only where alternative S1 route go down the escarpment

4. GROUNDCOVER

Indicate the types of groundcover present on the site:

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

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

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

5. LAND USE CHARACTER OF SURROUNDING AREA

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

5.1 Natural area
5.2 Low density residential
5.3 Medium density residential
5.4 High density residential

5.5 Informal residential[A]
5.6 Retail commercial & warehousing
5.7 Light industrial
5.8 Medium industrial [AN]
5.9 Heavy industrial [AN]
5.10 Power station (Camden Power Station is about 6km away)
5.11 Office/consulting room
5.12 Military or police base/station/compound
5.13 Spoil heap or slimes dam[A]
5.14 Quarry, sand or borrow pit
5.15 Dam or reservoir
5.16 Hospital/medical centre
5.17 School
5.18 Tertiary education facility
5.19 Church
5.20 Old age home
5.21 Sewage treatment plant[A]
5.22 Train station or shunting yard [N]
5.23 Railway line [N]
5.24 Major road (4 lanes or more) [N]
5.25 Airport [N]
5.26 Harbour
5.27 Sport facilities
5.28 Golf course
5.29 Polo fields
5.30 Filling station [H]
5.31 Landfill or waste treatment site
5.32 Plantation
5.33 Agriculture
5.34 River, stream or wetland
5.35 Nature conservation area
5.36 Mountain, koppie or ridge
5.37 Museum
5.38 Historical building
5.39 Protected Area
5.40 Graveyard
5.41 Archaeological site
5.42 Other land uses (describe)

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

N/A

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

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

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

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

6. CULTURAL/HISTORICAL FEATURES

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

If uncertain, conduct a specialist investigation by a recognised specialist in the field to establish whether there is such a feature(s) present on or close to the site.			
Briefly explain the findings of the specialist:	Refer to the Heritage Impact Assessment in Appendix D. Summary below.		
Will any building or structure older than 60 years be affected in any way?		YES	NO
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?		YES	NO
If yes, please submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.			

The main findings of the Heritage Impact Assessment are summarised as follows:-
The Phase I HIA study for the proposed Eskom Project revealed none of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) in and near the Eskom Project Area for Alternative 1.
Mitigation
It is possible that this Phase I HIA study may have missed heritage resources in the Eskom Project Area. If any heritage resources of significance is exposed during the construction of the power lines the South African Heritage Resources Authority (SAHRA) should be notified immediately, all development activities must be stopped and an archaeologist accredited with the Association for Southern African Professional Archaeologist (ASAPA) should be notify in order to determine appropriate mitigation measures for the discovered finds. This may include obtaining the necessary authorisation (permits) from SAHRA to conduct the mitigation measures.

From a **heritage point of view**, Alternative 1 is suitable for the construction of the proposed 88kV line.

Section B Copy No. B:	**Alternative 2**

Alternative 2

Property description/ physical address:	Two alternatives are considered for the line and substation. The affected properties for **Alternative 2** is on the farms Vlakfontein 269IT portion 1, 4; Vlakfontein 266IT portion 4; Holbank 265IT portion 12; Roodewal 270IT portion 2, 5, 6, 7, 8, 16, 17, 19, 24; Onverwacht 273IT portion 3, 5, 6, 9, 12, RE; Schiedam 274IT portion RE; Vlakplaats 284IT portion 3, 11, 13, 14, 20, 23; Cilliersrust 282IT portion RE; Scheepersvley 303IT portion 2, 6, RE; Glen Eland 413IT portion 11/15, 13, Rem; Jericho 304IT portion 1, 2 in the Msukaligwa Local Municipality in the Mpumalanga Province.		
	(Farm name, portion etc.) Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application.		
	In instances where there is more than one town or district involved, please attach a list of towns or districts to this application.		
Current land-use zoning:	Agricultural		
	In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to , to this application.		
Is a change of land-use application required?		YES	NO
Is a consent use application required?		YES	NO
Must a building plan be submitted to the local authority?		YES	NO

Locality map:	An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometers, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.) The map must indicate the following: • an indication of the project site position as well as the positions of the alternative sites, if any; • road access from all major roads in the area; • road names or numbers of all major roads as well as the roads that provide access to the site(s); • all roads within a 1km radius of the site or alternative sites; and • a north arrow; • a legend; and • locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection)

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.
Alternative S2:

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

2. LOCATION IN LANDSCAPE

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

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

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

	Alternative S2:	
Shallow water table (less than 1.5m deep)	YES	NO
Dolomite, sinkhole or doline areas	YES	NO
Seasonally wet soils (often close to water bodies)	YES	NO
Unstable rocky slopes or steep slopes with loose soil	YES	NO
Dispersive soils (soils that dissolve in water)	YES	NO
Soils with high clay content (clay fraction more than 40%)	YES	NO
Any other unstable soil or geological feature	YES	NO
An area sensitive to erosion	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).

Notes to Superscripts where answers to above are 'Yes'
3.1. Soils close to and around wetlands and pan depressions
3.2. Only where alternative S2 route go down the escarpment
3.3. Only where alternative S2 route go down the escarpment

4. GROUNDCOVER

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

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

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

5. LAND USE CHARACTER OF SURROUNDING AREA

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

5.1 Natural area
5.2 Low density residential
5.3 Medium density residential
5.4 High density residential
5.5 Informal residential[A]
5.6 Retail commercial & warehousing
5.7 Light industrial
5.8 Medium industrial [AN]
5.9 Heavy industrial [AN]
5.10 Power station
5.11 Office/consulting room
5.12 Military or police base/station/compound
5.13 Spoil heap or slimes dam[A]
5.14 Quarry, sand or borrow pit
5.15 Dam or reservoir (Jericho Dam)
5.16 Hospital/medical centre
5.17 School
5.18 Tertiary education facility
5.19 Church
5.20 Old age home
5.21 Sewage treatment plant[A]
5.22 Train station or shunting yard [N]
5.23 Railway line [N]
5.24 Major road (4 lanes or more) [N]
5.25 Airport [N]
5.26 Harbour
5.27 Sport facilities
5.28 Golf course
5.29 Polo fields
5.30 Filling station [H]
5.31 Landfill or waste treatment site
5.32 Plantation
5.33 Agriculture
5.34 River, stream or wetland
5.35 Nature conservation area
5.36 Mountain, koppie or ridge
5.37 Museum
5.38 Historical building
5.39 Protected Area
5.40 Graveyard

5.41 Archaeological site
5.42 Other land uses (describe)

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

N/A

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

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

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

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

6. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including	YES	NO
Archaeological or palaeontological sites, on or close (within 20m) to the site?	No	
If YES, explain:		
If uncertain, conduct a specialist investigation by a recognised specialist in the field to establish whether there is such a feature(s) present on or close to the site.		
Briefly explain the findings of the specialist:	Refer to the Heritage Impact Assessment in Appendix D. Summary below.	
Will any building or structure older than 60 years be affected in any way?	YES	NO
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	YES	NO
If yes, please submit or, make sure that the applicant or a specialist submits the necessary application to SAHRA or the relevant provincial heritage agency and attach proof thereof to this application if such application has been made.		

The main findings of the Heritage Impact Assessment are summarised as follows:-
The Phase I HIA study for the proposed Eskom Project revealed none of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) in and near the Eskom Project Area for Alternative 2:

Therefore, from a **heritage point of view**, Alternative 2 is suitable for the construction of the proposed 88kV line.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT

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

(a) fixing a notice board (of a size at least 60cm by 42cm; and must display the required information in lettering and in a format as may be determined by the competent authority) at a place conspicuous to the public at the boundary or on the fence of—
  (i) the site where the activity to which the application relates is or is to be undertaken; and
  (ii) any alternative site mentioned in the application;

(b) giving written notice to—
  (i) the owner or person in control of that land if the applicant is not the owner or person in control of the land;
  (ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  (iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
  (iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;
  (v) the municipality which has jurisdiction in the area;
  (vi) any organ of state having jurisdiction in respect of any aspect of the activity; and
  (vii) any other party as required by the competent authority;

(c) placing an advertisement in—
  (i) one local newspaper; or
  (ii) any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;

(d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or local municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official *Gazette* referred to in subregulation 54(c)(ii); and

(e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to—
  (i) illiteracy;
  (ii) disability; or
  (iii) any other disadvantage.

2. CONTENT OF ADVERTISEMENTS AND NOTICES

A notice board, advertisement or notices must:

(a) indicate the details of the application which is subjected to public participation; and

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

3. PLACEMENT OF ADVERTISEMENTS AND NOTICES

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

notice has been placed in any *Gazette* that is published specifically for the purpose of providing notice to the public of applications made in terms of the EIA regulations.
Advertisements and notices must make provision for all alternatives.

4. DETERMINATION OF APPROPRIATE MEASURES

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

5. COMMENTS AND RESPONSE REPORT

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

6. AUTHORITY PARTICIPATION

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

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

List of authorities informed:

- Regional Department of Water Affairs: Water Resources & Water Quality Management
- South African Heritage Resources Agency
- 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
- BHP Billiton Energy Coal SA Ltd
- Mondi
- Lion Match Forestry Pty Ltd
- SA Civil Aviation Authority
- Gert Sibande District Municipality
- Msukaligwa Local Municipality
- Eskom Transmission
- Eskom Distribution Northern Region

- The first phase of the **Public Participation Programme** (PPP) started in **September 2011 and continued until February 2012**. It included the identification of landowners and key stakeholders, the distribution of **information letters** with request for comment, as well as **advertising of the project in the press and on site**.

- In addition, **Informal meetings were conducted with landowners** and two Farmers' unions in September 2011. The landowners were represented by both the afforestation and the crop-farming sections.
- A seperate meeting was conducted on 27 September 2011 with the landowners with afforestation activities that included Mondi and Lion Match. Nearly 70% of these owners attended and the absent landowners were contacted individually.
- In addition, notification of an **information meeting conducted on 8 February 2012** was sent to all IAPs on **3 December 2011 and 25 January 2012**. 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. A slide show presentation, project posters with information and maps of the routes were presented at the meeting. Written comment was requested at the meeting. The minutes of the meeting was submitted to all attendees on 22 February 2012.
- A **draft Basic Assessment Report** –this document- was compiled with the main aim to identify issues, potential impacts and potential alternatives associated with this project. It included a description of the status quo of all relevant environmental components as well as the proceedings of the PPP and communication with registered Interested & Affected Parties (IAPs).
- 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 **22 May2012** the **draft Basic Assessment Report was submitted** for comment to:
  - Mpumalanga Region Department of Water Affairs: Water Resources & Water Quality Management
  - South African Heritage Resources Agency
  - 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
  - BHP Billiton Energy Coal SA Ltd
  - Mondi
  - Lion Match Forestry Pty Ltd
  - SA Civil Aviation Authority
  - Gert Sibande District Municipality
  - Msukaligwa Local Municipality
  - Eskom Transmission
  - Eskom Distribution Northern Region
  - Landowners

- The due date for **comment on the draft Basic Assessment Report is 3 July 2012**.
- Subsequently, a **final Basic Assessment Report** (BAR) will be compiled and **submitted to DEA by August 2012**. This report will include all concerns raised to the draft BAR and responses thereto. The Consultants (EAP) will ensure that all concerns raised are addressed in appropriate detail in the final Basic Assessment Report.

List of authorities from whom comments have been received:

Highveld Tourism Mpumalanga
The South African National Road Agency SOC Limited, Northern Regional Office
Department of Rural Development and Land Reform, Land Reform Office Mpumalanga
Endangered Wildlife Trust - African Crane Conservation Programme, Highveld Crane Conservation Project
Department of Agriculture, Forestry and Fisheries, Land Use and Soil Management
South African Heritage Resources Agency, APM Unit
Eskom Transmission, Land Management
Mpumalanga Landbou
SA Civil Aviation Authority

7. CONSULTATION WITH OTHER STAKEHOLDERS

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

Has any comment been received from stakeholders?	YES	NO
If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):		
Refer to the below Section D1 and Appendix E7 for comments and feedback. Also, refer to Appendix E3, E8-E9 for copies of any correspondence to and from the stakeholders.		

SECTION D: IMPACT ASSESSMENT

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

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

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

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

The Public Participation Programme allowed for informed and responsible decision-making by all interested and affected parties. Refer to Appendix E7: Comments and Responses Report and Appendices E8–E9 for copies of written comment.

1.1 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:

Verbal Comment received

Feedback on meetings conducted with landowners and farmers' unions

1. Informal meetings were conducted with landowners and two Farmers' unions in September 2011.
2. The landowners were represented by both the afforestation and the crop-farming sections.
3. A seperate meeting was conducted on 27 September 2011 with the landowners with afforestation activities that included Mondi and Lion Match. Nearly 70% of these owners attended and the absent landowners were contacted individually.
4. At this meeting a previously proposed alternative route (Alternative 3),running adjacent to the Sheepmoor-Jericho road, was not acceptable to the landowners due to its impact on afforestation. (Refer to the Locality map in Appendix A1 for the *blue dotted line = Alternative 3*).In addition an existing water pipeline is existing for about 50% of that route.
5. The proposed Alternative 1 (in the corridor of the 400kV and old 88kV lines) is supported under the following conditions:
   a. Eskom has to confirm in writing if the existing 88kV line will be upgraded and the resulting effect on the servitute widths.
   b. The model of consideration for the afforestation areas should be confirmed during the EIA phase. (How will the worth of the afforestation areas be determined to compensate for servitutes?). The compensation should be adequate to reimburse for any losses.
   c. Eskom should confirm their responsibility regarding fire control.
6. The interest groups/landowners suggested another route alternative, running along the R65 to be investigated instead of Alternative 3. The alternative route adjacent to the Scheepmoor-Jericho road (Alternative 3) is not viable and therefore a new route alternative adjacent to the R65 is proposed.
7. The Farmers' Union (via Mr H Geldenhuys) is to be kept abreast on the EIA investigation and all reports have to be submitted to them.
8. The unsolved complaints of Mr J Roberts have to be attended to by the relevant Eskom client services manager.

Response:

1. *One-on-one meetings as well as focus groups were conducted as part of the public participation process to*

facilitate informed opinion on the project.

2. *Of importance is to accommodate all landowners irrelevant of the farming activity.*
3. *Refer to 1.*
4. *The Alternative 3 route was proposed to run from Camcoll Substation mostly along existing roads towards Jericho Substation. Approximately half of this route was proposed to run adjacent to the dirt road between Sheepmoor and Jericho dam (Refer to the Locality map in Appendix A1 for the blue dotted line = Alternative 3).Alternative 3 was objected to by landowners in the early stages of the project, due to its impact on afforestation activities. Many private property owners have plantations and they are of the opinion that the impact of a new servitude and the resulting loss of income would be enormous.*
5. *At the informal meetings, Route Alternative 1 (following a corridor of power lines) was supported, but Route Alternative 3 (running adjacent to roads) was rejected.*
   a. *The only existing distribution line running in the same corridor as Route Alternative 1 from Jericho sub in the direction of Camcoll sub is the Jericho/Kliphoek 88kV line. This 88kV line runs from Jericho sub towards Kliphoek sub and from there to Uitkoms sub at Camden Power Station. This line therefore is not a feeder towards Camcoll sub. Eskom Project Engineering Witbank responded to the question from interested parties, if the existing 88kV line will be upgraded, that according to the Eskom Distribution Camden/Uitkoms NDP plan a project for the refurbishment for Jericho/Kliphoek 88kV line does not exist.The only lines from Camcoll to be refurbished is the Ultkoms/Camcoll and Usuthu West/Camcoll, both 88kV lines. It is in addition, not technically viable to upgrade the 88kV line between Jericho and Kliphoek to accommodate the new proposed 88kV line, because it is not possible to combine the new line from Camcoll to Jericho with the Jericho/Kliphoek 88kV line on a single structure. It is not standard practise to build a single structure double circuit due to operating and maintenance practice and it will create safety problems.*
   b. *Eskom pays 100% of the land value of the 31 meters wide servitude or - in the case of afforestation areas – a 60 m wide servitude, or as identified per plantation. The value of the servitude in the afforestation areas will be calculated according to the Faustmann Formula. This is a formula designed to detemine the loss due to premature clearfelling of plantation in the servitude areas. The value of the property will be calculated as well as the loss of income due to the removal of premature trees.*

      In the afforestation areas the servitude will be adapted to ensure the safety of the power line and the plantation. The width of the servitude will be calculated according to the rotation age of the plantation, that is the optimal age at which the specific component will be clear felled. The purpose for which the trees are grown will determine the rotation age.

      The height of the tree is taken into account, for example Blue gum can mature to approximately 25 meter, Black Wattle to 18 meter and Pine to 30 meter. Hence, in the case of Pine a general tree restriction of 30 meters from the center line underneath the power line will apply. The total servitude width will therefore be 60 meters.

      In the afforestation areas every affected property will have to be assessed individually to calculate the width of the servitude according to the type of plantation and the rotation age of that plantation. The negotiations with every landowner to this regard will be conducted once the final route has been recommended. Servitude rights for a servitude in general terms will be obtained by means of an "Option to Acquire a Servitude".

   1. <u>firebreaks and servitude maintenance</u>

- In the case of 33kV, 88kV and 132kV distribution power lines, Eskom obtains the rights to a servitude.
- A servitude is a real right which Eskom obtained in order to construct its infrastructure upon the affected property and it is registered in the Deeds Office against the title deed of the affected property. The effected owner normally gets compensated for this right according to market related values. The servitude stays effective even if a property is transferred to another owner.
- The National Veld and Forest Fire Act (Act 101 of 1998) places an obligation on the owner to ensure compliance and hence creation of fire-breaks amongst other. The Act defines owner as follows: "owner" has its common law meaning and includes— (a) a lessee or other person who controls the land in question in terms of a contract, testamentary document, law or order of a High Court;.
- The Eskom understanding is that Eskom needs to ensure compliance to the Act where it has purchased a property (hence being the owner), such as a substation, where Eskom controls the access to the site. Eskom is not considered as the owner for rights obtained via a wayleave agreement or servitude. Hence,

the requirements for creating firebreaks or joining Fire Protection Agencies are applicable as far as where Eskom has a substation, or other similar areas, and not for power lines. These opinions were reflected in the specifications – thus, the Vegetation Management Standard does not specify requirements for fire breaks.

- Fire Risk Management is dealt with under a procedure titled "Distribution Fire Risk Management", reference SCSASAAJ6. Grass fires are dealt with in this procedure stating that vegetation and equipment must be maintained. A specific procedure deals with fire risk management for substations where the chipped stone needs to be maintained to prevent vegetation growth.
- Eskom Distribution does not make use of the practice to burn firebreaks, 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 as this does not pose a safety risk and will create the potential for erosion, causing environmental degradation and hence legal liability. It will furthermore be an economically unsustainable exercise for Eskom given the amount of power lines throughout South Africa.

6. *The EIA discarded the route adjacent to the Scheepmoor road (Route Alternative 3) due to the feedback from the landowners and investigated a new corridor adjacent to the R65 (Route Alternative 2). (This Route alternative is indicated as Alternative 2 on the Locality map in Appendix A1).*
7. *The Farmers' Unions were added as interested parties and received all notifications re this project.*
8. *A letter was send to Mr. Robberts, requesting information from him. His response will be submitted to the relevant Eskom client services manager.*

Written Comment received

Highveld Tourism Mpumalanga
Comment:

Registered as an interested and affected party in their capacity as the Regional Tourism Organisation and Authority in the district.
They requested a detailed map of the route so as to ascertain the potential impact on the Highveld Heritage Sites and Wetland areas.
Response:
Detailed route maps were supplied to them.

The South African National Road Agency SOC Limited, Northern Regional Office
Comment:
The R65 is a provincial road. The N2 is the only national route that may be affected. It will be required that the nearest poles or structures of the power line be erected at a distance of not less than 60 metres outside the N2 road reserve.In principle SANRAL support the environmental authorisation but do not wish to be registered as an Interested and Affected Party.
Response:
The requirement for construction close to the N2 will be submitted to the applicant. Route Alternative 1 will run from Jericho sub to the west, then turn north towards Camcoll sub. At that point it is the closest to the N2.

Department of Rural Development and Land Reform, Land Reform Office Mpumalanga
Comment:
Commented that the below mentioned properties are under the management of the National Department of Public Works and provided the contact details of the officials.
Portion 1 of Swartwater 288 IT;Portion 6 of Swartwater 288 IT;Portion 6 of Scheepersvley 303 IT;Portion 1 of Jericho 304 IT;Portion 23 of Vlakplaats 284 IT; andPortion 20 of Vlakplaats 284 IT.
Response:
Noted. Notifications will be submitted to the officials of the National Department of Public Works.

Endangered Wildlife Trust - African Crane Conservation Programme, Highveld Crane Conservation Project
Comment:
Registered as an I&AP on behalf of the Endangered Wildlife Trust.The area is home to a number of rare and endangered species including cranes. They are also actively working in the area at present under the Biodiversity Stewardship programme with Mpumalanga Tourism and Parks Agency.
Response: Noted.

Onverwacht 287 IT Portion 6
Comment:
Mr. Meyer commented that it became apparent in discussions after the public meeting that Eskom has no plan to upgrade the existing 88kV line that is adjacent to the 400kV line. It makes no sense to construct a new line and servitude and not use the old line on an existing servitude or alternatively upgrade the old line in the existing servitude.
The status of this should be established to satisfaction. In the meantime co-operation will be withheld. This issue was also mentioned at the first meeting with landowners and is being ignored.
In addition, did the specialists their reports without permission from the landowner and the reports should therefor be questioned as being out of line with the prescribed lawful procedures.
Response:
Miscommunication took place after the public meeting regarding the upgrade of certain lines. The only lines from Camcoll to be refurbished is the Ultkoms/Camcoll and Usuthu West/Camcoll, both 88kV lines. The line referred to – the existing 88kV line that is adjacent to the 400kV line - is the Jericho/Kliphoek 88kV line. This 88kV line runs from Jericho sub towards Kliphoek sub and from there to Uitkoms sub at Camden Power Station. This line therefore is not a feeder towards Camcoll sub.
Eskom Project Engineering Witbank responded that, according to the Eskom Distribution Camden/Uitkoms NDP plan, a project for the refurbishment for Jericho/Kliphoek 88kV line does not exist. It is in addition, not technically viable to upgrade the 88kV line between Jericho and Kliphoek to accommodate the new proposed 88kV line, because it is not possible to combine the new line from Camcoll to Jericho with the Jericho/Kliphoek 88kV line on a single structure. It is not standard practise to build a single structure double circuit due to operating and maintenance practice and it will create safety problems. In order to strengthen the network, it is therefore unavoidable to construct a new 88kV line that feeds from Jericho to Camcoll.
The public participation process informed all landowners of the proposed EIA project in one-on-ones and in meetings with groups of landowners. There was some misunderstanding as to that additional permission was required from the said landowner.

Department of Agriculture, Forestry and Fisheries, Land Use and Soil Management
Comment:
In terms of the Subdivision of Agricultural Land Act, 1970 (Act 70 of 1970), Section 2(a) Eskom is a statutory body and therefore it is not subjected to the provisions of the Act.
Section 2 of the Act states the following:
"...2. Actions which are excluded from application: The provisions of this Act shall not apply in respect of- (a)(i) any subdivision of land for the purpose of transferring a portion thereof to the state or a statutory body;……." .
Should the above be applicable to this project then the consent of the Minister is therefor no longer required.
Response:
Noted.
It should also be noted that Eskom will not purchase any property or attempt to own the servitude, but will purchase the rights to construct and maintain the lines. A change in land use from agriculture to other land uses is not applicable.

Vlakplaats 284 IT portion 12
Comment:
PWG Attorneys commented as representatives of their client, Mr. HHO Gerken. Their client is in favour of the new line to be constructed within the servitude areas of the older/existing corridor of lines.
Their client prefers the new line to be constructed to the southern side of the existing line and not the northern side as proposed on the maps provided. The reason is that the landowner has a dwelling that will be impacted on

should the line be constructed in the northern corridor.
Response:
The negotiator for the project should discuss the exact placement of the line with the landowner and his attorneys. The existing vacant servitude is to the southern side of the existing line and therefore, should Alternative 1 be the final route, the positioning thereof will be in line with the preference of the landowner.

Windhoek 291IT Portion 8
Comment:
Mr Thabu Grobler on behalf of Tallyprops 7 commented as follows:
- The new power line should be on one structure with the existing lines to minimise impact.
- The new line should be to the north of the current line.
- New roads on the escarpment should have stormwater berms to prevent erosion. It is preferable that roads be done with tar or cement.
- Where the proposed route crosses the escarpment a detailed eco-tourism study should be conducted.
- All specialist reports should be provided to Tallyprops 7 on cds.
- The existing 88kV line could be upgraded to 132kV. This will create less impact.
- The current service road should be repared to adress the existing erosion. Eskom should continuously upkeep this road.

Response:
- *The existing 88kV line runs from Jericho sub to Kliphoek sub and from there to Uitkoms sub (at Camden Power Station). This line therefore is not a feeder towards Camcoll sub.It is in addition, not technically viable to upgrade the 88kV line between Jericho and Kliphoek to accommodate the new proposed 88kV line, because it is not possible to combine the new proposed line from Camcoll to Jericho with the Jericho/Kliphoek 88kV line on a single structure. It is not standard practise to build a single structure double circuit due to operating and maintenance practice and it will create safety problems.*
- *Noted. The vacant servitude is to the south, and in between the existing 88kV and the 400kV.*
- *Noted. New roads will be kept to a minimum and measures to limit erosion are provided in this BAR and in the EMPr. The construction of cement and tar roads will have significant impact on the environment. Specific measures to limit erosion should be devised on the mentioned property.*
- *The need for a detailed eco-tourism study is not apparent. A detailed fauna and flora study was conducted to with specific recommendations to limit impact to the escarpment.*
- *Specialist reports on a cd were posted to Tallyprops.*
- *The existing 88kV line feeds from Jericho sub to Kliphoek sub and from there to Uitkoms sub. Therefor it cannot fulfill in the need for this project, to supply Camcoll sub.*
- *The requirement for repair of service roads on this property is submitted to Eskom.*

Onverwacht 273IT Portion 6
Comment:
The Co-Executors and Heirs/Owners of the mentioned Estates need to establish the following information from Eskom for the following farms: Buhrmanns Tafelkop Van Oudshoornstroom 272 IT; Portion 6 Onverwacht 273 IT (RD); De Roodepoort 435 IS Portion 1:
1. The outstanding rentals from 1965 to the present date, that is due from Eskom since Eskom started to use these properties to carry on with their business and erect their installations.
2. The information referring to all the servitude's that Eskom should have registered on the said properties for all their installations listed.
3. The Original Legal Contracts that Eskom may have in their possession, and which Contracts gave/give Eskom permission to erect their installations and trade on the properties listed below.
4. Copies of all the Contracts that Eskom may have established with either above party mentioned in the Grand Parents Estate and Father's Estate, as well as including any other Contracts established with the Heirs/Owners to the properties listed below, or information that proves if any such Contract/s were in fact ever established by Eskom giving them permission to trade and erect their installations on these properties listed below.
5. Details of all or any of the Second or Third Party Contracts that are Sub Renting or Leasing and using the Eskom Communication Towers, as well as the details of the Contracts and rentals due from these Second or Third Parties that are still using the Eskom Communication Towers since 1965 to the present date: MTN;

Vodacom; SANDF; Cell C; various vhf aerials; yuggi aerials; data control aerials; various microwave dishes.

6. Details of the relevant Eskom Department as well as the Contact Numbers and Personnel that are mandated to represent Eskom's responsibility for establishing the necessary Contracts that Escom may or may not have, and will need to establish through the appointed Co-Executors of both Estsates with the present Heirs/Owners with immediate effect as well as going forward.
7. Details of the relevant Eskom Department responsible for the security, maintenance and general cleaning of the said areas of the properties that are currently being used by Eskom.

Response:
The EAP forwarded all the questions to Eskom Distribution for response. They attended to the matter, but according to all information attained, the EAP came to the conclusion that the answers need to be provided by Eskom Transmission, which is another company with their own infrastructure. It is therefore not within the authority of this EIA to provide answers to the landowner. The issues should be followed up by the landowner with Eskom Transmission.

South African Heritage Resources Agency, APM Unit
Comment:
SAHRA indicated the process to be followed. A Phase 1 Impact Assessment is recommended as a starting point. They also requested a Palaeontological study to assess whether or not the development will impact upon palaeontological resources- or at least a letter of exemption from a Palaeontologist is needed to indicate that this is unnecessary.
Response:
A Phase 1 HIA has been conducted and the draft BAR inclusive of the HIA will be forwarded to SAHRA for their perusal. A Palaeontological study is being requested and the recommendations will be adressed and submitted to SAHRA.

Eskom Transmission, Land Management
Comment:
Eskom will raise no objection to the proposed EIA provided Eskom Tx's rights and services are acknowledged and respected at all times.
Before any construction work commences in the vicinity of Eskom Tx's services, a formal application must be submitted with respect to their Transmission (Tx) services, Tx Camden-Edwaleni 400kV power line, that will be affected by the project.
Response:
Noted. The requirements of Eskom Transmission will be adhered to regarding the Tx Camden-Edwaleni 400kV power line.

South African Civil Aviation Authority
Comment:
After evaluating the site position and reviewing the information received, the CAA has no objection to the proposed 88kV line for either Alternative 1 or Alternative 2. The SACAA therefor approved the proposed 88kV line.
Response:
Noted.

1.2. Comments received at the Information day

An ***information meeting*** was conducted on **8 February2012** at Ermelo Country Club.**Invitations thereto were sent to all IAPs on**3 December 2011 and 25 January 2012**.** 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. The information meeting was conducted in the format of a public meeting with a formal slide show presentation.In addition project posters with information and maps of the routes were displayed at the meeting. Written comment was requested at the meeting. The attendees were all landowners in the project area and therefore requested the meeting to be conducted in Afrikaans. Minutes of the meeting was submitted to all

attendees on 22 February 2012.(Refer to Appendix E4 for the attendance register;Appendix E5 for the comment form that was provided; Appendix E6 for the minutes of the meeting; Appendix E9 for the comment provided at the meeting).

Actions forthcoming from the above meeting:

A meeting should be conducted between the farmers' unions and Eskom Distribution (Mr. Arthur Smith) to address the protocol for farm access and servitude maintenance in agricultural areas but in specific in plantation areas. The names of the chairpersons were provided to Mr. Smith and he undertook to arrange a meeting with them.

A similar meeting should be conducted between the farmers' unions and Eskom Transmission to address the issues regarding the 400 kV Camden - Edwaleni power line. The contact details of the chairmen of the farmers' unions were provided to Mr Ernest Grunewald.

1.2.1 Comment providedat the public meeting

Mpumalanga Landbou

Comment:

Mr Hennie Laas comments that it is a pity that his members were not well presented. His assumption is that they are satisfied with the process that has been followed so far- (in the EIA). He supports the fact that the meeting requested the landowners/farmers to put their remarks in writing. He would be interested in the comments received. He suggests that improved service provision is to the advantage of all. He observed the presentations to be good.

Reply:

Noted.

2. CONCLUSION OF PUBLIC PARTICIPATION PROGRAMME FOR THE BASIC ASSESSMENT REPORT

The Environmental Impact Assessment included a first phase Public Participation Process. The project was advertised with **onsite notices, newspaper notices and notification letters** to facilitate informed decision. Landowners were notified of the project in either one-on-one discussions or in focus groups. In addition an **information meeting** was conducted on 8 February 2012 to furnish the landowners and other interested parties with information regarding the extent of the project. The consultants endeavoured to facilitate a transparent and accommodating Public Participation Process.

A **draft Basic Assessment Report**– this document - was compiled with the main aim to identify issues, potential impacts and potential alternatives associated with this project. It included proceedings of the PPP and communication with registered Interested & Affected Parties (IAPs). **Notification** of the availability thereof was sent to all IAPs on **22 May 2012**with the **due date for comment by 3 July 2012**. The Consultants (EAPs) will ensure that all comments/concerns raised to the draft BAR will be addressed in appropriate detail in the final Basic Assessment Report, that will subsequently be submitted to DEA.

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

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

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

Impact on natural habitat

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

Relevant to the project is the following:

Grassland Plains

- The Eastern Highveld Grassland is a vegetation type that is endangered. Although the study site falls within this grassland, the site itself and the immediate surrounding area has been mostly transformed and consists mainly of cultivated lands and plantations. For these reasons the significance of the impacts are seen as low and can be viewed as neutral.

Drainage Lines

- Drainage lines are generally viewed as sensitive and need to be avoided. There are a number of drainage lines, some of which are traversed by both route alternatives. Due to the high rainfall, soils, grassland vegetation and flat, low gradient of the terrain, many of the drainage areas remain damp for most of the year. This is more due to the continual seepage of groundwater in the depressions and the slow run-off of the water. Most of the drainage lines (except those down the escarpment) are flat and wide. All drainage lines are calculated as been of medium/high sensitivity.

Wetlands

- All wetlands are considered sensitive and those found in the study area are no exception. A number of small water bodies (wetlands) are scattered across the high-laying western part of the study area, but all of these fall outside the power line corridors or will be avoided during construction. The lowlands in the west have a number of large wetland areas in fairly pristine condition. Corridor routes have been adjusted to avoid the larger wetlands, but in cases come within close proximity to some small pans and seasonal waterlogged depressions. Mitigating measures have been put in place to avoid any construction or disturbance of these small water bodies as well. Wetlands are viewed as 'No-Go' zones.

Rivers

- Rivers are always seen as sensitive and should be avoided, along with their associated riparian vegetation and floodplains. The power line corridors will need to cross a number of rivers in order to link up between Camcoll Substation and Jericho Substation. Mitigating measures are necessary, the implementation of which will ensure that almost no negative impact in terms of the ecological environment are felt. Typical of many of the small rivers and streams in the Highveld grasslands, the rivers do not have a very distinctive riparian vegetation zone, especially with regards to trees. Often the trees found along these watercourses are invasive aliens such as weeping willow (*Salix babylonica*) and grey poplar (*Populus* x *canescens*).

Ridges

- Rocky ridges are generally seen as sensitive and need to be avoided where possible. There are no typical koppies (rocky outcrops) found within the power line corridors. However, both route alternatives drop off the escarpment, which forms a continual rocky ridge that runs north-south through the study area. The rocky ridge itself is mostly east-facing. The ridge (escarpment) has been calculated as medium/high sensitive and is considered a 'Go-But' zone.

Plantations

- Plantations found in the study area are not ecologically sensitive and have all but totally transformed the vegetation of the site on where they stand, as well as distrubed the water balance. However, numerous avian raptors such as Long-crested Eagle often nest in the tall trees of such plantations. Care should therefore be

taken should any trees need to be removed that none contain active nests of raptors as most are threatened or vulnerable to some degree.

Conclusion

- Only Wetlands are seen as having a high ecological sensitivity and deemed as 'No-Go' zones. The transformed areas within the study site are not seen as sensitive (low sensitivity). These include cultivated lands and plantations, which are both viewed as 'Go' zones.
- 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 low.

Mitigation of impact on natural habitat

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

- Site specific measures in terms of ecology as identified by the ecologist, Mr. Johannes Maree of Flori Horticultural Services (Tel 082 564 1211) must be included in the contract with the Contractor and implemented by the Contractor during the construction phase. These measures are included in the EMPr of the BAR.
- Various species of indigenous trees and bush are protected by law in terms of the National Forests Act No 84 of 1998, which stipulates that it is necessary to obtain a permit from the relevant provincial office of the Department of Agriculture, Forestry and Fisheries in order to cut them. No permit applications are envisaged for this project.

Grassland Plains

- Any temporary storage and accommodation facilities should be erected in preferably old, previously cultivated lands that are open and not wooded. In other words, no areas of pristine grassland should be selected.
- 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, as oftentimes contractors do not have the expertise to distinguish between alien and indigenous species.
- Any selected temporary site (accommodation or storage) needs to be within the 100m power line corridor.
- No site within 300m of a river, stream or major drainage line may be used for temporary accommodation or storage.
- Positioning of the foundation slabs for the pylons must be a minimum of 50m away from the edge of all drainage lines, due to the general flatness and possible overflowing of drainage lines during high rainfall seasons.

Escarpment Ridge

- The power line corridor will need to dissect the escarpment ridge. The most sensitive part of the escarpment is the east-facing, rocky ridge, with its steep 'cliff face', which drops approximately 200m over a short distance. More care will need to be taken over this area than on the high plateau. However, even the high plateau (western side of the escarpment) is more sensitive than the grasslands to the west of the escarpment. This is because the plains are not as flat (more strongly undulating) and therefore have more and deeper drainage lines.
- No pylons to be placed inside any drainage lines or kloofs (ravines).
- Pylons need to be placed a minimum of 30m away from the edges of drainage lines.
- In areas where the power line goes off the escarpment ridge it must stay outside of any kloofs (ravines). Pylons need to be placed a minimum of 50m away from the edge of ravines.
- Power lines may not cross over the highest point (contour) on top of the escarpment. The highest pylon on the ridge must be a minimum of 50m below the highest point or follow a contour around the highest point. This contour to be at least 50m below the level of the highest contour line. This is to reduce the negative visual impact of high laying power lines over a long distance.
- The escarpment ridge is calculated to be of Medium/High sensitivity and is therefore seen as a "Go-But" zone. In other words, the power line corridor can Go there, but only if mitigating measures are adhered to and proper ongoing management measures put in place.
- No temporary storage facilities, toilets, dwellings, etc. of any kind to be erected or take place within the rocky, eastern side of the escarpment ridge. Not even within the demarcated power line corridor.
- The longest possible distance between pylons should be used in an effort to limit the footprint size down the escarpment ridge.
- The power line must run as straight as possible over the ridge. This in an effort to limit sharp turns that literally create a larger physical footprint on the ground. However, staying along lower contour lines and out of ravines must take precedence over a straight corridor.

Rivers, streams & drainage lines

- A few rivers (Vaal River, Holbankspruit and Mpama River) along with a few seasonal streams and drainage lines cross the power line 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.
- No temporary or other construction facilities to be erected or stored within 200m of the banks of the rivers, streams or main drainage lines.
- Positioning of any pylons need to be a minimum of 50m from the edge of the river banks or outside of the 1 in 100 year floodline, whichever is furthest.
- Positioning of the foundation slabs for the pylons must be a minimum of 20m away from the edge of all drainage lines.
- Under no circumstances may a pylon be placed directly in the bed (main flow) of a river or drainage line.
- No temporary ablution facilities to be placed within 200m of the banks of any of the rivers, streams or drainage lines (even those that are dry during the time of construction)
- Only proper portable, chemical ablution facilities to be used and these to be positioned only within the 31m power line servitudes.
- Portable ablution facilities only to be serviced by registered companies and on a regular basis. Under no circumstances may any effluent or sewage to be dumped (or buried) in the open veld.
- Proper water facilities need to be installed and maintained for construction workers. No water from out of the rivers may be used for drinking, washing or cooking purposes.
- No fishing, capture of any water or land animals, or removal of water plants or other vegetation for food to be allowed.

Wetlands

- No wetlands occur within the proposed power line corridors, but some (especially in the lowlands) do occur in the area, or in fairly close proximity. Under no circumstance may any activities directly or indirectly related to the power line project take place within any wetland area.
- No campsite, temporary storage facility, or any other facility to be erected within 500m of a wetland.

Water Use Licence Applications

- The law (National Water Act (NWA)) sees each river crossing as a Water Use that will either need to be registered (General authorisation) or a water use licence applied for (Water Use Licence Application (WULA)).
- However, a general indication is given in this report as to which river crossings will probably only need to be registered under General Authorisations and which will probably need Water Use Licence Applications (WULA). The water uses are all covered in the NWA. In the case of overhead power lines, 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.

Plantations

- Numerous avian raptors such as Long-crested Eagle often nest in the tall trees of plantations. Care should therefore be taken should any trees need to be removed that none contain active nests of raptors as most are threatened or vulnerable to some degree.

General

- The placement distance between pylons can be up to 330 meters. Therefore any sensitive areas, with proper planning, could be completely missed.
- It was concluded that, from a vegetation and fauna perspective, if duly mitigated and planned, the overall impact is seen to be minimal over the medium- to long-term.

Social Impact

- The construction of new power lines could potentially impact on landowners if not planned and designed to accommodate the needs of the landowners.
- In addition, the possibility exists that a project might impact also upon residents who are not landowners. Land users or lands rights holders could farm on the portion of land affected by the proposed line or rent a house and not own it. The compensation for the servitude is always paid to the landowner and not to the land user.
- Any possible impact on landowners as well as land users should be identified and accommodated before construction of the route.

- The development on State land allocated to a tribe requires the consent of the Minister of the Department of Rural Development and Land Reform as nominal landowner of the land. The land rights holders must be consulted, must participate in the decision making process, and consent to the development in the form of a tribal resolution.

Mitigation of Social Impact

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

- The design for the power line route and the placement of structures should be accommodating to existing structures in the alignment of the route.
- Routes with evident visual disturbance caused by existing power lines or roads are in general more acceptable than traversing through pristine area.
- For the reasons above the alternatives for the projectwere designed to impact as minimal as possible on the receiving environment and the affected landowners.
- The power line is proposed (Alternative 1) to run adjacent to an existing corridor of power lines, a 400kV and a 88kV power line.
- Alternative 2 is designed to follow adjacent to an existing corridor of impact, the R65.
- 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 structures may be erected. The following will be applicable to the servitute areas for this project:
- In general, a building restriction of 31 meters is applicable to Eskom 88kV/132kV power lines, which implies 15,5 meters on either side of the centreline underneath the power line.
- In the afforestation areas the servitude will be adapted to ensure the safety of the power line and the plantation. The width of the servitude will be calculated according to the rotation age of the plantation, that is the optimal age at which the specific component will be clear felled. The purpose for which the trees are grown will determine the rotation age.
- The height of the tree is taken into account, for example Blue gum can mature to approximately 25 meter, Black Wattle to 18 meter and Pine to 30 meter. Hence, in the case of Pine a general tree restriction of 30 meters from the center line underneath the power line will apply. The total servitude width will therefore be 60 meters.
- In the afforestation areas every affected property will have to be assessed individually to calculate the width of the servitude according to the type of plantation and the rotation age of that plantation.
- The negotiations with every landowner to this regard will be conducted once the final route has been recommended.
- For the first section of the route for Alternative 1, from Jericho substation to Kliphoek substation, it will be adjacent to the existing Jericho-Kliphoek 88kV line. For this section Eskom Distribution (Dx) has two existing servitudes. The first Dx servitude, on the northern side of the existing 400kV Transmission (Tx) line, is 27.4m wide (13.7 metres on either side of the centre line) and currently empty. The centre line of this vacant Dx servitude is 39,75 meter from the centre line of the Tx power line.*(Please note - the exact distances will be confirmed by the Eskom negotiator and the surveyor.)*
- The centre point of the second Dx servitude (immediately north of the first vacant Dx servitude) is 15.25 meters from the centre point of the first Dx servitude (this is referred to as the seperation distance). The second Dx servitude is also 27.4 metres wide and accommodates the existing Jericho-Kliphoek 88kV line.
- The vacant area/servitude north of the 400kV Tx line is therefore adequate tot accommodate the proposed new 88kV line. A new servitude for this section from Jericho substation to Kliphoek substation is therefore not needed and the proposed 88kV line can be constructed in the existing servitude areas.
- Alternative 1, as discussed above, will be able to use a vacant servitude for at least half of the route between Jericho sub and Camcoll sub.
- This alternative (1) is supported by the landowners that is affected by this route due to the existing impact of the power line corridors. Alternative 2 creates a new corridor of power line impact.
- During the course of the EIA, all affected landowners were identified and consulted with regarding the proposed project. Refer to the register of landowners in Appendix E10.
- The properties in question (servitude) will not be purchased and the registered owner will receive compensation for the use of the servitude. Further negotiations are taking place to confirm the details for the acquisition of the servitude and compensation therefore.

- The negotiator will confirm the specific requests/requirements with each landowner. These will be stipulated in the final document, an option document. The option document is a binding document that reflects all the requirements of the landowner, for example: the exact positions of the pylons on his property; the negotiated compensation for the servitude; specific access arrangements to his property etc.

Impact on Airfields

The power line and their routes can have an impact on airstrips.

Any communications structure, building or other structure, whether temporary or permanent, which has the potential to endanger aviation in navigable airspace, or has the potential to interfere with the operation of navigation or surveillance systems or Instrument Landing Systems, including meteorological systems for aeronautical purposes, is considered an obstacleand shall be submitted to the Commissioner for Civil Aviation for evaluation (refer SA-CAR Part 139.01.33)

The main reason is to control or prevent structures that could have a serious effect on aviation safety, especially in the vicinity of an aerodrome. (*An aerodrome is a defined area on land or water intended for the arrival, departure and surface movement of aircraft* – ICAO definition). It also follows that the knowledge of where obstacles are, will add to aviation safety.

Mitigation of impact to Airfields

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.

Power lines shall be marked when crossing a river, valley or major highway with marker spheres of a diameter of not less than 60 cm. The spheres shall be of one colour and displayed alternately orange/red and white or a colour that is in sharp contrast to the background as seen from an airborne perspective. The spacing between the spheres and between the spheres and the supporting towers shall not exceed 30m. On lines with multiple cables, the spheres shall be fitted to the highest cable.The marker spheres shall be visible from at least 1000m from an airborne perspective and 300m from the ground.

Where power lines crosses a river or valley, the co-ordinates (*latitude and longitude in degree, minute, seconds and tenth of seconds format*) and the height of the line above the valley or river, shall be communicated to the Commissioner for publication in the appropriate media.The Commissioner may require that supporting towers be marked and lighted.

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

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

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

After evaluating the site position and reviewing the information received, the CAA has no objection to the proposed 88kV line for either Alternative 1 or Alternative 2. The **SACAA therefor approved** the proposed 88kV line.

2.2 IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE

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

Risk of Surface and Groundwater Pollution

- Construction materials and construction equipment will be stored at the campsite and used on site. The pollution of groundwater may result from any spillages that may occur. In addition, the campsite may accommodate construction workers, in which case solid and liquid effluents will be produced, including sewage and domestic solid waste.
- Therefore possible diesel, oil and lubricant spills are the main concern in respect of water pollution during construction together with organic pollution caused by inadequately managed facilities at site camps and at the work sites. The above may result in a change in groundwater quality with the associated negative impact on humans and the natural habitat.
- A management plan must be in place to rehabilitate any such spills. Part of the management strategy must further include the proper storage and removal of any by-products and building rubble.
- Watercourses are crossed by the power line corridorsand it is strongly recommended that no construction of any sort takes place within aquatic and riparian habitats encountered, as these habitats are viewed as sensitive.

Mitigation of Surface and Groundwater Pollution

Construction camp

- Camp site, storage facilities and other necessary temporary structures to preferably be erected within the confines of the Camcoll and Jericho Substations. With the possibility of another one (maximum two) temporary sites within the power line corridors due to the distance between the substations.
- Encourage the construction contractor to employ local people as far as is reasonably practical and encourage the contractor to transport them daily to and from site. This will reduce solid and liquid waste production and water demand at the site camps.
- 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 accommodation in a construction camp be unavoidable, then the measures as stipulated in the EMPr must be adhered to.
- Included as requirement in the EMPr under heading *"Waste Management"* 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.
- No water for drinking or cooking purposes should be used from out of streams, vleis or farm dams in the vicinity. It is important for relevant management or contractors to ensure that staff/workers are supplied regularly with adequate clean drinking and cooking water.
- The water used to supply the site with potable water is sourced/purchased from farmers in the area with pre-existing rights. The contractor should deliver the water to the site in the applicable water tankers. These requirements are included in the EMPr under the headings "*Construction site*" and "*Ground and Surface Water*".
- In all cases, abstraction of water for construction purposes will require a permit from the Department of Water Affairs unless pre-existing rights are purchased from farmers. For this project, water tanks will be used during construction.
- Mixing of cement, concrete, paints, solvents, sealants and adhesive must be done in specified areas on concrete aprons or on protected plastic linings to contain spillage or overflows onto soil to avoid contamination of underground water.
- No material or machinery to be stored or placed in the open veld outside the designated area of the power line corridors.

- Proper and adequate containers (rubbish bins) to be placed in campsites for the temporary disposal of food waste and general litter generated by construction workers. These containers need to close securely to avoid items (eg. Paper and plastic) been blown into the veld, etc. Proper waste management is essential.

Diesel, hydraulic fluid and lubricants

- Minimize on-site storage of petroleum products. Relevant to this project, is that the relevant dangerous goods to be stored on site is diesel. The diesel tank can hold 2000 litres (2 cubic metres). Of relevance is: GNR 544 of 2010, activity nr 13 that states "…storages of dangerous goods with a capacity above 80 cubic metres….". The amount of diesel that will be stored on site is 2 cubic metres and is therefore a relatively small amount and well below the threshold of the listed activity of 80 cubic metres.
- Precautionary methods to be implemented for handling of oil and substances that could impact on the soils, ground- and surface water :
- No hazardous substances may be stored on site for a period exceeding 90 days. (Note that the Department of Water Affairs requires a permit for a waste disposal site in the event that longer storage periods apply).
- All hazardous substances at the site must be adequately stored and accurately identified, recorded and labelled. The storage of any hazardous substances must take place in a secured lock-up building or covered area.
- Build adequate structures (berms and containment structures) to contain any oil spills which might emanate from transformers.
- Bund storage tanks to 120% of capacity.
- Ensure proper maintenance procedures in place for vehicles and equipment.
- Servicing of vehicles to be in designated areas with appropriate spill management procedures in place.
- Ensure measures to contain spills readily available on site (spill kits).
- A container filled with sand to soak up any spillages, as well as an empty container into which the "contaminated" sand could be placed and stored for collection by the supplier of the chemicals or oils must be provided.
- The Regional Representative of the Department of Water Affairs should immediately be informed if pollution of any groundwater or soils occurs. They will give instruction on actions to be taken in this regard.

Site camp domestic waste (kitchens, showers)

- Deposit solid waste in containers and dispose of regularly- at least weekly. 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). Proof to be kept by contractor.
- Under no circumstances may any waste food or general litter be dumped, or buried in the veld.
- Dispose of liquid waste (grey water) with sewerage.

Site camp sewage

- Minimize on-site accommodation.
- Supply, maintain and enforce the use of mobile toilets at the work sites. Only proper portable, chemical ablution facilities to be used and these to be positioned only within the 31m power line servitudes.
- No temporary ablution facilities to be placed within 200m of the banks of any of the rivers, streams or drainage lines (even those that are dry during the time of construction).
- Included as requirement in the EMPr under heading *"Waste Management*" is the following: The disposal of chemical toilets should be on a regular basis and 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.
- Under no circumstances may any effluent or sewage to be dumped (or buried) in the open veld.

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

- Ensure compliance with stringent clean up requirements on site. As a general requirement, disposal should be at least twice a week.
- 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 thatis recycled and taken to the Eskom stores. Other waste is normally the 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.

- These measures are also 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.

Rivers and drainage lines

- It is strongly recommended that no construction of any sort takes place within aquatic and riparian habitats encountered, as these habitats are viewed as sensitive.
- During and after construction, storm water control measures should be implemented especially around stockpiled soil, excavated areas, trenches etc. so that export of soil into the watercourse is avoided.
- Of relevance is, that a few rivers (Vaal River, Holbankspruit and Mpama River) along with a few seasonal streams and drainage lines cross the power line corridors. Measures to limit impact to any watercourse are supplied and are inter alia
  - The rivers, seasonal streams and drainage lines need to be avoided in the sense that no pylons may be placed directly within the main stream of any one of these watercourses.
  - No temporary or other construction facilities to be erected or stored within 200m of the banks of the rivers, streams or main drainage lines.
  - Positioning of any pylons need to be a minimum of 50m from the edge of the river banks or outside of the 1 in 100 year floodline, whichever is furthest.
  - Positioning of the foundation slabs for the pylons must be a minimum of 20m away from the edge of all drainage lines.
  - Under no circumstances may a pylon be placed directly in the bed (main flow) of a river or drainage line.
  - All stream crossings are considered as sensitive areas and no traffic are allowed through it (only at properly constructed bridges) during construction or maintenance of the power line.
  - No fishing, capture of any water or land animals, or removal of water plants or other vegetation for food to be allowed.

Wetlands

- No wetlands occur within the proposed power line corridors, but some (especially in the lowlands) do occur in the area, or in fairly close proximity. Under no circumstance may any activities directly or indirectly related to the power line project take place within any wetland area.
- No campsite, temporary storage facility, or any other facility to be erected within 500m of a wetland.

Water Use Licence Applications

- The law (National Water Act (NWA)) sees each river crossing as a Water Use that will either need to be registered (General authorisation) or a water use licence applied for (Water Use Licence Application (WULA)).
- However, a general indication is given in this report as to which river crossings will probably only need to be registered under General Authorisations and which will probably need Water Use Licence Applications (WULA). The water uses are all covered in the NWA. In the case of overhead power lines, 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.

Impact on erosion

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

Mitigation of Impact on erosion

- Erosion in the area is low due to the general flatness of the topography.
- Construction activities should be well managed to prevent erosion and the following is relevant:
- It is strongly recommended that no construction of any sort take place within aquatic habitats encountered, as these habitats are viewed as sensitive.
- Construction must be limited to drier periods.
- Access roads must be kept to a minimum. These same roads need to be used later for access during site inspections, line maintenance, etc. In other words, proper planning must be done so that on completion of the project there will be no need for the subsequent construction of other access roads.
- Unnecessary clearing of flora resulting in exposed soil prone to erosive conditions should be avoided.
- Vegetation under pylons and next to pylons to be mowed and not ploughed.
- No trees or existing grass strata outside of the power line corridor should be removed to lower any kinetic energy of potential run-off.
- Indigenous vegetation, which does not interfere with the safe operation of the substation/ power line, should be left undisturbed.
- The eradication of any alien vegetation should be followed up as soon as possible by replacement with indigenous vegetation to ensure quick and sufficient coverage of exposed soil.
- Pro-active measures must be implemented to curb erosion and to rehabilitate eroded areas. All areas susceptible to erosion must be installed with temporary and permanent diversion channels and berms to prevent concentration of surface water and scouring of slopes and banks, thereby countering soil erosion.
- Disturbed surface areas in the construction phase to be rehabilitated. No open trenches to be left. No mounds of soils created during construction to be left.
- The sandy nature of the soils in most of the corridor route makes them susceptible to soil erosion by water once disturbed, especially in steeper areas such as those found closer to the escarpment edge. The ground surface around all foundation slabs for the pylons needs to be inspected before the start of the summer rainy season and within three months after the end of summer for erosion. Any erosion found needs to be fixed and preventative measures put in place to prevent a reoccurrence of the situation.
- Specifications for topsoil storage and replacement to ensure sufficient soil coverage as soon as possible after construction activities as identified in the Environmental Management Programme must be implemented.
- All cleared areas must be ripped and rehabilitated after construction. The top 200mm layer of topsoil must be removed and stockpiled in heaps not higher than 2m and replaced on the construction areas once the activities have been completed. The affected areas should be replanted with a grass mixture indigenous to the area.

Impact of Solid Waste

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

Mitigation of Impact of Solid waste

- The construction teams should ensure that all waste is removed from the site and that they recycle the items that can be used again. Unusable waste steel and aluminium will be sold to scrap dealers for recycling at the Eskom stores.
- 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 thatis recycledand taken to the Eskom stores. Other waste is normally the 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 and a copy kept on site.
- These measures are also included as requirements in the EMPr under the headings *"Appointment of Contractors"*and "*Waste Mangement*". Also refer to the other mitigation measures under the same headings.
- Stockpiling of construction material should be such that pollution of water resources is prevented and that the materials will be retained in a storm event.
- Once construction is completed, the contractor has to obtain written consent from the relevant landowner that the construction site, construction areas, access routes, etc. are sufficiently and adequately rehabilitated to the landowner's satisfaction.

Impact of labourers

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

Mitigation of impact of labourers

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

Impact on Safety and Security

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

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

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

Mitigation of Impact on Safety and Security

Safety mitigation measures

- During construction,the Contractor should put up a temporary fence around the campsite and work areas.
- All construction activities should take place within fenced or otherwise demarcated areas.
- All excavated areas for pylons must be fenced and barrier tape must be placed around them to prevent humans and animals from falling into them.
- The contractors must appoint their own guards to safeguard their materials.
- Construction workers should wear clearly identifiable clothing that allows landowners to easily identify contract workers on site.
- Once construction is completed, the contractor has to obtain written consent from the relevant landowner that the construction site, construction areas, access routes, etc. are sufficiently and adequately rehabilitated to the landowners' satisfaction.
- Should blasting be deemed necessary, it may only be undertaken by specialists in the field and should be limited to localised areas. All relevant legislation must be adhered to.
- All adjacent landowners have to be informed of the blasting programme prior to any blasting taking place. Contractors must liaise personally with adjacent landowners. All communication in this regard must be documented.
- A Fire Management Plan has to be identified during the pre-construction phase and must be implemented throughout the construction and operational phases of the project.
- No open fires to be allowed outside of the substation sites.
- Collection of wood for fires and cooking from out of the surrounding veld is prohibited.
- In campsites in the substations a designated area for camp fires and cooking needs to be made. Should open fires be used then an area of at least 2m by 2m needs to be cleared of any flammable materials such as grass.
- No open fires to be allowed in campsites erected outside of the substations. In such cases proper provision for portable gas stoves should be made. All relevant laws related to flamable substances to be strictly adhered to.

Noise mitigation measures:

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

Dust mitigation measures:

According to the applicant and their contractors**,** dust suppressionisnot 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.

Impact on natural habitat

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

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

Mitigation of impact on natural habitat

- Site-specific measures for the specific property as identified by the ecologist, must be implemented by the Contractor during the construction phase and by Eskom and the maintenance teams during the operational phase. Refer to mitigation measures provided in the Planning phase.
- Relevant to this project is that no proposed impacts on the ecology of the environment were identified as possibly being beneficial. The nature of the impacts are such that small, continuous footprints are left on the ground by the pylons of the power lines. If the clearing of natural vegetation is limited, along with the proper implementation of all mitigating measures, then the nature of the impacts will be low.
- The procedures for vegetation clearance and maintenance within servitudes and on Eskom owned land as prescribed by Eskom must be implemented. Selective bush clearing must take place, i.e. indigenous vegetation, which does not interfere with the safe operation of the structure, should be left undisturbed.
- Ensure that no trees, or existing grass strata outside of the servitude corridor be removed to lower any kinetic energy of potential run-off, that disturbed surface areas in the construction phase be restored and lastly that no open trenches or mounds of soils created during construction be left.
- Damage can result in habitat modification or erosion as a result of the proposed power line construction activities. This can be avoided in general, by not allowing any construction of any sort to take place within aquatic habitats encountered, as these habitats are viewed as sensitive.
- Care needs to be taken should contractors come across large holes dug in the ground in the grasslands plains. These potentially could be aardvark or pangolin lares, both are Red Data Species and protected by law. If unsure reposition the necessary pylon at least 20m away from the entrance.
- Where clearing of access for construction is essential, the maximum width to be cleared is 8m, 4m on either side of the alignment for the power line. Clearing for tower positions must be the minimum required for the specific tower.
- Only a single, basic vehicle track to be constructed as an access road under pylons in the grassland plains. The track is not to pass directly through any wetlands or pan depression, even those directly under the power line itself.
- Removal of trees, shrubs and other vegetation on the escarpment ridge should be kept strictly to within the 8m corridor under the power lines and only where specifically required (due to elevation differences between the actual lines and the ridge and/or existing vegetation) up to 20m in width.
- Only a single, basic vehicle track to be constructed as an access road under pylons moving around rocky areas.
- No straight-line vehicle track may be created down the steep escarpment. Any vehicle track going down steep sections of the escarpment needs to wind and soil mounds need to be placed across the tracks where necessary to prevent soil erosion due to stormwater run-off.
- Temporary access roads for vehicles carrying equipment, materials, etc. into the power line corridors need to be kept to an absolute minimum. None of these accesss roads may cross through sensitive areas.
- No temporary storage facilities, toilets, dwellings, etc. of any kind to be erected or take place within the rocky, eastern side of the escarpment ridge. Not even within the demarcated power line corridor.
- No campsites or other temporary structures to be erected outside the designated areas of the power line corridors.
- No concrete to be allowed to be mixed in the veld. Mixing boards or cement mixing machinery to be used.
- All construction activities and movement of people and machinery to remain within the designated power line corridor, as far as possible and within reason.
- Work corridor to be limited to 20 metres along the route of the servitudes.
- When foundation holes are dug for the pylons, the topsoil (top 30cm of the ground) needs to be placed aside separately. After construction this topsoil needs to be spread back over the distrubed area. The reason is that there might possibly be bulbs of geophytes in this topsoil and in this way if any where disturbed most would survive in this way, hereby mitigating the impact on the vegetation of the environment.
- No fires may be made for the burning of vegetation and waste.
- Fire fighting equipment must be readily available on site during welding and cutting operations.
- Branches and other debris resulting from pruning processes should not be left below conductors or in areas where it will pose a risk to infrastructure.
- Fires shall not be made for the purpose of chasing or disturbing indigenous fauna.
- No firearms should be allowed at the construction sites.
- No animals or birds may be fed, disturbed, hunted or trapped.

- Collection of firewood or any medicinal and protected plant species is prohibited.
- All exotic plants must be removed during construction and cleared areas must be rehabilitated. Areas where exotic plants are cleared should be rehabilitated and re-planted with approved indigenous species.
- Care must be taken to ensure alien vegetation is not spread as a result of vegetation management processes through the transport of seeds or other vegetative material from one site to another.

Impact on Birds

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

Loss of breeding, foraging and roosting habitat through habitat transformation

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

Mitigation of Impact on Birds

Relevant to this study:

Habitat destruction

A degree of habitat destruction always takes place when a power line is constructed. In this instance the study area has been intensively transformed through agriculture and afforrestation, which has fragmented the majority of the original grassland. There are however still sensitive grassland and wetlands areas which could be damaged, particularly with the construction of roads. Further fragmentation of the grassland habitat should be avoided if possible. It has been shown that fragmentation of natural grassland in Mpumalanga by afforrestation has had a detrimental impact on the densities and diversity of grassland species.

Recommendation: The construction of access roads in sensitive wetland habitat should be avoided.

Disturbance

The potential for disturbance of Red Data species is the biggest in remnant grassland areas, and in wetlands. Disturbance during the construction phase is inevitable, but is to some extent mitigated by the temporary nature of the impact.

Recommendation*:* The construction of access roads in sensitive wetland habitat should be avoided.

Impact on cultural heritage resources

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

Mitigation of impact on cultural heritage resources

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 revealed none of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999).

There is consequently no reason from a heritage point of view why **either Alternative 1 or Alternative 2** cannot be used for the construction of Eskom's proposed Camcoll Jericho Project.

Recommendation: It is possible that this Phase I HIA study may have missed heritage resources in the Eskom Project Area. If any heritage resources of significance is exposed during the construction of the power lines the South African Heritage Resources Authority (SAHRA) should be notified immediately, all development activities must be stopped and an archaeologist accredited with the Association for Southern African Professional Archaeologist (ASAPA) should be notify in order to determine appropriate mitigation measures for the discovered finds. This may include obtaining the necessary authorisation (permits) from SAHRA to conduct the mitigation measures.

Visual impact

The visual impact resulting from the construction of a power line can be substantial in a more rural environment.

Should sensitive vegetation clearing as proposed in the mitigating measures, be exercised then the visual impact of the power line should not be significant.

Mitigation of visual impact

The following is relevant to this project:

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

Loss of agricultural land

The power line and their routes can have an impact on a number of other activities, such as cultivation potential.
The construction of power lines with the resulting clearance of servitudes can lead to a temporary loss in agricultural land.

Mitigation of impact on Agriculture

The proposed **construction of the power line will however have a low impact on any agricultural activity**.
The following is relevant for this project:

- The land uses (landcover) within the study area are almost exclusively cultivation, grazing and afforestation. Cultivation dominates on the western side above the escarpment, with afforestation dominanting along the escarpment and in the east. Other land uses include private game farms, Bed and Breakfast Accommodation, urbanisation, small holdings and roads.
- The land capabilities of the area within which the proposed servitudes fall is that of good arable and grazing capabilities. Ground water potential is however unknown, but the area has good rainfall figures along with deep, good soils.
- The general quality and fertility of the soils is good as well as the presence of palatable grazing grasses. The actual carrying capacity of the open areas is relatively high when compared to many other bushveld areas. Infrastructure for commercial agricultural practices is good. The greatest limiting factor for the potential use of the open land as arable or grazing land is the coal mining industry.
- The impact to agricultural activities of the proposed power line will only be for a limited period during construction. The positions of the pylons will be cleared and should it be deemed necessary, an access road of 8m wide could be cleared to construct the power line. After construction, the access road will be revegetated and normal agricultural activities can continue under the power line as usual.
- It is therefore submitted that the servitude area will not in the long-term interfere with any agricultural activities on the properties. In addition, Eskom will not own the servitude but will purchase the rights to construct and maintain the lines. A change in land use from agriculture to other land uses is not applicable.

2.3 IMPACTS THAT MAY RESULT FROM THE OPERATIONAL PHASE

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

Access to farms

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

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

Mitigation to establish a protocol for Access to farms

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

Protocol measures are i.e. as follows:

- All Eskom staff will carry identity cards containing their photographs, indicating that they are Eskom employees. Landowners may verify presence of Eskom staff telephonically at the Contact Centre, at 08600 37566.
- Eskom contractors will carry identity cards displaying their photographs, indicating that they are contractors. Letters containing contract appointment as well as whom at Eskom to contact will be given to each Contractor. In the case of unplanned activities, the contractor must be in possession of a work order number.
- Eskom vehicles will be clearly marked on the door. Vehicles operating after dark will be fitted with amber rotating lights.

Access to Nature / Game reserves

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

Mitigation for access to nature/game reserves

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

Routine Field trips by maintenance staff

- Field Services staff must report all new game fences or game farming activities encountered on routine line patrol or fault repair activities to the Land Development section for mapping and to Customer Services Area Managers to engage the landowner for corrective action if Eskom was not informed or did not agree to such a change. This is seen as an *ad hoc* way of obtaining information of newly created game farms from normal business activities.

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

Safety of Eskom personnel

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

The identification of areas where game farms occur

- There are various ways to identify game farms or game farming activities e.g. through raising awareness, by engaging government and other game farming bodies, using the EIA process and maintenance activities. Geographical mapping of all information gained from the aforementioned methods will assist in identifying, understanding and comprehending the impact of game farms on the business.
- Communication campaigns: Each region is to engage in a communication campaign to create awareness of the challenges associated with game farms. The target audience is current and potential game farm owners, customers and landowners in general. The central message to this campaign is restriction of access, the safety risk to Eskom employees and the impact on biodiversity especially giraffes, elephants, rhinoceroses, etc. Property owners need to be made aware of Eskom requirements regarding service delivery and legal requirements. This message can be conveyed through customer news letters and media articles and reports which had reportedly been very successful in the Northern Region for communicating the challenges surrounding giraffes. A request can also be made to farmers and other landowners selling off their properties for game farming to notify Eskom
- Regions should set up task teams to drive this awareness campaign consisting but not necessary limited to the following sections/designations – Customer Service (Delivery Controller), Programme Management, Field Services (Technical Service Officer, Field Service Officer), Communication, Risk Management (Senior Environmental Advisor, Risk Management Co-ordinator), Land Development, Project Engineering). This task team is to identify key stakeholders to engage in this communication campaign

Biodiversity impacts

- Awareness about the issues surrounding game farms might bring about requests to have some lines checked for clearances for giraffes and/or others mitigated to prevent elephants and/or rhinoceroses from being electrocuted. Such requests should be sent through to the Land Development section for screening, evaluation, investigation and/or measuring. The latter could also be performed by Field Services staff. If clearances are insufficient in the case of giraffes and/or measures are required to mitigate for elephants and/or rhinoceroses, the request should be forwarded to the Project Engineering section for an engineering solution to be taken in conjunction with the Environmental function.
- The alternatives with regard to biodiversity mitigation are:
  - The landowner deciding not to go ahead with plans to introduce dangerous animals or removing them from camps where Eskom infrastructure exists.
  - Eskom introducing engineering solutions e.g. rerouting, lifting of the line and cabling in the case of giraffes and rerouting, stone packing and planting of dummy poles in cases involving elephants and rhinoceroses.
- Project Engineering is to inform the Customer Services Area Manager of the appropriate action to be taken. Customer Services Area Managers are to communicate this to the customers taking into account the provision on environmental costs recovery as per the *Recovery of Capital Costs* SCSPBABC9. Should the customer not

wish to accept Eskom's solution(s) or costs, a formal decision is to be taken by regional management and communicated to the customer. It is also advisable and practical to consider each case on merit before applying the abovementioned policy indiscriminately. This is advised against the background that Eskom's way leave agreement makes no reference of future accountabilities or costs being incurred by landowners. It is also not known at this time how the application of the policy would impact on the signing of way leave agreements and by extension the creation of new assets in future.

Engaging relevant Government departments and game farming bodies

- The provincial departments of Environmental Affairs and Tourism have a regulatory function with regard to game farms in the form of the issuing of Certificates of Adequate Enclosure Fencing Specifications. It is advised that regions lobby for Eskom requirements to be made part of the conditions of this process. This department would also have a database of existing and knowledge of some future or planned game farms or game farming activities. Efforts should be made to gain access to this and other databases of this kind held by the government. It could also be suggested to provincial governments to issue monthly publications regarding game farms.
- Engaging game farming bodies could assist in determining the boundaries of existing game farms as well as in ascertaining information on the planned introduction of giraffes, rhinoceroses, elephants, lions, tigers, etc. Other issues that could also be taken up with these stakeholders are:
  - Exchanging and availing contact details.
  - Requests that game reserve/farm owners number their gates so as to facilitate contact and access.
  - Requests for training.
- Customers who are game farmers should be highlighted in GTX / CC&B . There is also a need to keep and update relevant information about the contact details for game farms and rangers on duty (Name, number, alternate number). These customers should also be identified on the EP plans.

Training

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

The Environment Impact Assessment (EIA) process (Environmental Section and Land Development)

- The EIA process in all its forms (DESD, Scoping, Exemption or full EIA) must be used as a tool to determine existing or future intentions to create game farms or to introduce dangerous animals. It is thus necessary for the EIA practitioner/consultant to specifically ask questions with regard to future intentions. It is furthermore necessary that this information be captured and used for future planning purposes be that for new asset creation or asset maintenance. The way leave agreement could also be used to ensure that landowners inform Eskom prior to creating game farms or before the introduction of certain dangerous animals. This can be done through the inclusion of a clause on the way leave that states that the landowner will inform Eskom before converting to game farming or before introducing dangerous animals.

Mapping and GIS by the Land Development Section

- All information gathered from maintenance staff, external sources e.g. government departments, Eskom processes e.g. EIA process, needs to be captured electronically and geographically. This information can be used to identify, fully comprehend and to assist planning in, through and around game farms.

- Customers who are game farmers should be highlighted in GTX/Cordaptix as sensitive customers. There is also a need to keep and update relevant information about the contact details for game farms and rangers on duty (name, number, alternate number). These customers should also be identified on the EP plans.

Access to Plantation properties

Eskom has the right to enter the servitude areas to maintain the power line. This might impact negatively on the farming activities of the landowner and in specific plantations. A protocol for access should be finalised for the project area and specifically for afforrestation.

The specific access arangements of the landowner could also be stipulated in the option document, that is a binding document, signed between the landowner and Eskom, that will reflect all the requirements of the landowner.

Mitigation for impact to Plantation properties

- Provided that Eskom informs the specific landowner or Plantation and Land Manager (in the case of the afforestation areas) before entering the plantation and land, Eskom personnel has the right to enter and do maintenance work on Eskom's structures or the servitude area or to gain access to any adjacent property, provided further that Eskom personnel shall enter or be upon the plantation and land and any land at their own risk.
- In the exercise of the rights referred to above, Eskom personnel shall make a reasonable effort to inform the specific Plantation and Land Manager or his delegated official in advance, and shall take reasonable steps to minimise the inconvenience to the landowner.
- In order to assist with access, Eskom may at its own expense, erect access gates as may be reasonably necessary, provided that the landowner's prior written permission must first be obtained, which permission shall not be withheld unreasonably. Under no circumstances shall access be gained by cutting or "dropping" of fences. All gates are to be left closed and Eskom gates are to be locked at all times, unless otherwise requested by the landowner.

Recommendations for the maintenance of servitude areas are the following:

- Eskom will be responsible for the maintenance of servitude areas.
- The landowner will be responsible for the maintenance of all trees outside of the servitude area and specifically trees that fall within the overturning distance of the power line and/or trees, whether the said tree is located on a plantation or on land.
- Each party will consult with the other with regard to any maintenance to be effected but this does not affect the parties' respective obligations with reference to the areas of maintenance.
- Maintenance will be carried out consistent with the landowner's Forest Management Plans and Eskom's servitude and wayleave management policies.
- Eskom will provide its servitude and wayleave management policies to the landowner and the landowner will provide a copy of its Forest Management Plans to Eskom.
- Each party shall bear the cost of any maintenance undertaken or to be undertaken in accordance with the obligations set out above.
- Should Eskom during one of its line inspections find a tree outside of the servitude area, but within an overturning distance of the power line and/or tree, and such tree does not pose an immediate danger to any power line, it will endeavour to advise the landowner of such a tree but it will still be the landowner's responsibility to maintain such a tree.
- If a tree within the overturning distance of any power line and/or tree poses real and imminent danger to the power line, Eskom shall have the right to cut or trim the tree as necessary and advise the landowner of the fact. Eskom, at its discretion, will be able to invoice the landowner for any costs so incurred.
- Eskom shall be consulted prior to control burning for fire break construction. The landowner shall be liable for all damage caused as a result of negligence during maintenance of the servitude as a fire break to the extent liable in law.
- Eskom will supply the landowner with an annual inspection report of the servitude(s) on the plantation and land at the end of each calendar year.

Impacts associated with firebreaks and servitude maintenance

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

Mitigation of the impact associated with firebreaks and servitude maintenance

- In the case of 33kV, 88kV and 132kV distribution power lines, Eskom obtains the rights to a servitude.
- A servitude is a real right which Eskom obtained in order to construct its infrastructure upon the affected property and it is registered in the Deeds Office against the title deed of the affected property. The effected owner normally gets compensated for this right according to market related values. The servitude stays effective even if a property is transferred to another owner.
- The National Veld and Forest Fire Act (Act 101 of 1998) places an obligation on the owner to ensure compliance and hence creation of fire-breaks amongst other. The Act defines owner as follows: "owner" has its common law meaning and includes— (a) a lessee or other person who controls the land in question in terms of a contract, testamentary document, law or order of a High Court;.
- The Eskom understanding is that Eskom needs to ensure compliance to the Act where it has purchased a property (hence being the owner), such as a substation, where Eskom controls the access to the site. Eskom is not considered as the owner for rights obtained via a wayleave agreement or servitude. Hence, the requirements for creating firebreaks or joining Fire Protection Agencies are applicable as far as where Eskom has a substation, or other similar areas, and not for power lines. These opinions were reflected in the specifications – thus, the Vegetation Management Standard does not specify requirements for fire breaks.
- Fire Risk Management is dealt with under a procedure titled "Distribution Fire Risk Management", reference SCSASAAJ6. Grass fires are dealt with in this procedure stating that vegetation and equipment must be maintained. A specific procedure deals with fire risk management for substations where the chipped stone needs to be maintained to prevent vegetation growth.
- Eskom Distribution does not make use of the practice to burn firebreaks, 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 as this does not pose a safety risk and will create the potential for erosion, causing environmental degradation and hence legal liability. It will furthermore be an economically unsustainable exercise for Eskom given the amount of power lines throughout South Africa.

Impact on Birds

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

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**.**

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

Mitigation of impact on birds

Relevant to this study:

Electrocution

The steel mono-pole is not a major electrocution hazard to birds, except in specific instances, and then only for vultures, which do not occur in the study area. No electrocution risk is therefore foreseen for the new 88kV line. (Refer to visual in Appendix C2).

Collisions

The most direct impact that the proposed line could potentially have on Red Data birds is collisions with the overhead earth wire. Generally this impact is most likely to occur close to wetlands, where the line skirts a dam or where it is positioned across a drainage line. Another collision hazard exists if the line will cross patches of grassland, as this is the preferred habitat of most of the remaining large terrestrial Red Data species in Mpumalanga.

Recommendation
Those sections of line that will require the application of bird flight diverters (BFDs) are indicated on the accompanying sensitivity map in the Bird Impact Assessment in Appendix D3. Sensitive sections will include dams, wetlands, waterlogged grassland, drainage crossings and other areas of grassland. The proposed BFD is the Double Loop Bird Flight Diverter. BFDs should be placed on the earthwires, staggered, alternating black and white, 10 metres apart. (The Sensitivity map, included in Appendix D3 and Appendix A7 of the BAR, indicates the sections of the alignments to be marked with Bird Flight Diverters).

Visual impact
Impact on the esthetics of an area is related primarily to the visual impact of the proposed power lineand substation and secondary to the impact of habitat destruction. It is understood that the visibility of the power line could well impact negatively on the broader environment since visitors/ residents would not be able to escape the sights of human interventionFactors to consider regarding the visual impact are the following:

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

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

- The visual experience of the area can be described as medium due to existing disturbance of natural habitat such as through cultivation, grazing and afforestation.
- The power line is proposed adjacent to corridors of existing impact. Alternative 1, adjacent to a corridor of power lines and Alternative 2, mostly adjacent to the R65. This will limit further impact to habitat.
- Alternative 2, although adjacent to existing impact (the R65), will create an entirely new power line corridor. The new corridor will also have a greater effect on the negative visual aspect of power lines in general and in particular where the power line come up and over the high laying contours of the escarpment. Hence Alternative 1, that is proposed alongside an already existing corridor of power lines, will have a lower visual impact.
- To reduce the negative visual impact of high laying power lines over a long distance,power lines may not cross over the highest point (contour) on top of the escarpment. The highest pylon on the ridge must be a minimum of 50m below the highest point or follow a contour around the highest point. This contour to be at least 50m below the level of the highest contour line.
- It is recommended that any existing servitude roads as well as existing roads must be used during construction and maintenance of the power line. In addition, strict procedures for vegetation clearance within the power line servitude will be followed to limit impact to the natural habitat and the resulting visual impact.
- In addition, visual impact could generally be mitigated to some extend by constructing the power line with monopole steel structures. A sketch of the structure is included in Appendix C2. From previous experience the steel poles are known to weather and with time blend into the environment.

Impact of alien vegetation

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

- A servitude is a real right which Eskom obtained in order to construct its infrastructure upon the affected property and it is registered in the Deeds Office against the title deed of the affected property. This places a duty on Eskom to control declared weeds and invader plants.

Mitigation of alien vegetation

- The excessive and incorrect use of herbicides has caused a worldwide problem of the build-up of toxins in ecosystems. it is strongly felt that due to the grassland nature of the study areas there is no need for the use of herbicides.
- No indigenous trees or shrubs outside of the power line corridor of 8m to be removed, although due to the grassland vegetation of the study area very few occur except along the escarpment ridge. Patches of exotic trees (especially blackwattle (*Acacia mearnsii*) within the large 100m corridor may be totally removed. This will also have a positive impact on the grassland environment. 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.
- An ongoing programme to be implemented to mechanically control alien plant species that invade the disturbed soils around the newly erected pylons. This should be done in such as way as to allow the natural grasses and pioneer plants to colonise the disturbed areas. Typically there should not be any, or very little, infestation of weeds under the power lines 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.
- Mechanical control of alien species to be implemented within three (3) months of completion of construction of the power line. Thereafter ever six months.
- Surface area under power lines (where necessary) to be mowed and not ploughed. Thereby avoiding creating a negative impact of allowing weeds to encroach.
- No chemical control (herbicides) to be used in the control of alien plants or indigenous plants, except on tree and bush stumps in 8m corridors directly under power lines. All control of weeds to be mechanical in nature. That is, physically cut down, pulled out or mowed over.

Impact on Safety and Security

Fire Hazard:

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

Risk of Electrocution:

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

Mitigation of Impact on Safety and Security

Fire Hazard:

- The existing complaints structure must be revised by Eskom and be updated on a regular basis and communicated with all affected landowners to ensure effective response and service supply (especially in terms of reporting of obvious electrical faults).
- The applicable Emergency telephone numbers should always be available on site. Ms Marriam Ngwezi of Environmental Management, Eskom Distribution Northern Region is the relevant contact person (013 693 3034/ cell nr 073 387 1429).
- Branches and other debris resulting from pruning processes should not be left below conductors or in areas where it will pose a risk to infrastructure.
- Debris shall not be burnt under any circumstances.
- Fires shall not be made for the purpose of chasing or disturbing indigenous fauna.
- Eskom encourages affected landowners and maintenance staff to participate in the Fire Protection Agency.
- Annual fire management programmes will need to be implemented to manage the risk appropriately.

Risk of Electrocution:

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

Safety of landowners/ land rights users:

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

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

2.4 IMPACTS THAT MAY RESULT FROM THE DECOMISSIONING 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 broader area with power.

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

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

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

3. ENVIRONMENTAL IMPACT STATEMENT

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

3.1 No-go alternative (compulsory)

- It is suggested that **to maintain the status quo is not the best option for the macro environment**. This proposed project is **part of the infrastructure to improve the supply of electricity to the broader area**. Should this application not be approved then the supply will not be reliable and this can result in major disturbances in the supply of electricity.
- As indicated in this EIA report the impacts that are likely to occur as a result of the proposed power line are minimal over the medium- to long-term and can be mitigated to acceptable levels. The No-Go development alternative could therefore not be considered the responsible way to manage the site.

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

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

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

3.2 Environmental impact statement

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

EVALUATION METHOD FOLLOWED

The nature and extent of expected negative impacts are described directly under the heading for each impact.
Below this description for each impact, a table has been designed to facilitate evaluation of the expected negative impact in terms of significance (intensity), duration, probability and significance after mitigation.
The numerical values used for "Impact Severity" (significance / intensity) relates to the potential severity of the proposed project on the specific environmental component without any mitigation and is being evaluated and rated on a scale from 0 to 4 where the following values apply :
0 = no impact
1= low impact
2 = medium impact
3 = significant impact
4 = severe impact

The duration of the expected negative impact is supplied as either "temporary" - 0-3 years (generally during construction) or "permanent". The probability that the expected negative impact would occur if not mitigated is rated as "low", "medium" or "high". The negative impacts are also evaluated in terms of the effectiveness with which it could be mitigated: "Severity of Impact after Mitigation" is rated on a scale from 0 to 4, with a severe impact after mitigation

receiving a rating of 4 (and can therefore influence the viability of the project) and no impact after mitigation receiving a rating of 0.

Alternative 1

Evaluation of Impact and Evaluation of Mitigation Measures

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

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impact on cultural heritage resources	1	permanent	Medium	0

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impact on natural habitat	2	Permanent	Medium	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Risk of Erosion	2	Permanent	Low	1

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

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

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

Impact Description	Impact	Impact	Impact	Mitigation
Impact of labourers	2	Temporary	High	1

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

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Social Impact	3	Temporary	Medium	1

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

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Loss of agricultural land	2	Permanent	Low	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impact of alien vegetation	3	Permanent	Medium	2

Alternative 2

Evaluation of Impact and Evaluation of Mitigation Measures

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Risk of surface and ground water pollution	4	Temporary	Medium	1

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

Impact Description	Impact	Impact	Impact	Mitigation
Impact on cultural heritage resources	1	permanent	Low	0

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impact on natural habitat	4	Permanent	Medium	2

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

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

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

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

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

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Social Impact	4	Temporary	Medium	1

Impact Description	Impact	Impact	Impact	Mitigation

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

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Loss of agricultural land	3	Permanent	Low	1

Impact Description	Impact	Impact	Impact	Mitigation
	Impact Severity Degree	Duration	Probability	Severity of Impact After Mitigation
Impact of alien vegetation	3	Permanent	Medium	2

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

SECTION E. RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?	YES	NO

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

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

Ecological Sensitivity:

The significance of the impacts of constructing the power line and the substation is low.A number of mitigating measures are recommended to reduce the impacts, as well as to ensure that all other impacts on the area remain low.

Alien Vegetation

- An ongoing programme should be implemented to mechanically control alien plant species that invade the disturbed soils around the newly erected pylons, including areas that were disturbed and rehabilitated during the construction phase. This should be done in such as way as to allow the natural grasses to colonise the disturbed area, thereby keeping alien plants at bay. Most alien plants in the area are typically annual or bi-annual herbaceous plants and can be effectively controlled by slashing. In other words, not by hoeing which further disturbs the soils. This control is most effective if done early in the summer while the plants are still young and before they go to seed, thereby preventing further spread and infestation for the following growing season.
- Mechanical control of alien species to be implemented within two months of completion of construction of the power line. Thereafter ever six months or preferably late in the spring and then again late in the summer. Keeping in mind the project falls in a summer rainfall area and it is during this time plants are growing most actively. Once winter arrives or after veld fires it will be difficult to distinguish between alien and indigenous plant species.
- Surface area under power lines to be mowed and not ploughed. Ploughing will disturb soils, creating opportunity for invasive weeds to colonise the area.
- No chemical control to be used in the control of alien plants or indigenous plants.

Natural Habitat

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

- Site specific measures in terms of ecology as identified by the ecologist, Mr. Johannes Maree of Flori Horticultural Services (Tel 082 564 1211) must be included in the contract with the Contractor and implemented by the Contractor during the construction phase. These measures are included in the EMPr of the BAR.
- Various species of indigenous trees and bush are protected by law in terms of the National Forests Act No 84 of 1998, which stipulates that it is necessary to obtain a permit from the relevant provincial office of the Department of Agriculture, Forestry and Fisheries in order to cut them. No permit applications are envisaged for this project.

Grassland Plains

- Any temporary storage and accommodation facilities should be erected in preferably old, previously cultivated lands that are open and not wooded. In other words, no areas of pristine grassland should be selected.
- 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, as oftentimes contractors do not have the expertise to distinguish between alien and indigenous species.
- Any selected temporary site (accommodation or storage) needs to be within the 100m power line corridor.
- No site within 300m of a river, stream or major drainage line may be used for temporary accommodation or storage.
- Positioning of the foundation slabs for the pylons must be a minimum of 50m away from the edge of all drainage lines, due to the general flatness and possible overflowing of drainage lines during high rainfall seasons.

Escarpment Ridge

- The power line corridor will need to dissect the escarpment ridge. The most sensitive part of the escarpment is the east-facing, rocky ridge, with its steep 'cliff face', which drops approximately 200m over a short distance. More care will need to be taken over this area than on the high plateau. However, even the high plateau (western side of the escarpment) is more sensitive than the grasslands to the west of the escarpment. This is because the

plains are not as flat (more strongly undulating) and therefore have more and deeper drainage lines.

- No pylons to be placed inside any drainage lines or kloofs (ravines).
- Pylons need to be placed a minimum of 30m away from the edges of drainage lines.
- In areas where the power line goes off the escarpment ridge it must stay outside of any kloofs (ravines). Pylons need to be placed a minimum of 50m away from the edge of ravines.
- Power lines may not cross over the highest point (contour) on top of the escarpment. The highest pylon on the ridge must be a minimum of 50m below the highest point or follow a contour around the highest point. This contour to be at least 50m below the level of the highest contour line. This is to reduce the negative visual impact of high laying power lines over a long distance.
- The escarpment ridge is calculated to be of Medium/High sensitivity and is therefore seen as a "Go-But" zone. In other words, the power line corridor can Go there, but only if mitigating measures are adhered to and proper ongoing management measures put in place.
- No temporary storage facilities, toilets, dwellings, etc. of any kind to be erected or take place within the rocky, eastern side of the escarpment ridge. Not even within the demarcated power line corridor.
- The longest possible distance between pylons should be used in an effort to limit the footprint size down the escarpment ridge.
- The power line must run as straight as possible over the ridge. This in an effort to limit sharp turns that literally create a larger physical footprint on the ground. However, staying along lower contour lines and out of ravines must take precedence over a straight corridor.

Rivers, streams & drainage lines

- A few rivers (Vaal River, Holbankspruit and Mpama River) along with a few seasonal streams and drainage lines cross the power line 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.
- No temporary or other construction facilities to be erected or stored within 200m of the banks of the rivers, streams or main drainage lines.
- Positioning of any pylons need to be a minimum of 50m from the edge of the river banks or outside of the 1 in 100 year floodline, whichever is furthest.
- Positioning of the foundation slabs for the pylons must be a minimum of 20m away from the edge of all drainage lines.
- Under no circumstances may a pylon be placed directly in the bed (main flow) of a river or drainage line.
- No temporary ablution facilities to be placed within 200m of the banks of any of the rivers, streams or drainage lines (even those that are dry during the time of construction)
- Only proper portable, chemical ablution facilities to be used and these to be positioned only within the 31m power line servitudes.
- Portable ablution facilities only to be serviced by registered companies and on a regular basis. Under no circumstances may any effluent or sewage to be dumped (or buried) in the open veld.
- Proper water facilities need to be installed and maintained for construction workers. No water from out of the rivers may be used for drinking, washing or cooking purposes.
- No fishing, capture of any water or land animals, or removal of water plants or other vegetation for food to be allowed.

Wetlands

- No wetlands occur within the proposed power line corridors, but some (especially in the lowlands) do occur in the area, or in fairly close proximity. Under no circumstance may any activities directly or indirectly related to the power line project take place within any wetland area.
- No campsite, temporary storage facility, or any other facility to be erected within 500m of a wetland.

Water Use Licence Applications

- The law (National Water Act (NWA)) sees each river crossing as a Water Use that will either need to be registered (General authorisation) or a water use licence applied for (Water Use Licence Application (WULA)).
- However, a general indication is given in this report as to which river crossings will probably only need to be registered under General Authorisations and which will probably need Water Use Licence Applications (WULA). The water uses are all covered in the NWA. In the case of overhead power lines, 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.

Plantations

- Numerous avian raptors such as Long-crested Eagle often nest in the tall trees of plantations. Care should therefore be taken should any trees need to be removed that none contain active nests of raptors as most are threatened or vulnerable to some degree.

General

- The placement distance between pylons can be up to 330 meters. Therefore any sensitive areas, with proper planning, could be completely missed.
- It was concluded that, from a vegetation and fauna perspective, if duly mitigated and planned, the overall impact is seen to be minimal over the medium- to long-term.

Heritage Resources:

The Phase I HIA study for the proposed Eskom Project revealed none of the types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) in and near the Eskom Project Area.

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

Bird Impact:

- No electrocution risk is foreseen for the new 88kV lines. The steel mono-pole is not a major electrocution hazard to birds, except in specific instances, and then only for vultures, which do not occur in the study area.
- The most direct impact that the proposed line could potentially have on Red Data birds is collisions with the overhead earth wire. Generally this impact is most likely to occur close to wetlands, where the line skirts a dam or where it is positioned across a drainage line. Another collision hazard exists if the line will cross patches of grassland, as this is the preferred habitat of most of the remaining large terrestrial Red Data species in Mpumalanga. Those sections of line that will require the application of bird flight diverters (BFDs) are indicated on the accompanying sensitivity map (In Appendix C of the Bird Impact Study that is included in Appendix D3 of the BAR). Sensitive sections will include dams, wetlands, waterlogged grassland, drainage crossings and other areas of grassland. The proposed BFD is the Double Loop Bird Flight Diverter. BFDs should be placed on the earthwires, staggered, alternating black and white, 10 metres apart. (Sensitivity map is included in Appendix D3 and Appendix A7 of the BAR for the sections of the alignments to be marked with Bird Flight Diverters).
- The construction of access roads in sensitive wetland habitat should be avoided.

Recommended Alternative:

- Alternatives have been considered for this project, and in specific locality alternatives, that is Route Alternatives 1 and Route Alternative 2.
- From a purely ***ecological*** **viewpoint**, 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 low. When all impacts and sensitive habitats are taken into account, the Ecological recommended line variant for the proposed project is: **Alternative Route 1**.
- From the analysis of risk factors both alternatives emerge virtually equally as high risk from a ***bird impact*****alternative**. However, it is recommended that **alternative 1** is used, because of the **confirmed** presence of cranes in a large wetland on the farm Vlakplaats 2841T. This wetland forms part of a large wetland system which is bisected by alternative 2. If alternative 2 is constructed, it will bisect a likely flight path between the wetland areas and will thus constitute a definite high collision risk to the birds.
- From a ***heritage*** **point of view**, **both** of the location **alternativesare suitable**, for the construction of the project.
- In **summary**, however, due to close similaraties of alternatives 1 and 2 it is imperative that the accumulative weight of other parameters such as feedback from public participation, land tenure issues, construction costs, technical constraints, etc. also be taken into account when deciding on the final alternative between Alternative 1 and Alternative 2.
- **Subsequently, Alternative 1 is preferred and submitted as the final proposed route mainly due to the following:**
    - This Alternative (1) is preferred both from an ecological viewpoint as well as from a bird impact perspective. Both alternatives are suitable from a heritage point of view.

- In addition, Route Alternative 1 can be constructed in an existing Eskom Distribution vacant servitute for approximately 50% of the route.
- Route Alternative 1 is preferred by landowners above other new corridors of impact due to the existing corridor of power lines adjacent to this proposed route.Hence Route Alternative 1 will impact less on landowners and their agricultural activities.

The **final proposed route** is **Alternative 1** on the farms **Vlakfontein 269IT portion 2, 3, 4; Vlakfontein 266IT portion 9; Weltevreden 289IT portion 2, 3, 6, 10, 11; Zwartwater 288IT portion 1, 6; Onverwacht 287IT portion 6; Windhoek 291IT portion 8; Waaihoek 286IT portion 3, 4, 5, 6, 11, 12, 13; Vaalbank 285IT portion 2, 4, 6; Vlakplaats 284IT portion 1, 7, 9, 12; Scheepersvley 303IT portion 2, 4, 5, 6; Glen Eland 413IT portion 11/15, 13, Rem; Jericho 304IT portion 1, 2** in the Msukaligwa Local Municipality in the Mpumalanga Province.

Is an EMPr attached?	YES	NO

The EMPr must be attached as Appendix F.

SECTION F: APPENDIXES

The following appendixes must be attached as appropriate:

Appendix A: Site plan(s)

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports

Appendix E: Comments and responses report

Appendix F: Environmental Management Programme (EMPr)

Appendix G: Other information